



SEC 17a-4(f) Compliance Assessment LTO Ultrium WORM Magnetic Tape Technology

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October 2005

Abstract

United States Securities and Exchange Commission Regulation 17 CFR § 240.17a-4 (“Regulation”) establishes certain records retention requirements for the securities broker-dealer industry. Pertinent to this compliance assessment is the Regulation’s authorization for the retention of records “by electronic storage media.” The term “electronic storage media” is defined by the Regulation to mean “any digital storage medium or system . . . that meets the applicable conditions” set forth in 17a-4(f). This White Paper describes the results of an independent evaluation conducted by Cohasset Associates on how the LTO Ultrium WORM magnetic tape technology satisfies the applicable conditions of Rule 17a-4(f).



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1. Introduction

The United States Securities & Exchange Commission (“SEC”) Regulations 17 CFR 240.17a-3 and 17 CFR 240.17a-4 stipulate records retention requirements for the securities broker-dealer industry. Rule 17a-4(f)¹ (the “Rule” or “Regulation”), as adopted on February 12, 1997, expressly allows records to be retained on electronic storage media, subject to meeting certain conditions.

The conditions that an electronic storage system must meet in order to be compliant are specified in Rule 17a-4(f), and interpreted in SEC Interpretive Release No. 34-44238 Commission Guidance to Broker-Dealers on the Use of Electronic Storage Media under the Electronic Signatures in Global and National Commerce Act of 2000 with Respect to Rule 17a-4, dated May 1, 2001 (the “2001 Release”), and in SEC Interpretive Release No. 34-47806 Electronic Storage of Broker-Dealer Records, dated May 7, 2003 (the “2003 Release”). In both the Rule and the Interpretive Releases, the SEC clearly states that the use of alternative electronic storage media and devices, to the extent that they deliver the prescribed functionality, satisfy the stipulations of Rule 17a-4.

SEC Regulation § 240.17a-4 (f) provides that:

The records required to be maintained and preserved pursuant to §§ 240.17a-3 and 240.17a-4 may be immediately produced or reproduced on “micrographic media” (as defined in this section) *or by means of “electronic storage media”* (as defined in this section) that meet the conditions set forth in this paragraph and be maintained and preserved for the required time in that form. [Emphasis added].

(1) For purposes of this section:

(ii) The term electronic storage media means any digital storage medium or system and, in the case of both paragraphs (f)(1)(i) and f(1)(ii) of this section, that meets the applicable conditions set forth in this paragraph (f).



The following statement in the 2003 Release further clarifies that certain implementations of rewritable and erasable media, such as magnetic tape or magnetic disk, may meet the requirements of a non-erasable, non-rewritable recording environment to the extent that they deliver the prescribed functionality and so long as appropriate integrated control codes are in place:

“A broker-dealer would not violate the requirement in paragraph (f)(2)(ii)(A) of the rule if it used an electronic storage system that prevents the overwriting, erasing or otherwise altering of a record during its required retention period through the use of integrated hardware and software control codes.”

The key words in the statement above are “integrated” and “control codes.” The term “integrated” means that the method used to achieve a non-rewriteable, non-erasable recording environment must be an integral part of the recording hardware and software. The term “control codes” indicates the acceptability of using attribute codes (metadata) integral to the recording process to validate the non-rewriteable, non-erasable status of the recording media and prevent against overwriting or erasure of the records. Therefore, a magnetic tape storage system that provides a non-rewriteable and non-erasable or write-once, read many (“WORM”) recording process and meets the other relevant requirements of Rule 17a-4(f) would be an acceptable electronic storage solution.

It should be noted that Rule 17a-4(f)(2)(i) requires a member, broker or dealer to notify its examining authority² ninety (90) days prior to employing any technology other than WORM optical media.

The Technology Provider Companies³ of the Linear Tape-Open (LTO) Program have made available enhanced specifications for an LTO Ultrium⁴ non-rewriteable and non-erasable or WORM recording process⁵ designed to address the conditions of the Rule and other legal and regulatory requirements. The Technology Provider Companies seek independent confirmation that the LTO Ultrium WORM technology meets all of the applicable conditions of Rule 17a-4(f).

