

**IU Media Digitization Studios**  
**½" EIAJ videotape preparation and digitization workflow**  
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**1 Prepare the tape:**

- 1.1. Retrieve tape from the processing room.
- 1.2. All ½" open reel video formats are baked before any attempt to digitize is made.
  - i) Place the spool only in the oven.
  - ii) Gradually heat oven from room temperature to 123 degrees F
  - iii) Keep oven at a steady 123 degrees F for 48 hours, allow to cool
  - iv) Remove from oven and clean on the Studer A-80 adapted cleaning machine.
- 1.3. During cleaning, examine the reel for problems or physical damage such as breakages, mold, plasticizer residue, cracks, or chips. If defects are found, assess the damage and determine if a quick repair is possible or if additional in-depth processes may be necessary (re-housing on a new spool, mold remediation, problems in the pack, etc.).
- 1.4. Repair any breakages, mangled, torn or stretched tape with a ½" splicing block, splicing tape and a razor. Use vertical butted splices with no overlapping videotape at the splice and no splicing tape exceeding over the top or bottom of the tape edge. The splicing tape should never come in contact with the video heads.

**2 Preparing the VTR for digitization:**

- 2.1. The VTR tape path should be cleaned prior to each tape playback.
- 2.2. Power down the VTR.
- 2.3. Clean the scanner drum and heads with a TexWipe or foam swab dampened with acetone. TexWipes are lint free and are not likely to catch on the edge of the heads like a cotton swab will. The important part of video head cleaning is to not move the heads up and down. Clean any additional metal parts that come in contact with the tape with acetone.
- 2.4. Do not use acetone on rubber or plastic parts or audio heads. These surfaces can be cleaned with isopropyl alcohol. Ideally rubber parts like pinch rollers should be cleaned with Head, Red & Roll Cleaner when available. This cleaner will not dry the rubber out as alcohol tends to do over time.

### **3 VTR Signal routing:**

- 3.1. Thread the tape. Consult threading diagram on inside of VTR cover if needed.
- 3.2. Choose a Time Base Corrector to patch the VTR into (for this example we will use the DPS-235 labeled as TBC 3 on the patch panel).
- 3.3. On the front of the DPS-235 TBC unit:
  - (1) Press the "Select" button until "Unit1" is illuminated.
  - (2) Press the "Input" button until "NTSC" is illuminated.
- 3.4. Connect the BNC cable from the video patch point labeled "1/2" to the BNC output of the Sony AV-8650 composite video source out. Patch the "1/2" OUT into TBC 3 INPUT. Patch TBC 3 OUTPUT into A/D VIDEO IN (this sends the output of the DPS-235 TBC into the AJA HD10AVA converting the signal from analog to digital SDI).
- 3.5. Patch the A/D VIDEO OUT 1 into the SDI CAPTURE CARD for capture station 1 (this sends the converted SDI signal into the Blackmagicdesign Decklink Studio 4K capture card).
- 3.6. Patch the CAPTURE SDI OUTPUT into the VTM-203 DIGITAL C INPUT (this sends the output of the capture card into the Videotek VTM-203 Waveform/Vectorscope which feeds the Dell computer display on the console for signal monitoring and setup).
- 3.7. Patch the CAPTURE ANALOG OUTPUT to the TEKTRONIX ANALOG INPUT (this sends the analog output of the capture card to the rack mounted analog Tektronix 1730 Waveform Monitor and Tektronix 1720 Vectorscope)
- 3.8. Patch the AV-8650 VTR RCA audio line out into a Henry Engineering impedance converter, RCA to RCA for properly balanced audio.
- 3.9. Patch the corresponding audio line on the XLR patch panel into Capture 1 Audio DA IN channel 1.
- 3.10. Patch Capture 1 Audio DA OUT channel 1 into TO A/D channel 1. (This routes the EIAJ audio to the analog to digital convertor and also sends the audio signal to the Mackie audio board to allow monitoring during digitization.)

### **4 Video TBC and audio setup:**

- 4.1. To see the video and audio levels for setup, launch the "Blackmagic Media Express" tool from the start menu of the Capture work station, then press the "Log and Capture" tab. With the source tape in play, you should now see video passing and audio levels visible on the meters.
- 4.2. (If there is no discernible video/audio or there are problems with the content playing properly, the tape may have very unstable RF signal, it could be blank or a different

½" video format or TV standard: Sony CV (skip field), Sony AV-5000, Shibaden, Concord/Panasonic (12 ips). There were numerous incompatible ½" videotape formats and only the mainstream AV EIAJ format will play properly on the MDPI Sony AV-8650.)

