



ENTERTAINMENT SERVICES

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**MONTEREY BAY AQUARIUM RESEARCH INSTITUTE
(MBARI)**

PROPOSAL FOR TAPE DIGITIZATION TEST SAMPLE

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Executive Summary

IMES appreciates the opportunity to submit this proposal to Monterey Bay Aquarium Research Institute (MBARI) to participate in the **2020** Budgeting process for content digitization, migration and asset preservation, of the institutes legacy and expanding content library.

Time Line – based on the quantity and volume of elements warded this could be an 18-24 month project.

Tape Formats include, but Not Limited to the following: Betacam SP and or Digital Betacam, D5 HD and possibly born digital on Hard Drives.

Key strengths of IMES proposal outlined in this document include:

- Ability to provide an in-house solution to convert 29,500 program hours to digital files, encoded to MBARI file spec and deliver to into the MBARI MAM as instructed.
- IMES has extensive experience in managing large volume library digitization and would work with MBARI to ensure the migration of the physical assets from your facility into our media facilities for the duration of the project.
- Flexibility to prioritize digitizing to meet MBARI requirements including changing catalogue priorities for digitization throughout the project to meet market requirements.
- Cutting edge studio facility with a dedicated ingest team equipped to deliver digitizing content to the highest standard in a highly structured and efficient manner.
- Customized physical and digital workflows to ensure highest quality and low risk of failure including tailored manual and automated quality control of the physical asset prior to digitization and of the digital asset after digitization.
- Continuous delivery via digital networks allowing MBARI to automate as far as possible ingest into the MBARI Cloud solution for maximum efficiency and minimum cost

The file delivery format requested by MBARI shall be:

- ProRes HQ, ffMpeg, H.264, Additionally, they use AVC Intra, and 10 Bit Uncompressed
- Proxy File as ProRes HQ or H.264 – Client to Confirm
- 3 Point QC of Files and Check Sums (scope to be defined)

Key Project Criteria

Successful completion of this proposal to digitize 24,000 program hours is broken down into steps, each with key criteria to maximize efficiency and minimize the likelihood of error.

Selection of the original asset

MBARI, will determine the particular assets to be digitized based on their internal requirements and MBARI will set the Priority of these assets.

Preparation of the asset for digitizing

The tape is visually checked for damage and labelling cross referenced against the associated metadata to ensure tape inside the case matches the intended material to be digitized.

Cleaning

Due to their age and potential deterioration through less than optimum storage at times since production, SD tapes are cleaned using industry standard tape cleaner/evaluator (RTI Tapechek 4100) as required. This removes debris and polishes the surface of the tape. The tape is also optically evaluated for physical damage. Where damage is detected, unless it is only at the head of the tape, the tape is marked for special handling at ingest.

Formatting

Where possible the objective is to preserve the original timecode reference of the recording in the digital file. The timecode where file capture is to begin is logged, usually 5 seconds after stable code on the first required segment. The end of the material is then located and where there has been continuous and contiguous timecode present, a timecode end time is logged. Where there are timecode discontinuities, i.e. a multi-segmented recording, then depending on the decision by MBARI, a single file with continuous timecode or multiple files with individual timecode segments will be captured. These elements will be captured as Tape 1 = 01:00:00:00; Tape 2 = 02:00:00:00 and so on. MBARI to confirm if Bars and Tone are required on the file as well as existing, slate details and pre and post black at the head and tail of each asset?

Ingest

Tapes are set up on VTRs aligned to the manufacturers' specification for the format presented for ingest. During ingest any errors detected during ingestion and by the 3 Point QC Stage, will be compared via the source to determine if this is in the source or an ingest issue. Once all details are reviewed, we will correct any artifacts induced in the process or recapture the file as required, and we will make note of any inherent video and audio related flaws, which are source related.

3 Point Quality Control

Post digitization, the resulting file is examined at the Manual 3 Point QC. A trained operator checks beginning, middle, and end of the file, noting any issues and checks each issue against the source tape. Any visual or audible distortion that they believe can be corrected by re-ingest will result in the asset being returned for ingest.

Where the issue is a result of an un-correctable fault, such as physical tape damage, after confirmation by examination of the tape asset, the nature and duration of the problem is recorded against the asset record.

Automated Quality Control

On completion of ingest the resulting digital file(s) are automatically checked using Tektronix Aurora software against a format template to gather critical statistics such as video/audio levels, black frames, file duration, size and checksum information. The resulting report is provided to MBARI for examination and future reference.