In order to obtain an independent assessment regarding the ability of the LTO Ultrium WORM magnetic tape technology to meet the conditions set forth in SEC Rule 17a-4(f), the Technology Provider Companies engaged Cohasset Associates, Inc., a highly respected management consulting firm that has specific knowledge and expertise related to electronic records management practices in companies regulated by the SEC and SROs. Now in its fourth decade of serving clients throughout the United States, Cohasset Associates provides award-winning professional services in three areas: management consulting, education and publishing.



The focus of Cohasset Associates' consulting practice is improving the programs, processes, and systems that manage document-based information. This ranges from establishing effective corporate records management programs to planning state-of-the-art electronic records systems. Using its unique combination of records management, legal, and technical skill sets, together with extensive problem-solving experience, Cohasset Associates provides clients cost-effective solutions that achieve their business objectives and meet their legal/regulatory responsibilities.

Cohasset is widely known for its excellence in education and publishing. This work includes organizing and sponsoring the renowned annual Managing Electronic Records (MER) conference, with its special focus on the legal, technical and operational issues (www.merconference.com); preparing thought leadership White Papers addressing key issues regarding electronic records management; and providing definitive survey research on electronic records management issues (www.merresource.com/whitepapers/survey.htm).



2. Scope

This Compliance Assessment is limited in scope and represents an evaluation specifically to determine whether the LTO Ultrium WORM magnetic tape technology meets the conditions articulated by the SEC in its Regulation 17a-4(f). This assessment does not address whether end users of LTO Ultrium WORM tape drives and tape cartridges, such as securities broker-dealers, comply with their recordkeeping obligations pursuant to the Regulation by virtue of storing their records on LTO Ultrium WORM magnetic tape products, to the extent that such recordkeeping requirements are extrinsic to the LTO Ultrium WORM technology itself.⁶

The assessment presented in this report represents the professional, independent opinion of Cohasset Associates based on the information provided and analyzed. The information analyzed includes certain written materials and the results of telephone discussions between Cohasset Associates and Technology Provider Companies' representatives relating to how LTO Ultrium WORM magnetic tape drives and magnetic tape cartridges perform various functions, specifically as they relate to meeting the provisions of the Rule.

This assessment is not intended and should not be construed as legal advice. Relevant laws are constantly evolving and legal advice must be tailored to the specific circumstances of the laws and for each organization. Therefore, nothing provided herein should be substituted for the advice of competent legal counsel.

This assessment by Cohasset Associates should not be construed as an endorsement or rejection of the LTO Ultrium WORM magnetic tape technology.



3. Summary

Cohasset Associates assessed the functionality of the LTO Ultrium WORM magnetic tape technology relative to the applicable requirements of SEC Rule 17a-4(f). In conducting this assessment, Cohasset Associates relied exclusively upon information provided by the Technology Provider Companies, in the form of technical specifications, technology standards and responses to questions posed by Cohasset Associates.

Cohasset Associates' overall assessment of the LTO Ultrium WORM magnetic tape storage technology is that it provides the features and functionality that either directly meet the relevant requirements of SEC Rule 17-a-4(f) or allow the requirements to be met.

The requirement that records are preserved in a non-rewriteable, non-erasable format is accomplished by the LTO Ultrium technology in that:

- The LTO Ultrium technology incorporates multiple integrated codes that designate the LTO Ultrium tape cartridge as WORM. These codes are recorded to the LTO Ultrium tape cartridge and media at three points in time: 1) the time of manufacture, 2) the time of initialization of an LTO Ultrium tape cartridge, and 3) in conjunction with each user data set recorded to the cartridge media. These integrated codes allow the LTO Ultrium tape drive to determine that an LTO Ultrium tape cartridge is WORM.
- Upon determining that the LTO Ultrium tape cartridge is WORM, the LTO Ultrium WORM tape drive will not allow data to be recorded prior to the End of Data (EOD). The EOD is a set of data (that also contains WORM codes) recorded at the end of each user dataset written to the tape cartridge – thereby preserving all previously recorded user data (and initialization data) as non-rewriteable and non-erasable.
- If any of the checks for the WORM codes indicate an error condition, the LTO Ultrium tape drive reports the error condition to the Host application and prevents any further attempt to read from or write to the cartridge.



- Codes used by the LTO Ultrium technology link the physical LTO Ultrium Cartridge to the media located in the cartridge. This prevents tampering such as removing the tape media from a WORM cartridge and respooling it into a non-WORM cartridge.

