



LIBRARY OF CONGRESS
National Library Service
for the Blind and
Physically Handicapped

Specification 1202:2011

Digital Talking-Book Mastering



Revision History	Issue	Date	Change Description
	Rev. 1.0	Sep/30/2008	First Release
	Rev. 1.1	April/30/2011	Removed requirements for reviewing on CD media Removed requirements for labeling and packaging Added requirements for narrator criteria Added requirements for foreign-language books Added requirements for speaking written text Added requirements for location of notes

Document No.
1202:2011

Release Approval:

Head,
Quality Assurance Section



(Robert Norton)

Head,
Engineering Section



(John Brown)

Chief,
Materials Development
Division



(Michael Katzmann)

Acting Director



(Ruth Scovill)

Table of Contents

1. Scope	5
2. Reference Documents	5
2.1 Specifications	5
2.2 Standards	6
2.3 Reference Sources	7
2.4 Definition of Terms	8
3. Requirements	9
3.1 Narrator Criteria	9
3.1.1 Characteristics	9
3.1.2 Aesthetic/Interpretative Requirements	9
3.1.3 Casting	9
3.1.4 Narration Accuracy	10
3.1.5 Pronunciation	10
3.2 Technical Characteristics of the Audio Recording	10
3.2.1 Conversion from Analog Prohibited	10
3.2.2 Audio Recording Signal Level for Spoken Text	10
3.2.3 Background Noise Level in the Audio Recording	10
3.2.3.1 Audible Characteristics of the Audio Recording	10
3.2.3.2 Acoustical Quality and Speech Intelligibility	11
3.2.4 Checksum File	11
3.3 Primary Audio WAV Files	12
3.3.1 Primary Audio File Configuration	12
3.3.2 Primary Audio File Duration	12
3.3.3 Primary Audio File Content	12
3.4 Ancillary Audio WAV Files (Announcement and Headings)	12
3.4.1 Ancillary Audio File Configuration	12
3.4.2 File of Headings (hdgs) Clips	12
3.4.3 DTB Announcement (ann) File	12
3.4.3.1 Content of DTB Announcement File (Except for Children's Books)	12
3.4.3.2 Ending Announcement (Except for Children's Books)	13
3.5 Children's Books	14
3.5.1 Content of DTB Announcement File (Children's Books)	14
3.5.2 Ending Announcement (Children's Books)	14
3.6 Foreign-Language Books (Table of Contents)	14
3.7 Speaking the Written Text	15
3.7.1 Omitted and Relocated Text	15
3.7.2 Location of Typographical Elements	15
3.7.3 Reading Notes	15
3.7.4 Location of Notes	15
3.7.5 Explanatory Notes	16
3.7.6 When References (or Source Notes) Are Omitted	16
3.7.7 When Footnote Numbers Are Omitted	16
3.7.8 Special Instructions	16
4. Quality Assurance	16
4.1 Contractor Inspection	16
4.1.1 Monitor (Recording Technician)	17
4.1.2 Reviewer (Proofreader)	17
4.1.3 Test Equipment and Inspection Facilities	17
4.1.4 Responsibility for Compliance	17
4.1.5 Reporting of Inspection Results	17
4.1.6 Quality Assurance Procedures (QAP)	17
4.2 Library of Congress (NLS/BPH) Inspection	17
4.2.1 Audio Recording Inspection	17
4.2.2 Facility Inspection	17
4.3 Acceptance Inspection	18

4.3.1 Contractor's Acceptance Inspection	18
4.3.2 NLS Acceptance Inspection.....	18
4.4 Methods of Inspection	18
4.4.1 Primary Audio File Configuration	18
4.4.2 Primary Audio File Duration	18
4.4.3 Signal Levels	18
4.4.3.1 Reference Level.....	18
4.4.3.2 Spoken Text.....	19
4.4.3.3 Background Noise	19
4.4.3.4 Headings (hdgs) Clip File.....	19
4.4.3.5 DTB Announcement (ann) File	19
4.4.3.6 Checksum File	19
4.5 Warranty.....	19

1. Scope

This specification defines requirements for the narration and mastering of digital audio (WAV) files for digital talking-books (DTBs) produced for the National Library Service for the Blind and Physically Handicapped (NLS), Library of Congress.