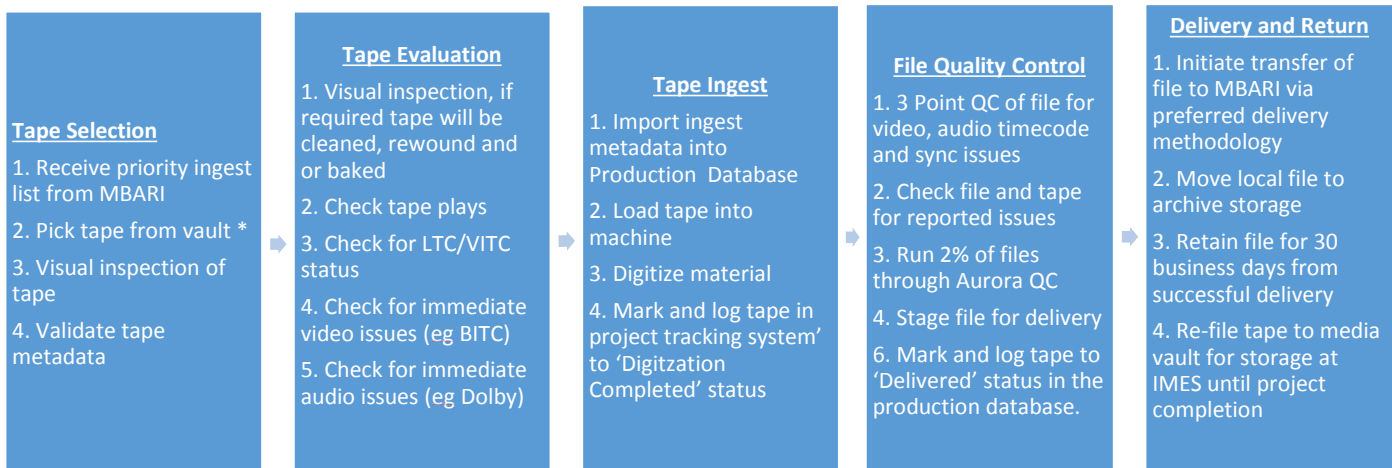
Digital Asset Delivery

Once passed as satisfactory at the 3 Point QC the completed file is queued for dispatch over the internet to MBARI using Signiant Media Shuttle, FTP, Hard Drive, and any other digital delivery means approved by the client, for efficient and secure transport. When receipt of the file at MBARI is logged, the local file is moved to medium term storage. The local file is retained by Iron Mountain for a period of 20 business days after which it is automatically deleted.

Asset Workflow

Below is the proposed physical and digital asset workflow.

Iron Mountain will use File Maker and / or Excel to track the throughput of assets through the process. Should any asset be required during the digitizing workflow, Iron Mountain would, at MBARI direction either remove the tape and send this asset to the recipient designated by MBARI, or if still awaiting ingest, advance that asset through the digital workflow, and then move to the designated recipient.



Proposed Pricing and Response to Provided Questions

1. Can you support our tape formats (Beta SP and or Digi Beta, and Panasonic D5 HD)?
2. We currently use ProResHQ (Apple or ffmpeg) as our archival format and H.264 as our proxy video. Can you deliver those formats? What other formats are available?
3. What hardware/software systems used to transcode video from tape?
4. What are details of QC/sum checks reports?
5. Are progress/verification reports provided and what is included in them?
6. What are your file naming methods and metadata support (e.g. auto-naming, manual entries, metadata extracted from user bits, encoded in atom headers)?
7. Clip length options (e.g. 1 hour-long videos get cut into 15 minute clips)?
8. Hardware delivery method options (e.g. LTO-6, hard drive, RAID, cloud)?
9. Can the digitization happen at our facility or at your facility?
10. Do you offer short- and long-term tape storage options?
11. Cost per unit, batch, or entire lots for digitization and storage media? Estimate # of tapes: 20,500 Digit beta, and 9,000 D5 HD

Iron Mountain Responses and Pricing

1. Yes, IRM supports all of the tape formats listed above and more.
2. Confirmed, we can deliver ProRes HQ (Apple or ffMpeg, and H.264. We have also delivered dnx media, AVC-Intra, and 10 bit uncompressed. If requested, Iron Mountain welcomes the opportunity to test file types and codecs with MBARI, to arrive at the desired result and a Proof-of-Concept.
3. IMES uses AJA, Telestream, Final Cut Pro and Adobe Premiere for capture. We can elaborate on our signal path if required.
4. Details of Checksum Process:
 - a. Iron Mountain will perform an MD5 checksum on data approved for delivery before writing to the delivery media. We include file manifests as well as the checksum on the delivery media. If required, Iron Mountain can restore the data from the delivery media and checksum again, to verify the values match.Details of QC Process:
 - b. All assets are inspected prior to digitization by a capture operator. If there is any issue, it is reported back to MBARI with recommendations as to how to proceed, including baking or mold remediation. While tapes are being captured, the operator monitors the playback, and will report or not any issue that is apparent. In a Full Archival Workflow, upon creation of the file, the operator executes a beginning-middle-end visual QC and then stages the file for Software QC. Tektronix Aurora QC is then performed. Aurora settings can be customized to create a specialized report tailored to MBARI's specific requirements.
5. Iron Mountain Project Management will set up weekly or bi-weekly calls with MBARI to review the progress of the project. Reporting is designed to MBARI needs and will be issued weekly. Iron Mountain will report the schedule, tapes completed, and any exceptions.

