

**Evaluation and Report of Sony Electronics
Inc.'s AIT-2 WORM Tape Cartridge's
Compliance with SEC Regulation 17 CFR
§ 240.17a-4**

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I. INTRODUCTION

Securities & Exchange Commission (the “SEC” or “Commission”) Regulation 17 CFR § 241.17a-4 (“17a-4” or the “Regulation”) dictates the records retention requirements imposed upon the securities broker-dealer industry. Most significantly for purposes of this Evaluation and Report, 17a-4(f) expressly allows for production or reproduction of the records to be retained “by means of electronic storage media”. A copy of this Regulation is attached hereto as Appendix Exhibit 1 for the convenience of the reader. The history behind this particular provision of the Regulation, and the SEC interpretive releases issued in connection therewith, provide considerable guidance in assessing the likelihood that the Sony Corporation’s AIT-WORM technology will meet the requirements of 17a-4.

SEC Release No. 34-44238 dated as of May 1, 2001, *Commission Guidance to Broker-Dealers on the Use of Electronic Storage Media under the Electronic Signatures in Global and National Commerce Act of 20000 with Respect to Rule 17a-4* (the “Release”), in particular, speaks directly to the issue of those features that an electronic storage media must possess in order to meet the mandate of 17a-4. In that Release, the SEC has made clear that use of alternate electronic storage media and devices, including, but not limited to, magnetic tape – to the extent that it can deliver the prescribed functionality – would satisfy the dictates of 17a-4.

According to the Release, the requirements for electronic storage media are “designed to ensure the accuracy, accessibility, and accurate reproduction of the electronically stored records.” In that regard, the interpretive Release underscores that a magnetic tape storage device that provides non-eraseability and non-alterability would meet the requirements imposed upon broker-dealers by 17a-4. Indeed, as set forth in Section II(C)(4) of the Release, “[t]he Commission also acknowledged

that, with respect to the WORM provision, several storage methodologies, in addition to the ablative method . . . were available. For these reasons, the electronic storage requirements of Rule 17a-4 do not require, or accord greater legal status to, the implementation or application of a specific technology or technical specification.” In short, the Release makes clear, in Section II(A), that “the final rule [17a-4] did not limit broker-dealers to using optical disk. Instead, it allowed them to employ any electronic storage medium, subject to certain requirements.” A copy of this Release is attached hereto as Appendix Exhibit 2 for the convenience of the reader.

The issue of what types of electronic storage media will satisfy the SEC is of particular interest to Sony Electronics Inc. (“Sony”) because of its recent development of a new Advanced Intelligent Tape (the “AIT-2 WORM Tape Cartridge”)¹ that it anticipates will be appealing to the securities broker-dealer market for storage of electronic records based upon such considerations as cost, secure storage functionality and increased capacity. In that regard, Sony wishes to ensure to the extent possible that its AIT-2 WORM Tape Cartridge meets or exceeds the legal and technical requirements of the Regulation as they pertain to the broker-dealer industry.² Because the Commission does not issue advisory rulings or “no opinion letters” to manufacturers on their

¹Sony expects to release its AIT-3 WORM Tape Cartridge in the fall of 2001. In that regard, it is important to note that versions of the AIT technology earlier than AIT-2 WORM did not have “WORM” functionality. Therefore, this report covers only the functionality of AIT-2 WORM Tape Cartridges and such future AIT tapes as will have WORM functionality.

²While this Evaluation and Report does not address whether or not the AIT-WORM technology would satisfy other non-broker-dealer SEC requirements, it is the opinion of Cohasset that such technology would satisfy the requirements for use by investment advisors, pursuant to the recent Interpretative Release on the Investment Company Act of 1940 and the Investment Advisors Act of 1940, dated May 24, 2001, entitled “Electronic Recordkeeping by Investment Companies and Investment Advisors, as well as satisfying the requirements upon transfer agents, as recently interpreted in the SEC Release dated April 27, 2001, entitled “Recordkeeping Requirements for Transfer Agents”, which interprets Rule 17Ad-7, under the Securities Exchange Act of 1934.

products' compliance with SEC regulations, Sony has retained Cohasset Associates, Inc. ("Cohasset"), which is regarded as one of the nation's foremost management consultants specializing in document-based information management, to evaluate whether the AIT-2 WORM Tape Cartridge, as used in Sony's AIT WORM drive, complies with the records-retention requirements enunciated by the SEC, whether in 17a-4 or in the SEC's interpretative releases.