There are two kinds of WAV files—the primary audio files and the ancillary audio files. The primary audio WAV files contain the actual content of the book. The ancillary audio WAV files contain information used in the DTB format. Two ancillary audio WAV files, called the announcement and headings files, are required. One contains the opening announcements for the DTB. The other contains audio clips used by the DTB's Navigation Control File (NCX). These clips hold the book's title and author and all of its headings, which are referenced by the NCX.

NLS Specifications 1203, 1205, and 1206 define requirements for the set of files, protection, and uploading of a DTB. In some areas, these requirements augment those contained in this specification. It is therefore essential that producers of DTBs reference both this specification and NLS Specifications 1203, 1205, and 1206 to ensure full compliance with all NLS requirements.

The requirements of this specification, susceptible to objective and subjective evaluations, must be fulfilled. NLS may reject any master recording that fails to meet the requirements specified herein. Specific artistic points not covered by these specifications are subject to judgment by NLS staff and also can be cause for rejection of a particular title.

Contractors who consider submitting a bid to produce books should be cognizant of the consumer-responsive nature of the program, and that the specifications have been developed to meet the special needs of readers in the program. Materials are produced with those needs foremost in mind and are improved through constant monitoring and consumer input. Contractors are expected to familiarize themselves with the equipment-handling practices of blind and physically handicapped clientele and ensure that the products they produce will stand up under this type of use. A high degree of quality workmanship and product reliability is mandated by the product specification.

2. Reference Documents

The following documents and publications, in effect on the posting date of the RFP, form a part of this specification. In the event of conflict between the documents and publications referenced herein and the content of this specification, the content of this specification shall be considered a superseding requirement.

2.1 Specifications

American National Standards Institute (ANSI)

ANSI/NISO Z39.86-2002
Specifications for the Digital Talking Book

The document cited above is available from:

American National Standards Institute, Inc.
25 West 43rd Street,
4th Floor
New York, NY 10036
Tel: (212) 642-4900
Fax: (212) 398-0023
and at
<http://www.niso.org/workrooms/daisy/Z39-86-2002.html>

National Library Service for the Blind and Physically Handicapped

NLS Specification 1203
Construction of Digital Talking Books

NLS Specification 1205
Protected Digital Talking Book

NLS Specification 1206
Uploading Digital Talking Books and Magazines

The documents cited above are available from:
National Library Service for the Blind and Physically Handicapped
Library of Congress
1291 Taylor Street, NW
Washington, DC 20542-0002
Tel: (202) 707-5100
Fax: (202) 707-0712
and at
<http://www.loc.gov/nls/specs/>

2.2 Standards

American National Standards Institute (ANSI)

ANSI/ASQ Z1.4-2003
Sampling Procedures and Tables for Inspection by Attributes

The document cited above is available from:
American Society for Quality
Quality Press
600 N. Plankinton Ave.
P.O. Box 3005
Milwaukee, WI 53201-2914
and at
<http://www.asq.org/quality-press/index.html>

Audio Engineering Society

AES17
AES standard method for digital audio engineering
Measurement of digital audio equipment

The documents cited above are available from:
Audio Engineering Society
60 East 42nd Street, Room 2520
New York, NY 10165-2520
and at
<http://www.aes.org/publications/standards/>

Internet Engineering Task Force Network Working Group

The MD5 Message-Digest Algorithm (RFC 1321, April 1992)

available at
<http://www.ietf.org/rfc/rfc1321.txt>

European Broadcasting Union

Specification of the Broadcast WAVE Format

available at
<http://tech.ebu.ch/docs/tech/tech3285.pdf>

2.3 Reference Sources

Random House

The Random House Dictionary of the English Language, current edition

Columbia University Press

Columbia Lippincott Gazetteer of the World, current edition
The New Columbia Encyclopedia, current edition

Merriam-Webster, Incorporated

Webster's New International Dictionary, current edition
Webster's Biographical Dictionary, current edition
Webster's Geographical Dictionary, current edition
A Pronouncing Dictionary of American English, current edition
Encyclopedia of Literature, current edition

Pearson Education, Incorporated

The New Century Cyclopedia of Names, current edition

J.P. Lippincott Company

Universal Pronouncing Dictionary of Biography and Mythology, current edition

Omnigraphics, Incorporated

Pronouncing Dictionary of Proper Names, current edition

Oxford University Press

BBC Pronouncing Dictionary of British Names, current edition

Online Pronouncing Guides

Say How: A Pronunciation Guide to Names of Public Figures

available at
<http://www.loc.gov/nls/other/sayhow.html>

The ABC Book: Acronyms, Brand Names and Corporations

available at
<http://www.loc.gov/nls/other/ABC.html>

Forvo

available at
<http://www.forvo.com>

How J Say

available at
<http://www.howjsay.com>

2.4 Definition of Terms

Audio recording - The uncompressed digital audio files (master and ancillary) of a complete book that has been narrated and recorded in the NLS-designated style and are the source of all copies.