The requirement that the electronic storage medium automatically verify the quality and accuracy of the media recording process is met in that:

- LTO Ultrium WORM magnetic tape technology employs a Read-While-Write capability – supported by a read-head that is located directly behind the write-head – that reads back all written data, thereby providing a method for immediately detecting any recording errors. Detection of a recording error causes a rewrite of the data to be attempted further down the tape media. The data must be recorded error-free in order for the write operation to be accepted.
- Two levels of error correction codes (ECC) are recorded with each dataset written to the Ultrium WORM tape cartridge that allows bit-level errors to be detected and corrected during a read operation.

The requirement that the electronic storage medium serialize the original and duplicate LTO Ultrium WORM tape cartridges is achieved through:

- Serialization of each LTO Ultrium magnetic tape cartridge is accomplished through the creation of a Unique Cartridge Identifier (UCI) by the LTO Ultrium tape drive at the time of initial cartridge load.



4. Assessment of Compliance with SEC Rule 17a-4(f)

This section provides a detailed assessment of the ability of the LTO Ultrium WORM magnetic tape technology to meet each relevant condition of SEC Rule 17a-4(f).

In the preparation of this assessment, Cohasset Associates relied exclusively on product information supplied by Technology Provider Companies regarding the functions and operations of the LTO Ultrium WORM magnetic tape technology as it relates to the relevant sections of SEC Rule 17a-4(f). Cohasset Associates did not consider any information, either oral or in writing, regarding the Technology Provider Companies' opinion of whether or not the LTO Ultrium WORM magnetic tape technology complies with SEC Rule 17a-4(f).

The structure of the assessment for each requirement in Rule 17a-4(f) includes three components:

1. **Supporting Functionality:** A description of the functionality, as understood by Cohasset Associates, that is provided by the LTO Ultrium WORM magnetic tape technology to meet the requirements of the Rule.
2. **Factors to Consider:** Identification of certain factors, if any, that may need consideration in order to meet the requirement.
3. **Compliance Assessment:** Cohasset Associates' assessment of the degree to which the LTO Ultrium WORM magnetic tape technology complies with the Rule.

Appendix A contains the provisions of Rule 17a-4(f) which are not applicable to the functionality provided by a WORM magnetic tape storage technology. These provisions pertain primarily to areas that are the responsibility of the information management policies and procedures of the user organization and to the functionality of the Host software application utilizing the WORM magnetic tape storage solution to write and read records.



17a-4(f)(2)(ii)(A) Preserve the records exclusively in a non-rewriteable, non-erasable format

As set forth in Section III(B) of the 2001 Release, this preservation requirement “is designed to ensure that electronic records are capable of being accurately reproduced for later reference by maintaining the records in unalterable form.” As further explained in the 2003 Release, storage systems that merely mitigate the risk of overwrite or erasure (rather than prevent them), such as by employing access control security, will not satisfy the requirements of the Regulation.

Supporting Functionality

The following describes the LTO Ultrium WORM magnetic tape technologies that support a non-rewriteable, non-erasable format.

At the Time of Writing to a LTO Ultrium WORM Cartridge

1. Once the LTO Ultrium tape drive has established that the LTO Ultrium magnetic tape cartridge is WORM (see below), the drive does not allow data to be written prior to the End of Data (EOD) location on the tape medium. This functionality preserves all prior written data as non-rewriteable and non-erasable. Prior to initiating a write command, the LTO Ultrium tape drive determines that the current logical position of the LTO Ultrium magnetic tape media is at EOD.⁷
2. A new EOD is written at the end of each write session. Each EOD data set contains a copy of the LTO Ultrium Tape Cartridge Memory (LTO-CM), which includes the WORM Cartridge Type and Format Type identifiers, at the time the EOD is created.
3. For each dataset written to a LTO Ultrium cartridge, a Data Set Identification Table (DSIT) is written. The DSIT contains key areas of the LTO-CM, including the Cartridge Type and Format Type identifiers, which designate the cartridge as WORM as well as the Unique Cartridge Identifier (UCI).



At the Time of Manufacture of a LTO Ultrium WORM Cartridge

4. A unique “WORM” designator code is set in the Cartridge Type Field of the Manufacturer’s Information Page of the LTO-CM.
5. The Servo pattern recorded along the complete length of the magnetic tape media contains a specific identifier in the Servo Manufacturer’s Word⁸ indicating that the medium is WORM.