6. File naming is per MBARI spec. IRM has employed a barcode_tape name_date naming convention in the past, but the naming convention is truly to the spec of MBARI. Metadata from the source tapes will be cataloged using FileMaker under Option 2 in the pricing. Any other fields required or any embedding can be discussed and executed to MBARI spec.
7. Yes, we can create specific clip length options and will work with MBARI to match your specs.
8. Iron Mountain can delivery via Hard Drive, RAID, LTO, and various other means. We're currently using LTO 7 but can also use LTO 5 or 6. IRM can also upload to an MBARI "cloud" instance, or long term digital storage on Iron Mountain's Digital Content Repository.
9. All digitizing will occur at Iron Mountain's Digital Studio, in Hollywood, CA.
10. Yes, we offer both digital and physical short and long term storage options. MBARI is an existing client.
11. Digitizing Costs Options:

Option 1 – Basic Tape Digitization:

MBARI source tapes are barcoded with an Iron Mountain Barcode and tracked in an Excel Worksheet or FileMaker Database by barcode and completion date. Media is digitized to MBARI Spec and delivered via MBARI approved method.

20,500 DBC	\$19.80 per program hour	Total = \$405,900.00
9,000 D5 HD	\$20.80 per program hour	Total = \$187,200.00

Total – Option 1 = \$593,100.00

This service includes straight across conversions and data management time to write to Hard Drive, LTO Media, or posting to MBARI FTP or Server. Hard Drive and LTO Media is NOT included. Client is welcome to supply record media.

Option 2 – Full Archival Workflow:

- MBARI source tapes are barcoded with an Iron Mountain Barcode and entered into a production FileMaker Database.
- Inbounding to the Production Database includes all information from the asset, scans of the asset itself (pictures of Case/Spine/Label/any Inserts).
- Three-point Visual QC (no report), Tektronix Aurora QC, Operator Notes, Checksums and an "xml export" of the production database is included in delivery.

20,500 Digi Beta	\$31.60 per program hour	Total = \$647,800.00
9,000 D5 HD	\$32.60 per program hour	Total = \$293,400.00

Total – Option 2 = \$941,200.00

This service includes the Full Archival Workflow and data management time to write to Hard Drive, LTO Media, or posting to MBARI FTP or Server. Hard Drive and LTO Media is NOT included.

Client is welcome to supply record media. Physical storage is priced per MBARI's prevailing rates.

DCR Storage Rates:

Digital storage rates on our DCR (Digital Content Repository) start at \$0.02/gig and the rates are tied to the amount of data and length of term.

As an example 100TB would be 100,000 GB X \$0.02 = \$2,000 / Month X 12 = \$24,000.00 Per Year.

- DCR File Distribution Fee: 3.55
- DCR File Clip Fee: 7.55

Estimate of DCR Annual Costs: Note – added in a small amount of retrieval and clip requests, just to show some basic costs:

- | | | |
|---------------------------------|------------------|-------------------|
| • 100TB (100,000GB) Data Stored | \$2,000.00 Month | \$ 24,000 Annual |
| • 20 Retrieval orders per Month | \$71.00 Month | \$ 852.00 Annual |
| • 20 Clip Requests Per Month | \$151.00 Month | \$ 1812.00 Annual |

DCR Monthly Estimate: \$ 2,222.00

DCR Annual Estimate: \$ 26,664.00

If MBARI is interested in learning more about our DCR and its functions then IRM would be ready to come up to Monterey, or invite your team to our Mountain, and provide you with a detailed run through.