Primary audio file - 90-minute file(s) needed to make a complete digital book.

Ancillary audio files - The announcement and headings files that are required to properly structure an NLS DTB compliant with Specification 1203 and ANSI/NISO Z39.86-2002.

WAV file - A linear pulse code modulation (PCM) file.

DTB - The complete set of files comprising a digital talking book as defined by NLS Specification 1203, 1205, and ANSI/NISO Z39.86-2002.

Checksum file - An XML file containing MD5 checksums of the primary and ancillary files.

3. Requirements

3.1 Narrator Criteria

Approval by the NLS Quality Assurance Section (QAS) must be sought and granted for each narrator to read for the NLS program. Auditions shall consist of five minutes of nonfiction and five minutes of fiction reading. The fiction selection shall contain a minimum of two characters and narrative. The studio director shall contact QAS to determine the best delivery method for an audition(s).

The NLS director must be sent written notification and must approve in advance any solicitation of authors, agency administrators, or well-known individuals for narration of NLS materials.

The narrator shall meet the requirements stated below. Conformance to these requirements may be subjective. Final authority for judging the acceptability of a narration shall rest with the NLS Quality Assurance Section.

3.1.1 Characteristics

Important characteristics of narration include, but are not restricted to:

- a. Delivering the narration in a conversational manner
- b. Conveying the sense of the text
- c. Conveying the appropriate emotional levels of the text
- d. Using emphasis, inflection, phrasing, stress, timing, and other appropriate speech art skills, to distinguish narrative from dialog, and characters from each other without calling undue attention to the manner of delivery
- e. Ensuring that, if character voices are used, the voice of each character possesses the same ease, flow, and vocal range as the normal narrative voice and is appropriate to the text
- f. Avoiding a delivery that is stilted, mechanical, or monotonous, unless one or more of these characteristics is an artistic necessity for specific sections of the text
- g. Avoiding strained, unclear, inconsistent, or overplayed character interpretations, dialects, and accents
- h. Avoiding narration characteristics that might become a distraction during extended periods of listening
- i. Using appropriate conventions for speaking written language
- j. Accomplishing the narration at a pace that enables the narrator to most naturally convey the energy, mood, sense, and style of the text

3.1.2 Aesthetic/Interpretative Requirements

The narrator must be attentive to the sense of the book, skillful in securing proper emphasis, and must avoid a stilted, mechanical, and monotonous delivery. The emotional content of the voice shall at all times be appropriate to the emotional level of the book. The narrator, by proper use of timing and inflection, must clearly differentiate between narrative and dialog, and between various characters depicted. If character voices are utilized, each separate vocal characterization must possess the same ease, flow, and vocal range as the normal narrative voice. Character interpretations, dialects, and accents that are strained, unclear, inconsistent, or overplayed are not acceptable.

3.1.3 Casting

The narrator selected for each book title must possess, as much as possible, the vocal personality, vocal qualities, and vocal style that are most suited to the content of the book, and most suited to

speaking the written text in a way that is as consistent as possible with the intent of the author. Unless approved in advance by the NLS contract monitor, the same narrator shall be used throughout the entire book.

3.1.4 Narration Accuracy

Narration shall conform to the print edition in its entirety and include bibliographies, appendixes, and notes, etc. (See Section 3.7 regarding the handling of notes). Errors in the print text identified during the recording process shall be corrected, after consultation with the studio recording director and the editor of the book, as appropriate. Special instructions, if required by NLS, will accompany the book upon assignment and shall be returned to NLS with the print book. Quotations from works such as the sacred text of any religion (e.g., the Bible, the Torah, the Koran, etc.), historical documents, poems, and direct quotations shall be word perfect. Final authority for judging accuracy of the narration shall rest with the NLS Quality Assurance Section.