At the Time a LTO Ultrium WORM Cartridge is Initialized

6. A UCI is created by the LTO Ultrium magnetic tape drive and stored in the Format Identification Data Set (FID) which is written as the first dataset at the beginning of the user area of the cartridge tape media (before the initial EOD). The UCI is a combination of information taken from the Servo Manufacturer’s Word and the LTO-CM.
7. The Cartridge Type field from the LTO-CM Manufacturer’s Information Page is read and checked to determine its status, either WORM or rewriteable.
8. The Servo Manufacturer’s Word is read directly from the Servo pattern on the magnetic tape medium and checked against the Cartridge Type field in the LTO-CM to ensure there is agreement that the cartridge is WORM.
9. If the Cartridge Type field and the Servo Manufacturer’s Word agree, a specific WORM code is set in the Format Type field of the Initialization Data Page stored in the LTO-CM designating that the cartridge was initialized as WORM.
10. The Initialization Data Page is written to the LTO-CM. All content up to and including the Initialization Data Page is write protected, thereby preventing overwrite or deletion of this critical initialization information.
11. A Format Identification Data Set (FID), which includes the Format Type field WORM indicator and the UCI, is created and written to the LTO Ultrium cartridge.
12. An initial EOD is written to the cartridge tape media immediately after the FID unless user data is written to the media immediately preceding initialization, in which case the EOD is written immediately following the end of user data. Each EOD data set contains a copy of the LTO-CM at the time the EOD is created, which includes the Cartridge Type and Format Type identifiers that designate the cartridge as WORM as well as the UCI.



Each Time a LTO Ultrium WORM Cartridge is Loaded into a LTO Ultrium Drive

13. The Cartridge Type field from the LTO-CM Manufacturer's Information Page is read and checked to determine it is a WORM cartridge.
14. The Servo Manufacturer's Word is read directly from the Servo pattern on the magnetic tape medium and checked against the Cartridge Type field in the LTO-CM to ensure there is agreement that the cartridge is WORM.
15. The Format Type field is read from the Initialization Data Page and checked against the Cartridge Type Field and the Servo Manufacturer's Word to establish that the cartridge is WORM.
16. The Format Identification Data Set is read from the media and compared to the information in the LTO-CM to ensure consistency.
17. During the process of reading data from the LTO Ultrium tape cartridge, the drive checks the UCI stored in the DSIT of every dataset against the UCI constructed by the LTO Ultrium tape drive when the cartridge was initially loaded to establish that they are identical. This assures that the cartridge and the tape medium belong together.

If any of the checks and comparisons outlined above do not return the desired result, the LTO Ultrium tape drive reports the error condition to the host application and prevents any attempt to read from or write to the cartridge.

Other

18. The LTO Ultrium WORM cartridge housing is two-tone in color vs. the monotone color of the rewritable cartridge. This allows the WORM cartridge to be visually differentiated from the rewriteable cartridge.
19. The Host software application can read the Cartridge Type, using the SCSI Read Attribute command, to determine that the LTO Ultrium cartridge loaded in the LTO Ultrium drive is WORM.



Exception Conditions

20. If a LTO Ultrium WORM cartridge is loaded into a non-WORM capable LTO Ultrium tape drive, the tape drive does not recognize the WORM indicator in the Cartridge Type Field and rejects the cartridge.
21. If the tape medium is removed from a LTO Ultrium WORM cartridge and rewound into a non-WORM cartridge, then the UCI in the FID of the WORM tape medium does not agree with the UCI of the non-WORM CM and the tape cartridge is rejected. Even if the UCIs were tampered with in some manner to make them agree, the WORM indicator in the Servo Word and the Format Type in the FID would not agree with comparable information in the non-WORM physical cartridge's CM, and the cartridge would be flagged as read-only or would be rejected.

Factors to Consider

None

Compliance Assessment

It is the opinion of Cohasset Associates that the LTO Ultrium WORM magnetic tape technology meets both the letter and spirit of the Rule to preserve the records in a non-rewriteable, non-erasable format in the normal course of business.



17a-4(f)(2)(ii)(B) Verify automatically the quality and accuracy of the storage media recording process

The intent of SEC Rule 17a-4(f)(2)(ii)(B) is to ensure that the media recording process is accurate to a very high degree and, therefore, the recorded information is of the highest quality. The objective of this subsection of the Rule is to provide complete confidence that all records read from the storage media are precisely the same as those recorded.