In conducting the evaluation of Sony's AIT-2 WORM Tape Cartridge, Cohasset has relied exclusively upon information provided to it through a series of meetings with Sony representatives and members of Sony's Tape Storage Solutions Division relating to how the AIT-2 WORM Tape Cartridge performs its various functions, as well as upon written explanations, marketing materials, technical specifications and articles supplied by Sony to augment the oral presentations. Cohasset has incorporated summaries of this technical information into this Evaluation and Report, including such detail as it believes necessary to duly explain a particular feature of the technology. Cohasset did not evaluate or review the AIT-2 WORM Tape Cartridge in a "live" environment. Rather, this Evaluation and Report is predicated on several assumptions, described more fully below.

It should be noted, further, that this Evaluation and Report is limited in scope and has been commissioned solely for the purpose of determining whether the AIT-2 WORM Tape Cartridge storage technology meets or exceeds the records retention requirements imposed upon the securities broker-dealer industry, as articulated by the SEC in its Regulation 17a-4. It assumes that the AIT-2 WORM Tape Cartridge will function as described to it by Sony representatives. It does not address whether or not an AIT-2 WORM Tape Cartridge end user, such as a securities broker-dealer, in fact complies with its record-keeping obligations pursuant to SEC Regulation 17a-4 by virtue of storing its records on AIT-2 WORM media, to the extent such record-keeping obligations – such as

maintaining a duplicate set of records – are extrinsic to the AIT-2 WORM Tape Cartridge technology itself.³ Similarly, it does not address whether records storage on AIT-2 WORM Tape Cartridges would satisfy other industries’ requirements.

II. SUMMARY OF EVALUATION

It is Cohasset’s opinion that the AIT-2 WORM Tape Cartridge complies with both the letter and spirit of SEC Regulation 17a-4. The technology of the AIT-2 WORM Tape Cartridge allows records to be retained on a medium that is both “non-rewriteable” and “non-erasable”. The AIT-WORM technology additionally provides for the “automatic verification of the quality and accuracy of the storage recording process” as required by 17a-4. The Regulation’s requirements of serialization, time-date recording and index and records downloadability are also met by Sony’s AIT-WORM technology. These results are attained through a variety of features contained within the AIT-2 WORM Tape Cartridge itself or in conjunction with the AIT WORM drive, such as the AIT-2 WORM Tape Cartridge’s addition of an “RMIC”, or Remote Memory-in-Cassette; the AIT WORM Error Code Correction (“ECC”) technology which, according to Sony, boasts one of the highest error ratios in the industry at 10^{-17} ; the removal of an erasure head from the drive and the removal of a recording-enabling hole from the Tape Cartridge itself, in addition to a variety of other related protection against intentional or unintentional post-recording alteration. These attributes are discussed in further detail below, in Section IV.

³This Evaluation and Report does identify various of these end-user requirements, however, as set forth below in Section IV(E).

The authors of this Evaluation and Report caution, however, that 17 CFR § 240.17a-4(f)(2)(i) requires a member, broker or dealer wishing to use the Sony AIT-WORM technology for its electronic storage medium to notify its examining authority designated pursuant to section 17(d) of the Act ninety (90) days prior to employing this or any other non-optical storage medium.⁴ In connection therewith, the member, broker or dealer “must provide its own representation or one from the storage medium vendor or other third party with appropriate expertise that the selected storage media meets the conditions set forth in 17a-4(f)(2).”

III. SUMMARY OF SEC REGULATION 17 CFR § 240.17a-4 AND SEC INTERPRETATIONS RELATING TO SAME

As discussed above, SEC Regulation 17 CFR § 240.17a-4 describes the records that must be preserved by certain exchange members, brokers and dealers. The Regulation is comprised of numerous sections which are dividable into three major categories: i) those relating to the types of records members, brokers and dealers must retain and for what period of time; ii) those setting forth the manner in which those records may be produced or reproduced if the members, brokers and dealers elect to produce or reproduce these records on “micrographic media” or by means of “electronic storage media”; and iii) those enumerating the responsibilities of the members, brokers or dealers if they elect to use micrographic or electronic storage media. This Evaluation and Report

⁴Under this same subsection of the Regulation, members, brokers or dealers employing optical disk technology (including CD-ROM) also have notification requirements, although they differ from those involving other electronic storage media, presumably because the SEC has had less opportunity to evaluate such “other electronic storage media”.

focuses on the second of the categories, that relating to the requirements if an electronic storage media – namely, the AIT-2 WORM Tape Cartridge – is used to produce or reproduce records.