The following points will be cause for immediate rejection:

- a. Mispronunciations
- b. Changing the original meaning of the text by improper inflection or interpretation
- c. Failure to satisfactorily follow the text of the print edition

3.1.5 Pronunciation

Pronunciation shall be appropriate to the style and period of the print book and to the nature of the characters. Proper names and foreign words and phrases shall be pronounced in a natural and accurate manner. For general vocabulary usage, any of the sources listed in Section 2.3 of this specification shall be used as an authoritative source. Specialized reference works (music, law, medicine, British speech, etc.) may be used for specialized requirements. Additional research is required if published sources do not give the needed pronunciations. In case of dispute, final authority rests with the NLS Quality Assurance Section Head.

3.2 Technical Characteristics of the Audio Recording

3.2.1 Conversion from Analog Prohibited

All audio must be initially recorded digitally at a sample rate of 44.1 kHz, and at least 16 bits per sample. Conversion of analog recordings to digital format under this specification is not permitted.

3.2.2 Audio Recording Signal Level for Spoken Text

- a. The average RMS signal level for the spoken text in the audio recording shall be not less than -24 dB FS, nor greater than -18 dB FS
- b. No clipping or distortion shall occur
- c. Audio recordings shall have no abrupt level changes as a result of corrections or file transitions

3.2.3 Background Noise Level in the Audio Recording

The RMS background noise level in the audio recording(s) shall not exceed -72 dB FS, A-weighted. Use of a noise gate to meet this requirement is prohibited. Background noise includes both acoustical and electrical noise.

3.2.3.1 Audible Characteristics of the Audio Recording

When the audio recording is reviewed, certain characteristics shall not be audible in the recording. Examples of such characteristics include, but are not restricted to the following:

- a. Clipping

- b. Distortion
- c. Hum
- d. Background noise in the narration environment (see Section 3.2.3)
- e. A difference between a section of sound track that has a correction and any other section of the same sound track
- f. Gaps, seams, or transients in edits
- g. Effects caused by sound-processing devices (such as automatic gain controls, compressors/limiters, noise gates, equalizers, etc.)
- h. Radio frequency interference (RFI) or electromagnetic interference (EMI)

3.2.3.2 Acoustical Quality and Speech Intelligibility

When the audio recording of a book is reviewed, it shall be judged for acoustical and speech intelligibility.

An audio recording may be considered unsatisfactory because of the following:

- a. The recording is judged to have an overly muffled, bassy, or tinny quality
- b. The recording exhibits an objectionable degree of sibilance
- c. The recording has other undesirable acoustical characteristics judged to be audible to an objectionable degree
- d. The spoken text is of poor clarity

3.2.4 Checksum File

An XML checksum file shall be created containing a checksum for each file submitted to NLS, with the exception of the checksum file itself. The only files listed in the checksum file shall be those forming the audio recording. The checksum shall be calculated using the MD5 algorithm as described in the reference cited in Section 2.2 and shall be in the form of thirty-two hexadecimal digits.

The checksum file shall be named “nnnnn.md5,” where “nnnnn” is the book number (e.g., 68886.md5). Leading zeros shall be added to have a five-digit book number minimum. All alphabetic characters shall be in lowercase. The format of the XML file is described by the following Document Type Definition (DTD), which shall be placed at the beginning of the checksum files.