Key Stakeholders

MBARI

Nancy Jacobsen Stout - jana@mbari.org
Video Laboratory Manager

Kristine Walz - kwalz@mbari.org
Research Technician

Iron Mountain Entertainment Services

Allan Schollnick – allan.schollnick@ironmountain.com
Business Development Executive

Grant Rammer – grant.rammer@ironmountain.com
Manager, Engineering

Greg Maratea - Gregory.maratea@ironmountain.com
Program Manager

Brian Towle – Brian.towle@ironmountain.com
General Manager East & Regional Sales Director

CONCLUSION

As this proposal demonstrates, Iron Mountain has the expertise, the resources and the experience to meet and often exceed Monterey Bay Aquarium Research Institute's unique requirements. Our professional, proven, cost-effective protection and preservation program has been tailored to address your specific needs.

Iron Mountain can provide you with:

- Responsive local service
- Proven technology including digital archiving and studio services
- Long term entertainment archiving expertise
- Proactive account management
- National and worldwide account capabilities
- Real estate and facilities resources
- Economies of scale
- Highly trained and dedicated professional staff

Customers choose Iron Mountain for one reason above all: value. This value extends beyond asset preservation and management services; it rests with the confidence of knowing you have entrusted your assets to the industry leader. Our customers are secure in the knowledge that Iron Mountain is committed to a long-term business relationship with them as a trusted partner. We are here today to help you with your protection and preservation needs, and we will be here with state of the art solutions to help you address the inevitable challenges of tomorrow.

Authorization/Signatures - Statement of Work

This Statement of Work ("SOW") is the Customer Agreement by and between **MBARI** ("Customer") and Iron Mountain Entertainment Services, Inc. ("Iron Mountain") (the "Agreement"). In the event of any inconsistency between this SOW and the Agreement, the Agreement shall prevail. The duly authorized representative of Customer has affixed his or her signature below with the effective date being the signature date. This SOW can be accepted by Customer for thirty (30) calendar days from the date shown above. Customer's acceptance shall be indicated by Customer's signature below. Iron Mountain cannot be held responsible for delays caused by Customer or for incorrect information provided by Customer.

This Statement of Work constitutes the complete description of the work to be performed. Project-specific pricing is contained in this document. Additional pricing for services to be provided by Iron Mountain is located in the Customer Information Center at cic.ironmountain.com. Please refer to this site for a Glossary with definitions of the terms used in this SOW. Any modification, deletion, or addition must be documented in a Change Order which may result in re-pricing the project. The Change Order must be signed by the duly authorized representatives of Customer and Iron Mountain.

VALUE OF DEPOSITS. Customer declares, for the purposes of this Agreement, that (a) with respect to hard-copy (paper) records, microfilm and microfiche stored pursuant to this Agreement, the value of such stored items is \$1.00 per carton, linear foot of open-shelf files, container or other storage unit, and (b) with respect to round reel tape, audio tape, video tape, film, data tape, cartridges or cassettes or other non-paper media stored pursuant to this Agreement, the value of such stored items is equal to the cost of replacing the physical media. Customer acknowledges that it has declined to declare an excess valuation, for which an excess valuation fee would have been charged.

LIMITATION OF LIABILITY: Iron Mountain's liability, if any, for loss or destruction of, or damage to, materials stored with Iron Mountain ("Deposits" or "Items") is limited to the value of each Deposit as described above, or as otherwise set forth herein. Iron Mountain's maximum liability with respect to services not related to storage is the amount paid by Customer for a discrete project or, if the loss is related to service of an ongoing and continuing nature, six months of fees paid by Customer for such service. Other limitations on Iron Mountain's and/or Customer's liability are set forth on the following pages.

LIABILITY FOR LOSS OR DAMAGE TO DEPOSITS FOR STORAGE: IM shall not be liable for any loss or destruction of, or damage to, Deposits, including costs resulting from a loss of a deposit constituting a breach of data security or confidentiality, unless such loss or damage resulted from IM's negligence, gross negligence or willful misconduct. If liable due to IM's negligence, the amount of liability is limited as described above. Deposits are not insured by IM against loss or damage, however caused. Customer may insure Deposits through third-party insurers for any amount. If, at Customer's request, Deposits are placed in the custody of third party carrier for transportation, the carrier shall be solely responsible for any loss or destruction of, or damage to, such Deposits while in the custody of the carrier.

LIABILITY FOR NON-STORAGE SERVICES: With respect to services not related to the storage of Deposits, IM shall not be liable for any loss or default unless such loss or default is due to the negligence, gross negligence, or willful misconduct of IM. If liable due to IM's negligence, the amount of IM's liability is limited as provided above in Value of Deposits.

Customer	
Customer Address	
Authorized By (Customer)	X
Printed Authorization	
Title	
Signing Date	X
Authorized By (Iron Mountain)	X
Printed Authorization	Brian Towle
Title	Director Business Development and Account Management North America
Signing Date	X

IN WITNESS WHEREOF, the parties have duly executed this SOW as of the date and year first written above.