A. What is Electronic Storage Media?

17 CFR § 240.17a-4(f) provides that:

(f) 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 history behind the amendment of 17a-4, which came to allow retention of the mandatory records on “electronic storage media”, is discussed in Section II(A) of the Release. Specifically, the Securities Industry Association (“SIA”), in 1991, requested on behalf of broker-dealer members, that the Division of Market Regulation (“Division”) amend Rule 17a-4 to permit broker-dealers to store records electronically. In connection therewith, the following year, the SIA requested that the Division of Market Regulation (the “Division”) “not recommend enforcement action if broker-dealers stored records using an electronic storage technology known as optical disk”. The SIA identified in its request those safeguards that it felt were appropriate if broker-dealers were to use electronic storage. The safeguards identified included that the storage system “be non-rewriteable and non-erasable (or write once, read many “WORM”); automatically verify the accuracy of stored information; serialize and time-date the records; and create indexes of the records”.

In 1993, in response to this 1992 SIA request, the Division issued a “no-action letter” and established certain conditions for use of the optical disk “to help ensure that records stored in this manner would be accurate and accessible for examination purposes”. These conditions included that, where optical disk technology using a laser heat source to burn a pattern on the disk (thereby making the records non-rewriteable and non-erasable) was the elected production or reproduction method:

- (1) broker-dealers file an undertaking signed by a third-party in which the third-party represents that it will access the records at the request of the Commission;
- (2) the optical disk system automatically verify the quality and accuracy of the recording process;
- (3) the optical disk system serialize the original and any duplicate units of the storage medium and time-date information stored on the medium;
- and (4) the disk system have the capacity to download indices and records.

SEC Interpretation No. 34-44238, Section II(A).

Most notably for purposes of this Evaluation and Report, when the Commission essentially codified the Division’s no-action letter through amendment of subparagraph (f) of 17a-4 in 1997 to allow broker-dealers to store records electronically, *it did not limit broker-dealers to using optical disk*. Rather, as set forth hereinabove, the amendment allows for use of *any* electronic storage medium, subject to certain requirements designed to ensure “the prompt production of legible, true and complete records” – a requirement applicable to the storage of all broker-dealer records regardless of form, as noted in the Release, Section II(C)(2).

Indeed, Section III(C)(4) of the Release is entitled “[t]he electronic storage requirements of Rule 17a-4(f) do not require, or accord greater legal status or effect to, the implementation or application of a specific technology or technical specification”. This Section recounts that, while the Commission first proposed amending 17a-4 in 1993, the proposed amendment “would have limited broker-dealers to using optical disk. However, as further observed in this Section of the Release, the

Commission ultimately adopted a rule that allows the use of *any* electronic storage medium that meets the general requirements of the rule, acknowledging that “with respect to the WORM provision, several storage methodologies, in addition to the ablative method . . . were available”.

B. The SEC Requirements Of An Electronic Storage Medium

1. Non-Rewriteable, Non-Erasable Format

17a-4(f)(2)(ii)(A) requires that the electronic storage media “[p]reserve the records exclusively in a non-rewriteable, non-erasable format.” As set forth in Section III(B) of the Release, this requirement “is designed to ensure that electronic records are capable of being accurately reproduced for later reference by maintaining the records in unalterable form.”

2. Automatic Verification of Quality and Accuracy of the Storage Media Recording Process

17a-4(f)(2)(ii)(B) requires that the electronic storage media “[v]erify automatically the quality and accuracy of the storage media recording process”. Section III(B) of the Release explains that the automatic verification requirement “is designed to ensure the records are accurate by providing verification that a record has been accurately stored in the electronic system.”

3. Serialization of Original and Necessary Duplicate Units of Storage Media

17a-4(f)(2)(ii)(C) requires that the electronic storage media “[s]erialize the original and, if applicable, duplicate units of 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 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.”