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE di skcheck [
<!ELEMENT di skcheck (book, file+)>
<!ATTLIST di skcheck
version CDATA #FIXED "1.0"
>
<!ELEMENT book (#PCDATA)>
<!ELEMENT file (filename, checksum)>
<!ATTLIST file
type CDATA #IMPLIED
content CDATA #IMPLIED
>
<!ELEMENT filename (#PCDATA)>
<!ELEMENT checksum (#PCDATA)>
<!ATTLIST checksum
type CDATA #REQUIRED
>
]>
```

The <book> element shall contain the unique identifier (UID) for the DTB. The UID shall consist of the lowercase character string “us-nls-dbrnnnn” where “nnnnn” represents the book number.”

The <filename> element shall contain the name of the file for which the checksum is calculated.

The “type” attribute on the <checksum> element shall contain the value “MD5.”

3.3 Primary Audio WAV Files

3.3.1 Primary Audio File Configuration

- a. Each primary audio file shall be written as linear PCM data in WAV-file format at a sample rate of 44.1 kHz, 16 bits per sample, with dither, block alignment = 2.
- b. A primary audio file shall be named “nnnnnsmm. wav”, where “nnnnn” is the book number and “mm” is the two-digit file number (e.g., 56123s07. wav). Leading zeros shall be added to assure a five-digit book number minimum. The first file number shall start with 01 and continue consecutively until the book recording is complete. All alphabetic characters shall be in lowercase.

3.3.2 Primary Audio File Duration

The recorded time for each primary audio file shall be 90 minutes +/-1 minute, except the last primary audio file. The ancillary audio files (see Section 3.4) do not have to conform to this time restriction.

3.3.3 Primary Audio File Content

The first (01) primary audio file shall begin with the first print book item after the table of contents. The first primary audio file shall begin with chapter one, or equivalent, for books without a table of contents. Reading will continue using the 90-minute file duration until the book is complete (see Sections 3.1.4 and 3.3.2).

3.4 Ancillary Audio WAV Files (Announcement and Headings)

3.4.1 Ancillary Audio File Configuration

Each ancillary audio file shall be written as linear PCM data in WAV-file format at a sample rate of 44.1 kHz, 16 bits per sample, with dither, block alignment = 2.

3.4.2 File of Headings (hdgs) Clips

The file containing the audio clips of the navigation control file (NCX) docTitle, docAuthor, and audio navLabels for navPoints and navTargets shall be named “nnnnnhdgs. xxx,” where “nnnnn” is the book number and “xxx” is the file extension (e.g., 68886hdgs. wav). Leading zeros shall be added to ensure a five-digit book number minimum. All alphabetic characters shall be in lowercase.

3.4.3 DTB Announcement (ann) File

The audio file containing the opening announcements for the DTB shall be named “nnnnnann. xxx”, where “nnnnn” is the book number and “xxx” is the file extension (e.g., 56123ann. wav). Leading zeros shall be added to have a five-digit book number minimum. All alphabetic characters shall be in lower case.

3.4.3.1 Content of DTB Announcement File (Except for Children’s Books)

The contractor shall record the following opening announcements for all titles except children’s books and where noted:

- a. Title
- b. “By (author name)”

- c. The prefix, “DB” plus the book number, e.g., “DB56123”
- d. “Copyright [date and holder(s)].”
- e. “This is a new recording of [book number].” This announcement shall be used only when the statement “rerecord of [book number]” appears on the Production Authorization Record (PAR).
- f. “Read by _____.” If the annotation contains a sequel note and the assigned narrator differs from the narrator of the previous book in the series, add the following statement: “[previous narrator’s name] was unavailable to continue the reading of this series.”
- g. “This book contains _____ pages.” (This shall be the total number of pages for the entire book.)
- h. “Approximate reading time: ____ hours, ____ minutes.” (Rounded to the nearest five minutes, accurate to within +/- fifteen minutes of the value of “dtb: total Ti me.” See NLS Specification 1203 OPF metadata.)
- i. “This book contains markers allowing direct access to the [book item(s)] at level 1, to the [book item(s)] at level 2, . . . , to the [book item(s)] at level (lowest hierarchical level for the recording), and (page numbers, if marked in the recording).”

This announcement shall include all hierarchical navpoints. Nonhierarchical page numbers, if marked, in the recording shall also be referenced in this announcement. The term for the “book item” shall be appropriate to the written text.

The producer shall mark the book according to the NLS PAR navigation suggestions. Producers shall contact their NLS contract monitor with any concerns about the navigation suggestions. Adjustments to a book’s navigation shall be corrected and a revised PAR shall be submitted with the print book for QAS review.
- j. “Library of Congress annotation: . . .” (To be supplied by NLS.)
- k. “From the book jacket: . . .” (Publisher’s information about the book, excluding reviews. Information may be given in several locations. Narrator may combine the various selections, if appropriate.)
- l. “About the author. . .”
- m. “Other books by (author). . .” (Repetitive book title references, which do not add additional information, from earlier sections may be omitted here.)