- 4.3. Listen and watch for any mechanical sounds such as squealing or chirping that may indicate that soft binder/sticky shed syndrome is still present. Sticky shed can also result in video image banding caused by friction that prevents the VTR from tracking the picture properly. If sticky shed is still present, bake again for a longer duration.
- 4.4. If playback appears normal, optimize the tracking and skew adjustments for playback. It can be helpful to make these adjustments with the video monitor set to H-V Delay so that the vertical interval skew corrections can be optimized.
- 4.5. If a tape has an especially unstable video signal it may be necessary to deploy an additional TBC upstream from the DPS-235. In this case the composite output of the EIAJ deck can be patched to the Snell & Wilcox TBS24 TBC (TBC 1). Then the output of TBC 1 would be patched into TBC 3 as described. Sometimes this can help clean up bad video sync that causes an unstable image.
- 4.6. Start with the DPS-235 Proc Amp settings adjusted to the unity/default settings position for video, black, chroma and hue settings (green light).
- 4.7. Play the tape and view the SDI signal through the Videotek VTM-203 Waveform/Vectorscope set to YCbCr/YC (parade display).
- 4.8. EIAJ tapes can be color or black and white. Set the VIDEO MODE switch accordingly to COLOR or B/W. Black and white tapes will have more video noise if run in the color mode.
- 4.9. Check the TAPE SELECT mode. Switch between REGULAR and HIGH DENSITY to determine which setting outputs a cleaner video signal.
- 4.10. On EIAJ tapes there are seldom reference color bars, but if they exist set the TBC proc amp settings; set-up (black) level to zero, video gain to 100, chroma level and hue set to align to the graticule of the vectorscope, with the red vector being the priority. If the content is all black and white, turn the chroma completely down.
- 4.11. Check the program content and be sure there is no clipping of the video signal happening due to high luminance levels. Lower video gain if necessary. Luminance levels may slightly exceed 100% by a few units as long as they are not hard clipped which occurs at or over 110%, which can result a loss of image detail. Check the tape in several locations and be sure to view an area with higher luminance levels, such as a daytime sky or bright light fixture. Adjust if black levels are crushed and if chroma over-saturation creates excessive video noise.

- 4.12. Verify that all audio content is visible on the meters of the “Blackmagic Media Express” tool and that it is audible through the first fader of the Mackie 802 VLZ4 audio board.
- 4.13. Check audio locally through the VTR jack with headphones and compare to what is coming through the audio board. With all video and audio levels set, you are ready to digitize.

## 5 **Digitization:**

- 5.1. Quit the Blackmagic Media Express tool. Quit any other applications that may be using computer resources.
- 5.2. Launch the Recorder tool icon on the capture station desktop.
- 5.3. Scan the bar code of the tape or case with the scanner and verify that the numbers appear in the barcode field. By default the system will place the bar code in the file name field.
- 5.4. On the Audio pulldown menu, select “1 Audio Channel (1 mono stream)”.
- 5.5. Press the #2 to prep to record, then the red circle to start the digitization.
- 5.6. Press play on the VTR. Remember that EIAJ can be a very unstable format and interchange between any two playback machines is very marginal. Make the best of what is a less than optimal format by keeping a close eye on the tracking and don’t be hesitant to adjust carefully on the fly during playback.
- 5.7. Monitor video and audio and note any anomalies with time codes in the comments field of the Digital Workflow section of the POD.
- 5.8. Fill out and verify all appropriate fields in the POD.
- 5.9. When the program has ended, press “Pause” on the Recorder interface.
- 5.10. Press the #3 “Combine”, then the “Combine Parts” circle.
- 5.11. Rewind the source tape.
- 5.12. Do a spot check QC of the digital file in VLC Player:
  - i) Verify audio sync with picture.
  - ii) Verify time code notes of anomalies found and compare with source if necessary.
  - iii) Confirm that audio is present.
- 5.13. Double check that all mandatory POD fields have been completed

5.14. Copy the mkv preservation file to the Transcode/Dropbox for processing.