4. Capacity to Download Indexes and Records to Other Acceptable Media

17a-4(f)(2)(ii)(D) requires that the electronic storage media “[h]ave 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 Commission or the self-regulatory organizations of which the member, broker, or dealer is a member”. As noted in Section III(B) of the Release, this requirement “is designed to allow for the retrieval of specific records in a manner equivalent to the way that particular paper records can be pulled from designated files”.

IV. SUMMARY OF THE AIT-2 WORM TAPE CARTRIDGE’S FUNCTIONALITY IN THE CONTEXT OF THE REQUIREMENTS OF 17a-4

Cohasset summarizes below in this Section the representations, explanations and descriptions of the AIT-WORM technology that Sony provided to it. As a preliminary matter, it must be understood for the sections that follow, the AIT-WORM functionality is attained through a Read-Write process whereby software embedded in the Sony AIT-WORM tape drive communicates with the AIT-WORM Tape Cartridge.

A. The Requirement of a “Non-Rewriteable, Non-Erasable” Format

17a-4(f)(2)(ii)(A) requires that the electronic storage media “[p]reserve the records exclusively in a non-rewriteable, non-erasable format.”

1. The AIT-WORM Functionality

Prior to the recording process, the AIT-WORM drive first verifies the presence of an AIT-WORM tape. If the tape is identified as AIT-WORM, writing will be allowed if the tape passes the additional tests. First, the AIT-WORM confirms identification information between the imbedded RMIC Chip and the actual storage medium, namely, the AIT-2 WORM tape. To the extent there are any discrepancies in that confirmation-of-identification process, no writing will be allowed and the

tape will be ejected. The AIT-WORM tape drive will also search for the End of Data (“EOD”) and “Last Group Count” that would be established through the immediately-prior recording session, assuming it was successful. The AIT WORM drive will then allow writing to occur only on the “virgin” space following the prior recording of EOD, or Last Group Count, plus one. To the extent that no EOD is recorded due to a prior failure in the recording process, the drive will not allow further recording to the tape, which then becomes a “read only” tape. It should be noted, too, that the AIT-WORM drive has been specifically designed to exclude an “erase head”, which precludes erasure of any kind, whether intentional or unintentional, of the data recorded to an AIT-2 WORM Tape Cartridge.

2. AIT-WORM Meets the Requirement of the Non-Rewriteable, Non-Erasable Format

AIT-WORM meets the requirement of a non-rewriteable, non-erasable format in a variety of manners through various safeguards which include, but are not limited to:

- the lack of an erasure head in the AIT WORM tape drive
- communication between hardware (AIT WORM tape drive) and software imbedded in the actual Tape Cartridge to preempt over-write
- a procedure that prevents any intentional attempted alterations or over-writes even if the tape is extracted from the AIT WORM Cartridge and placed into a non-WORM cartridge. This procedure is comprised of a verification process that compares information stored in the RMIC against the information contained in the system area of the Tape
- the elimination of a recording-enable hole from the AIT-2 Tape Cartridge itself
- safeguards against accidental over-writes where recording is interrupted. This safeguard is effectuated through the AIT WORM drive’s disabling of the EOD marker such that the tape thereafter becomes “read only”

These safeguards are described in somewhat greater detail and in the context of the AIT-WORM process, below:

a) Evaluation Under Normal Operations

First, and as explained above, each AIT-2 WORM Tape Cartridge contains an RMIC. The RMIC's predecessor, the "MIC"⁵, already "provide[d] direct and immediate connection to the tape drive's on-board processors to enable quick media load, fast access to user files, multiple on-tape load and unload points, and provide[d] a wealth of data about the history and current state of the data cartridge". *Computer Technology Review*, Volume XVII Number 6 (June 1997). The substantially enhanced RMIC has 64KB memory installed into the data cartridge and acts as the "intelligence" of the storage medium. Contained in the RMIC is a variety of essential code and embedded data (some of which ensures that the AIT media cannot be overwritten), including, but not limited to: manufacturing information, physical characteristics of the RMIC, physical characteristics of the tape itself, a unique serial number and "Application ID". The RMIC also contains an index of the records stored on the AIT-2 WORM Tape Cartridge (which index is duplicative of an index that is created on the tape medium itself in its "System Area", a non-data area contained at the front of each tape, which contains other key types of tape information). Such information, working in concert with the AIT WORM drive, contributes to the AIT-WORM technology's prevention of overwrites of stored data.

⁵It should be noted that use of the designation "MIC" refers to earlier versions of the AIT Tape Cassette technology which are not WORM.