- n. Introductory items up to and including the table of contents, such as dedication, introduction, preface, foreword, acknowledgments, etc., in the order in which they appear in the print book. In the table of contents, include page references, preceding each page reference with “page.”

3.4.3.2 Ending Announcement (Except for Children’s Books)

The following announcements shall be recorded on the last primary audio file after the end of the print book text, in the order stated:

- a. “End of ____ (Title) ____ by [Author(s) and spelling of author’s name].” (e.g. “End of Troubling a Star by Madeleine L’Engle, M-A-D-E-L-E-I-N-E , L-’-E-N-G-L-E” In the case of multiple authors all authors’ names shall be pronounced, then spelled.)
- b. “Read by _____ in the studios of _____ for the Library of Congress, ____ (Month and Year) ____ .”

- c. “Published by: (Publisher’s name and address if it appears in the print edition.) Further reproduction or distribution in other than a specialized format is prohibited.”
- d. “If you found this book to be defective, please contact your cooperating network library.”

3.5 Children’s Books

The following specifications apply only to books flagged with the notice. . . “Children’s Book Format. Announcements as per Section 3.5 of NLS Specification 1202.”

3.5.1 Content of DTB Announcement File (Children’s Books)

For children’s books, the contractor shall record the following opening announcements for use with the DTB:

- a. Title
- b. “By (author name).” If applicable: “Illustrated/Pictures/Drawings/Photographs by (as credited in print copy).”
- c. The prefix, “DB” plus the book number, e.g., “DB68886”
- d. “Copyright [date and holder(s)].”
- e. If pages are numbered: “This book contains _____ pages.” Omit this announcement if pages are not numbered.
- f. “Reading time, _____ minutes.” (Rounded to the nearest minute, accurate to within +/- five minutes of the value of “dtb: total Time.” See NLS Specification 1203 OPF metadata.)
- g. Dedication, foreword, etc., if these precede the table of contents.
- h. Table of contents as it appears in the text, including any page references, preceding each reference with “page.”

3.5.2 Ending Announcement (Children’s Books)

The following announcements shall be recorded on the last primary audio file after the end of the print book text, in the order stated:

- a. “End of ____ (Title) ____ by (Author and spelling of author’s name).” (e.g. “End of Troubling a Star by Madeleine L’Engle, M-A-D-E-L-E-I-N-E , L-’ -E-N-G-L-E. ” In the case of multiple authors all authors’ names shall be pronounced then spelled.) Include illustration credit, if any, as read in the opening announcements.
- b. “About the Author. . .”
- c. “Other books by (author). . .” if given.
- d. “Read by _____ in the studios of _____ for the Library of Congress, ____ (Month and Year).”
- e. “Published by: (Publisher’s name and address if it appears in the print edition.) Further reproduction or distribution in other than a specialized format is prohibited.”
- f. “If you found this book to be defective, please contact your cooperating network library.”

3.6 Foreign-Language Books (Table of Contents)

If the table of contents appears at the end of the print book, it shall be read at the beginning of the recorded book, following items “a” through “m” listed under Section 3.4.3.1 of this specification but preceding any items (foreword or introduction, for example) listed within the table of contents. If the table of contents is printed at the beginning of the book, it shall be read where it appears.

3.7 Speaking the Written Text

3.7.1 Omitted and Relocated Text

Unless otherwise instructed in writing by NLS, studios may omit:

- a. Elements that label, credit, or list visual materials without giving additional information
- b. Source (reference) notes
- c. Index and index references

Illustrations, captions, or charts not immediately necessary for clarity may be gathered at the end of a chapter or end of the book, as appropriate to the style of the text.

Any relocation of material must be accompanied by the following reader's note to be placed at the end of the table of contents (If there is no table of contents, read the note before chapter one or its equivalent):

“Reader’s note: (name of material) located throughout the book have been gathered at (appropriate location). End of reader’s note.”

3.7.2 Location of Typographical Elements

When it is appropriate to the specific title, captions, charts, graphs, illustrations, and other typographical elements may be relocated from where they occur in the print edition, provided they are not necessary for clarity at the point where they occur. They may be read as a group at the end of each chapter, or read as a group at the end of the book, whichever is most appropriate to the specific title. Relocation of typographical elements in chapters shall be consistent for all chapters of the same book.

The following announcement shall be used to inform the listener when typographical elements in the written text have been relocated:

“Reader’s note: (name of element or elements) located throughout the book have been gathered at (identify the new location). End of reader’s note.”

This announcement shall follow the table of contents or be placed just before the start of the book if there is no table of contents.

3.7.3 Reading Notes