Supporting Functionality

The LTO Ultrium WORM magnetic tape storage technology provides the following functionality directed at meeting this condition of the Rule:

1. LTO Ultrium WORM magnetic tape technology employs a Read-While-Write capability that is enabled by a read-head located directly behind the write-head. This allows immediate detection of errors during the write operation.
2. Detection of an error by the Read-While-Write technology causes a rewrite of the data to be attempted further down the tape medium. The recorded data must be written error-free in order for the write operation to be accepted.
3. A cyclic redundancy check (CRC) code is written at the end of each record received from the Host application. At the time of each read back of the record, the CRC is recalculated and compared as a means of detecting any changes in the quality and accuracy of the data.
4. Two levels of error correction codes (ECC) are recorded with each dataset which allows bit-level errors to be detected and corrected during a record read operation.

Factors to Consider

None

Compliance Assessment

It is the opinion of Cohasset Associates that the LTO Ultrium WORM magnetic tape storage technology meets the letter and spirit of the Rule for automatic verification of the quality and accuracy of the storage media recording process.



17a-4(f)(2)(ii)(C) Serialize the original, and, if applicable, duplicate units of the storage media, and time-date for the required period of retention the information placed on such electronic storage media

This requirement, according to Section III(B) of the 2001 Release, “is intended to ensure both the accuracy and accessibility of the records by indicating the order in which records are stored, thereby making specific records easier to locate and authenticating the storage process.”

Supporting Functionality

Each LTO Ultrium magnetic tape cartridge is serialized using the UCI that is created by the LTO Ultrium magnetic tape drive at the time of initial cartridge load. It is recorded in the Format Identification Data Set (FID), which is written prior to the initial EOD at the beginning of the user portion of the cartridge tape. The UCI is a combination of information taken from the Servo Manufacturer’s Word and the CM.

The LTO Ultrium WORM magnetic tape technology does not provide for a calendar-synchronized clock (which is the case for most magnetic tape drive technology). Therefore, it is the responsibility of the Host software application to acquire the time-date during the initialization of the cartridge and track the time-date, tied to the UCI and other pertinent information about the tape cartridge, for retention management purposes.

Factors to Consider

As noted above, the Host software application is responsible for generating the time-date that a LTO Ultrium WORM magnetic tape cartridge was initialized and for tracking the time-date, together with any Unique Cartridge Identifier, for purposes of retention management.

Compliance Assessment

It is the opinion of Cohasset Associates that the LTO Ultrium WORM magnetic tape technology meets the letter and spirit of the Rule for serializing, or uniquely identifying, each original and duplicate unit of storage media.



17a-4(f)(3)(iii) Store separately from the original a duplicate copy of the record stored on any medium acceptable under 240.17a-4 for the time required

Supporting Functionality

The creation of a duplicate copy of records stored on the LTO Ultrium WORM magnetic tape cartridges is the responsibility of the user organization and the Host application employed to perform the duplication. The regulated entity and the Host application have the duty to ensure that each LTO Ultrium WORM magnetic tape cartridge is copied to another LTO Ultrium WORM magnetic tape cartridge with the same quality and accuracy of the recording process as the original.

Factors to Consider

None

Compliance Assessment

This requirement must be met by the procedures employed by the regulated entity and the functionality of the Host software application utilized to create duplicate copies.



Appendix A. Other Non-Applicable Rules

Appendix A contains those provisions of Rule 17a-4(f) that are not applicable to the functionality provided by the LTO Ultrium WORM magnetic tape storage solutions. The Rule provisions contained in this Appendix must be addressed by the regulated entity's procedures and processes and by the Host software application that uses the LTO Ultrium WORM magnetic tape technology to write and read records.

17a-4(f)(2)(ii)(D)

Have the capacity to readily download indexes and records preserved on the electronic storage media to any medium acceptable under this paragraph (f) as required by the Commissioner or the self-regulatory organizations of which the member, broker, or dealer is a member.

17a-4(f)(3)(i)

At all times have available, for examination by the staffs of the Commission and self-regulatory organizations of which it is a member, facilities for immediate, easily readable projection or production of micrographic media or electronic storage media images and for producing easily readable images.

17a-4(f)(3)(ii)

Be ready at all times to provide, and immediately provide, any facsimile enlargement which the Commission or its representative may request.