Second, when any type of tape media is inserted into an AIT-WORM drive, the drive first detects whether it is a WORM Tape Cartridge or a standard AIT (i.e., non-WORM) Tape Cartridge by reading the Application ID written onto the RMIC.

Third, the AIT drive will allow formatting *only* of “virgin” space on an AIT-2 WORM Tape Cartridge. Specifically, either the tape must be new or it must have a determinable “End of Data” (“EOD”) – a clear ending to the prior recording session, with no data following that EOD. With respect to EOD, at the commencement of each recording session, the AIT-WORM drive searches for the EOD to ensure against re-recording. Once the EOD is located, the EOD is disabled and recording is allowed in the space that follows. At the successful conclusion of the next recording session, a new EOD is created. Only a completed recording session will allow for the creation of an EOD. Thus, if an error occurs in the recording process that does not allow for the complete and accurate recording of data, such as a power interruption, no “EOD” is created. Henceforth, because there is no EOD for the drive to detect, the implicated AIT-WORM Tape Cartridge may be used for “read only” purposes and cannot again be used for recording.

Fourth, when an AIT-WORM Tape Cartridge is formatted, Application ID is recorded on both the RMIC and the system area of the tape. At the commencement of the recording process, the drive causes a comparison of the data contained in the RMIC and system area of the tape. If a discrepancy is detected, no recording is allowed on that tape.

Fifth, the AIT-WORM drives contains a variable, referred to by Sony as “Last Group, which means the last group count written to the tape. The AIT-WORM drive is designed to recognize that the next data written to the AIT-WORM Tape Cartridge must be “Last Group, plus one”, or “last group + 1 = N”. During its Write operation, the AIT-WORM Tape Cartridge will verify Last Group

+1 = N on every one-group writing. If the drive does not detect a “Last Group”, it will not allow a further writing to the tape.

b) Problem Detection Ensuring Non-Rewriteable/Non-Erasable Status

Were someone to try to thwart the WORM functionality by removing an AIT-WORM tape from its cartridge and placing it into a non-WORM cartridge, the AIT-WORM drive would detect that the medium is WORM by its Application ID contained in the RMIC and would not allow recording. As double protection against such intentional attempts at over-writing, the data cannot be overwritten on the AIT-2 WORM tape because the cartridge lacks a recording-enable hole.

Moreover, the AIT-WORM drive can detect that a medium is WORM by virtue of the Application ID written onto the system area of the tape. Again, even were the Application ID somehow corrupted, the AIT-WORM drive still will not allow for an overwrite because of the lack of a recording-enable hole.

Finally, the AIT-WORM drive verifies during the recording process that the Application ID on the RMIC and Application ID on the system area of the AIT-WORM tape match. If there is a conflict of data, the medium is rejected.

B. The Requirement of Automatic Verification of Quality and Accuracy of the Storage Media Recording Process

17a-4(f)(2)(ii)(B) requires that the electronic storage medium “[v]erify automatically the quality and accuracy of the storage media recording process”. This requirement is also met by the AIT-WORM functionality.

1. The AIT-WORM Functionality / “ECC”

For all tape media, there is a degree of error correction. The AIT-2 WORM Tape Cartridge provides a significantly enhanced degree of error correction through the use of its “ECC” process (“Error Code Correction”). The AIT-WORM technology involves four distinct levels of “error correction”: one “pre-ECC”, with the remaining three being “ECC”. The first level of correction, that involving the “non-ECC” component of correction, occurs prior to data compression and addresses errors at the bit level as part of the Read-Write process. To the extent that errors cannot be resolved through the addition of parity⁶ in this non-ECC component of the error-correction process, the data is returned to the “host” (the computer from which the information to be stored originates) for resolution. If the host cannot resolve the error, the recording process is terminated. The error rate upon completion of the pre-ECC Read-Write process is 10^{-17} which, according to Sony, is one of the highest error ratios currently available in the industry.

A unique characteristic of the AIT-2 WORM Tape Cartridge is its even more comprehensive and advanced mode of error correction at the byte level, or ECC. Specifically, once the “pre-ECC” process is completed, the data then undergoes three additional levels of correction. To the extent that errors continue to be detected, the process terminates and will not allow further writing until resolution of the data error through return of the recording process back to the data-compression

⁶Parity checking is defined as “an error detection technique that tests the integrity of digital data within the computer system or over a network. Parity checking uses an extra ninth bit that holds a zero or one depending on the data content of the bit. Each time a byte is transferred or transmitted, the parity bit is tested”. *The Computer Glossary* (Ninth Edition) (2001).

component of the recording process. The error rate upon completion of the ECC process is also 10^{-17} .