The generic term “note” shall be used in the spoken text for end notes, explanatory notes, etc. The term “footnote” shall be used for footnotes. Notes shall be set off from the text by saying “Note . . . end of note” or “Footnote . . . end of footnote.”

When notes are read in the spoken text, they shall be read as near as is practical to the point in the written text where they occur. Notes shall normally be read at the end of a sentence, provided the nature of the written text makes it practical, but always in a manner that least interrupts the flow of the spoken text.

3.7.4 Location of Notes

When it is appropriate to the specific title, notes may be relocated from where they occur in the print edition. They may be read as a group at the end of each chapter, or read as a group at the end of the book, whichever is most appropriate to the specific title. The appropriate announcement shall be used for the following situations:

- a. When notes are relocated to the end of a chapter:
 - i. The following announcement shall follow the table of contents or, if there is no table of contents, precede the main text of the book: “Reader’s note: All notes will be found at the end of the chapter in which they appear. End of reader’s note.”
 - ii. If there is a heading for other notes that appear at the end of the chapter, that heading is used for reading those notes and the relocated notes. If there is no heading, the following

announcement shall be used to introduce the relocated notes: “Notes for (chapter name or number).”

- b. When notes are relocated to the end of the book:
 - i. The following announcement shall follow the table of contents or, if there is no table of contents, shall precede the main text of the book: “Reader’s note: All notes will be found at the end of the book. End of reader’s note.”
 - ii. If there is a heading for other notes that appear at the end of the book, that heading is used for reading those notes and relocated notes. If there is no heading, the following announcement shall be used to introduce the relocated notes: “Notes for (book title).”
 - iii. Unless otherwise directed by written instructions from NLS, notes read as a group at the end of the book shall be read after the body of the main text has ended.

3.7.5 Explanatory Notes

Each explanatory note shall be read in its entirety, including source information. It shall be read with a note number, if present in the print text, and as near as is practical to where it occurs in the print edition.

The exception to retaining an explanatory note in its entirety is when other material, such as references or repetition of information from the main text, is part of the explanatory note. Such material may be omitted when the explanatory note is read.

3.7.6 When References (or Source Notes) Are Omitted

When it is appropriate to the specific title, references (or source notes) in the print edition may be omitted. The appropriate announcement shall be used for the following situations:

- a. Books in which the references (or source notes) are grouped together, either at the end of chapters, or at the end of the book. “Reader’s note: The (total number) pages of (references or source notes) found in the print edition are not included in this recording.” If appropriate, add the following statement: “Explanatory notes have been retained. End of reader’s note.”
- b. Books in which the references (or source notes) are not grouped together and the number of pages of references (or source notes) cannot be determined. “Readers note: The (references or source notes) found in the print edition are not included in this recording.” If appropriate, add the following statement: “Explanatory notes have been retained. End of reader’s note.”

This announcement shall follow the table of contents or precede the start of the print text if no table of contents is present.

3.7.7 When Footnote Numbers Are Omitted

Footnote numbers shall not be read when footnote numbering begins anew on each page.

3.7.8 Special Instructions

NLS will provide any special instructions to the recording contractor when there are requirements for a book that are not covered in this document. The contractor may request changes from the NLS contract monitor to special instructions that will improve clarity of narration or usefulness of the book. All such changes must be approved in writing by NLS.

4. Quality Assurance

4.1 Contractor Inspection

The contractor is responsible for the performance of all inspection requirements specified herein.

4.1.1 Monitor (Recording Technician)

The reader shall be continuously monitored by a second person using another copy of the print book to detect errors and control the recording process. The monitor shall be fluent in reading and speaking the language in which the text is printed.

4.1.2 Reviewer (Proofreader)

Each primary audio file for the book shall be proofread in its entirety by a reviewer who was not involved with the narration or monitoring of the book being reviewed. The reviewer shall be fluent in reading and speaking the language in which the text is printed. Each audio recording shall be reviewed for adherence to requirements cited in the document.

4.1.3 Test Equipment and Inspection Facilities

The contractor shall ensure that test and inspection facilities of sufficient accuracy, quality, and quantity are established and maintained to permit performance of required inspections. Test equipment shall be calibrated annually. NLS reserves the right to request copies, for review, of any documentation related to this specification. These shall be provided at no cost to NLS.