17a-4(f)(3)(iv)

Organize and index accurately all information maintained on both original and any duplicate storage media.

17a-4(f)(3)(iv)(A)

At all times, a member, broker, or dealer must be able to have such indexes available for examination by the staffs of the Commission and the self-regulatory organizations of which the broker or dealer is a member.



17a-4(f)(3)(iv)(B)

Each index must be duplicated and the duplicate copies must be stored separately from the original copy of each index.

17a-4(f)(3)(iv)(C)

Original and duplicate indexes must be preserved for the time required for the indexed records.

17a-4(f)(3)(v)

The member, broker, or dealer must have in place an audit system providing for accountability regarding inputting of records required to be maintained and preserved pursuant to 240.17a-3 and 204.17a-4 to electronic storage media and inputting of any changes made to every original and duplicate record maintained and preserved thereby.

17a-4(f)(3)(v)(A)

At all times, a member, broker, or dealer must be able to have the results of such audit system available for examination by the staffs of the Commission and the self-regulatory organizations of which the broker or dealer is a member.

17a-4(f)(3)(v)(B)

The audit results must be preserved for the time required for the audited records.

17a-4(f)(3)(vi)

The member, broker, or dealer must maintain, keep current, and provide promptly upon request by the staffs of the Commission or the self-regulatory organizations of which the member, broker, or broker-dealer is a member all information necessary to access records and indexes stored on the electronic storage media; or place in escrow and keep current a copy of the physical and logical file format of the electronic storage media, the field format of all different information types written on the electronic storage media and the source code, together with the appropriate documentation and information necessary to access records and indexes.



17a-4(f)(3)(vii)

For every member, broker, or dealer using electronic storage media for some or all of its record preservation under this section, at least one third party (“the undersigned”), who has access to and the ability to download information from the member’s, broker’s, or dealer’s electronic storage media to any acceptable medium under this section, shall file with the designated examining authority for the member, broker, or dealer the following undertakings with respect to such records:

The undersigned hereby undertakes to furnish promptly to the U.S. Securities and Exchange Commission (“Commission”), its designees or representatives, upon reasonable request, such information as is deemed necessary by the Commission’s or designee’s staff to download information kept on the broker’s or dealer’s electronic storage media to any medium acceptable under Rule 17a-4.

Furthermore, the undersigned hereby undertakes to take reasonable steps to provide access to information contained on the broker’s or dealer’s electronic storage media, including, as appropriate, arrangements for the downloading of any record required to be maintained and preserved by the broker or dealer pursuant to Rules 17a-3 and 17a-4 under the Securities Exchange Act of 1934 in a format acceptable to the Commission’s staff or its designee. Such arrangements will provide specifically that in the event of a failure on the part of a broker or dealer to download the record into a readable format and after reasonable notice to the broker or dealer, upon being provided with the appropriate electronic storage medium, the undersigned will undertake to do so, as the Commission’s staff or its designee may request.



End Notes

1. Adopting Release 34-38245, 62 FR 6469 (Feb. 12, 1997).
2. Examining authorities are Self Regulatory Organizations (SROs) under the jurisdiction of the SEC such as the New York Stock Exchange (NYSE) and National Association of Securities Dealers (NASD).
3. The Technology Provider Companies for the LTO Ultrium WORM specification are Hewlett-Packard Company, the IBM Corporation, and Quantum Corporation.
4. The Ultrium linear tape format is delineated in the ECMA-319 Standard and is an approved ISO/IEC 22050 Standard.
5. On October 25, 2004, the LTO Program announced the availability of an enhancement to the LTO Ultrium format generation 3 specification that provides LTO technology manufacturers the opportunity to offer Write Once, Read Many (WORM) functionality for the LTO Ultrium format generation 3.
6. This Compliance Assessment identifies certain of these requirements, however, as set forth in the Appendix hereto.
7. Certain applications that write information to magnetic tape write one or two “filemarks” after the current logical position of user data and just prior to the EOD. The LTO Ultrium WORM magnetic tape drive allows for overwrite of the filemarks but only if they are after the current logical position and immediately prior to the EOD.
8. The Servo Manufacturer’s Word is information recorded in the Servo track at the time of manufacture of the media and for the WORM version of the media, includes indicators that the tape media is used for WORM recording.