2. AIT WORM Functionality Meets the Requirement of Automatic Verification of Quality and Accuracy of the Storage Media Recording Process

As set forth above, 17a-4(f)(2)(ii)(B) requires that the electronic storage media “[v]erify automatically the quality and accuracy of the storage media recording process”. The recording process of Sony’s AIT-WORM Tape Cartridge ensures accuracy through the functionality described in the immediately previous section, as can be further explained as follows:

During the Read-Write process, data is sent from the host to the SCSI Chip, into the I/F Buffer Controller and into the Data Compression Chip. During this pre-ECC process, data is written to the tape and parity is added at the bit level to ensure accuracy. Any data issues or conflicts that are unresolvable through the addition of parity are returned to the host for resolution and confirmation of accuracy before the process continues into the ECC component of the AIT-WORM technology for parity analysis and error detection at the byte level.

Both pre-ECC and ECC itself, through their respective parity processes, effectuate resolution of error by a margin of 10^{-17} , which as noted above, is one of the highest error ratios currently available in the industry, according to Sony. Absent the system’s ability to attain this high degree of correction, it causes a shut-down of the recording process through repeated returns first to the host as part of the pre-ECC process in an attempt at resolution and then, if the process allows progress past pre-ECC, by repeated returns as part of the ECC process itself to the data compression component of the process if an error remains unresolvable through the addition of byte-level parity. If the returns

either to the host, following pre-ECC, or to the data compression chip post-ECC cannot resolve detected errors, the recording process is automatically terminated.

C. The Requirement of Serialization and Time-Date Recording

17a-4(f)(2)(ii)(C) requires that the electronic storage media “[s]erialize the original and, if applicable, duplicate units of storage media, and time-date for the required period of retention the information placed on such electronic storage media”

1. AIT WORM Meets the Requirement for Serialization

All AIT-WORM Tape Cartridges are given a unique serial number held in the RMIC header. The serial number is assigned and written into the RMIC and into the Application ID section of the tape when the Tape Cartridge is assembled at the manufacturer. The unique serial number consists of 32 digits that can support the maximum value of 99,999,999,999,999,999,999,999,999,999. The AIT Cartridge manufacturers must obtain their unique manufacturer identification from the RMIC Formal holder, namely, the Sony Corporation.

2. The AIT WORM Process Meets the Requirements for Time-Date Recording

The AIT WORM drive and AIT WORM functionality, generally, cannot operate without the utilization of certain application software which is available through major application software vendors. According to Sony, the application software supplies the time-stamping of the data being stored to an AIT-2 WORM Tape Cartridge to indicate the date of recording. Additionally, storage media would allow for affixing a time stamp.

D. The Requirement that the Electronic Storage Medium Have the Capacity to Download Indexes and Records to Other Acceptable Media

17a-4(f)(2)(ii)(D) requires that the electronic storage media “[h]ave 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 Commission or the self-regulatory organizations of which the member, broker, or dealer is a member.”

1. AIT-2 WORM Tape Cartridge’s Indexing System

As set forth above, the RMIC contains an index of the records stored on the AIT-2 WORM Tape Cartridge, which index is duplicative of an index that is created on the tape medium itself in its “System Area”. Such information, working in concert with the AIT WORM drive, serves the dual purpose of contributing to the AIT-WORM technology’s prevention of overwrites of stored data.

2. AIT-2 WORM Tape Cartridge’s Ability to Download Indexes and Records to Other Acceptable Media

Like all storage media, AIT WORM tape will have a limited useful life, after which the contents of the tape will have to be refreshed or migrated to new storage media. In any event, in order for records and indexes to be available, end users will have to manage and handle the AIT-WORM technology in accordance with Sony’s recommendations and specifications. Sony AIT-WORM technology will allow for both indexes and records to be accessible and downloadable to other acceptable media (to the extent that the broker-dealer has retained access to the software and hardware needed for the creation of the record).