4.1.4 Responsibility for Compliance

The inspections set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of assuring that all products submitted to NLS for acceptance comply with all requirements of the contract. Sampling in quality conformance does not authorize the submission of known defective material, either indicated or actual, nor does it commit NLS to the acceptance of defective material. Should NLS determine that a significant fault or faults are found in production materials, within the warranty period, then correction of the fault or faults and inspections or controls for prevention shall be instituted without additional charge to NLS.

4.1.5 Reporting of Inspection Results

The contractor shall maintain complete records (in English) of all inspection results for the duration of the contract, including the warranty period. NLS reserves the right to request copies, for review, of any documentation related to this specification. These shall be provided at no cost to NLS.

4.1.6 Quality Assurance Procedures (QAP)

The contractor shall prepare a written document that describes the quality-assurance procedures used to achieve the requirements of the specification. The contractor shall submit this document to the NLS Quality Assurance Section at the beginning of each new contract or at any time required by NLS. NLS reserves the right to require the contractor to improve quality-assurance procedures.

4.2 Library of Congress (NLS/BPH) Inspection

4.2.1 Audio Recording Inspection

NLS reserves the right to reject any audio recording that fails to meet these requirements. Each master recording (see NLS Specification 1206) shall be uploaded to NLS for inspection for specification compliance and/or narration approval.

4.2.2 Facility Inspection

NLS reserves the right to inspect plant facilities or recording processes at any reasonable time. An NLS representative shall have the authority, without advance notice, to select at random a sample of the books at any time during the course of the contract for testing to the specified requirements.

4.3 Acceptance Inspection

4.3.1 Contractor's Acceptance Inspection

Acceptance inspection shall be performed by the contractor on 100% of every audio recording and shall consist of the inspections listed in Table 1.

4.3.2 NLS Acceptance Inspection

Acceptance inspection will be performed by NLS on every audio recording and will consist of the inspections listed in Table 1. The complete master recording (WAV files, unprotected DTB, and protected DTB) shall be uploaded into an automated validator suite (autotest) to assure compliance to NLS specifications and ANSI/NISO Z39.86-2002. Master recordings that pass autotest will be queued in the NLS QA section for full review.

Requirement	Section	Test Method
All applicable requirements of this specification	3.0	Audio Review
Primary Audio file configuration	3.3.1	4.4.1
Primary Audio file duration	3.3.2	4.4.2
Signal level – text	3.2.2	4.4.3.2
Background noise level	3.2.3	4.4.3.3
File of headings clips	3.4.2	4.4.3.4
DTB announcement file	3.4.3	4.4.3.5
Checksum file	3.2.4	4.4.3.6

Table 1 – Acceptance Inspection

4.4 Methods of Inspection

4.4.1 Primary Audio File Configuration

Examine with an audio editor for conformance with the requirements of Section 3.3.1.

4.4.2 Primary Audio File Duration

Examine with an audio editor for conformance with the requirements of Section 3.3.2.

4.4.3 Signal Levels

4.4.3.1 Reference Level

Full-scale signal level is equal to 0 dB FS and is defined in AES17. It is the amplitude of a 997 Hz sine wave whose positive peak value reaches the positive full scale, leaving the negative maximum code unused. (The reference is based on a sine wave not a square wave.)

RMS signal level in dB FS is calculated using the formula:

$$L = 20 \times \log_{10} \sqrt{\frac{1}{N} \sum x(n)^2} - 20 \times \log_{10} \sqrt{\frac{1}{N} \sum ref(n)^2}$$

Where x is a set of N samples of the signal to be measured and ref is a set of N samples of the 0 dB FS sine wave. Average RMS signal level shall be measured using a section of the signal that is 1 minute in length.

4.4.3.2 Spoken Text

Select a section of the primary audio file that is 1 minute in length and measure the un-weighted RMS level in db FS for conformance to the requirement of Section 3.2.2.

4.4.3.3 Background Noise

Select a quiet section of the primary audio file at least 1 second long between words. Apply an A-weighting filter to the selection and measure the RMS noise for conformance to the requirement of Section 3.2.3.

4.4.3.4 Headings (hdgs) Clip File

Examine the heading clip file for conformance with the requirements of Section 3.4.2.

4.4.3.5 DTB Announcement (ann) File

Examine the DTB announcement file for conformance with the requirements of Section 3.4.3.

4.4.3.6 Checksum File

Calculate the checksum, as described in Section 3.2.4, for each primary audio and ancillary audio file and confirm that it exactly matches the corresponding checksum in the checksum file.

4.5 Warranty

The contractor shall agree to unconditionally warrant that the audio recording conforms to the requirements set forth in this specification for a period of two (2) years from the date the book is approved by the NLS Quality Assurance Section.