To the extent that this subsection of the Regulation may be interpreted to require a showing of the technology’s intrinsic downloadability and accessibility, it should be noted as a preliminary matter the Sony AIT-WORM technology duplicates the index of stored records on the RMIC chip, as well as in the system area of the AIT-2 WORM tape itself. To the extent that one index has been comprised, access to the record is enhanced because of the existence of the duplicate indexes. Additionally, the information contained on the RMIC improves access to data by virtue of RMIC’s

use of a high-speed search map (positioning information stored by the AIT WORM drive while it writes to the tape) that allows the AIT WORM drive to perform quick, bi-directional searches.

E. Certain Related Regulation Requirements Placed Upon the Broker-Dealer Which are Outside the Purview of the AIT-WORM Technology Itself

Numerous components of the Regulation address requirements on the members, brokers or dealers which are extrinsic to the AIT-WORM technology itself, but which have some logical connection thereto. Accordingly, a few such Regulation provisions are set forth below. Members, brokers or dealers reading this Evaluation and Report are specifically cautioned that they should not rely on this section of the Evaluation and Report as an exhaustive recitation of their requirements under the Regulation or the Act (which it does not purport to be) and should instead seek legal counsel on the full extent of their non-AIT WORM requirements under the Act and related laws.

1. Regulation Requirement of Availability of Records for SEC Review

17a-4(f)(3)(i) requires that the member, broker or dealer shall “[a]t 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 . . . electronic storage media images for producing easily readable images”. Among other things, it will be necessary for the member, broker or dealer to retain an AIT WORM drive and enabling software to ensure accessibility to records throughout the required life of the AIT-2 WORM Tape Cartridges.

2. Regulation Requirement of Ability to Provide Facsimile Enlargements

17a-4(3)(ii) requires that the member, broker or dealer “[b]e ready at all times to provide, and immediately provide, any facsimile enlargement”.

3. Regulation Requirement of Duplicate Copy of Records

17a-4(f)(3)(iii) requires that the member, broker or dealer “[s]tore separately from the original, a duplicate copy of the record stored on any medium acceptable under SEC Regulation 17a-4 for the time required.”

4. Regulation Requirement of Accurate Index

17a-4(f)(3)(iv) requires that the member, broker or dealer “[o]rganize and index accurately all information maintained on both original and duplicate storage media” and that (A) “[a]t 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”. Moreover, (B) “[e]ach index must be duplicated and the duplicate copies must be stored separately from the original copy of each index”. In addition, (C) “[o]riginal and duplicate indexes must be preserved for the time require for the indexed records”.

5. Regulation Requirement for Audit System to Provide Accountability Regarding Inputting of Records

17a-4(f)(3)(v) requires that:

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 240.17a-4 to electronic storage media and inputting of any changes made to every original and duplicate record maintained and preserved thereby.

(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.

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

To the extent that this section could be construed as placing a burden on the manufacturer to have an automatic audit component to its technology, please see Section III(B)(2), above, entitled “Automatic Verification of Quality and Accuracy of Storage Media Recording Process”.

6. Regulation Requirement that all Information Necessary to Access Records and Indexes Stored on the Electronic Storage Media be Maintained and Kept Current

17a-4(f)(3)(vi) requires that:

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 documents and information necessary to access records and indexes.

7. Regulation Requirement of Third-Party Filing of Various Undertakings

17a-4(f)(iii)(vii) provides that:

For every member, broker, or dealer exclusively 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 reasonably 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 Rule 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.

VI. CONCLUSION

For the reasons set forth above, it is the opinion of Cohasset Associates, Inc., based upon:

i) its review of 17 CFR § 241.17a-4 and the SEC's interpretive releases relating thereto; ii) the information supplied to it by Sony and its Tape Storage Solutions Division; and iii) Cohasset Associates, Inc.'s experience in the area of records management and electronic information management generally, and with respect to electronic storage media and the requirements of the SEC, specifically, that the Sony AIT-2 WORM Tape Cartridge, when coupled with the AIT-WORM technology effectuated through use of Sony's AIT WORM drive and enabling software, meets the SEC's requirements for electronic storage media, as articulated by 17 CFR § 241.17a-4.⁷

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⁷Cohasset Associates, Inc. is a management-consulting firm and does not engage in the practice of law. For purposes of this Evaluation and Report, the authors, Randolph A. Kahn (RKahn76867@aol.com) and Diane J. Silverberg (djs@kswwmail.com), are serving as consultants to Cohasset Associates, Inc.