

## Monitors Transfer Report

### **Introduction**

This system transfer report is created for the BTV 221 (Television Studio Operations and Maintenance Lab) class in Fall of 2006. The system reported on is the studio's collection of video monitors. The purpose of the monitors project is to align, repair, and enhance the monitors in use in the studio, including:

- monitors on the control room bridge
- other monitors in the control room
- monitors used at editing stations
- other monitors used to align cameras
- monitors in the server/white room
- monitors in the laboratory

### **Team Membership History**

I was a member of the monitors team from Monday, October 16, 2006 to Monday, November 20, 2006 when I was transferred to the cameras maintenance team. On Monday, October 23, 2006, I became the guru/lead of the monitors team, a position which I held until being transferred out of that team.

### **Status As Received**

The previous monitor teams had begun work on the monitor trio installed at the video server workstation in the control room. Having removed the monitor trio, the previous teams had aligned one of the monitors and in that same monitor had installed a three-color LED to replace the original neon tally lamp.

### **Changes to Concept or Direction**

I didn't make any changes to the concept or direction of the monitors team. The main changes I made were at the implementation level, specifically the decisions made as part of replacing neon tally lamps with three-color LEDs (these changes are described in the monitors team lab notes on my web site at <http://www.dancingkayak.com/nvcbtv/monitors.html>).

### **Accomplishments**

We had some accomplishments during the month I was guru.

## Monitors Transfer Report

### ***Monitor Trio at Video Server Workstation in Control Room***

We completed the upgrade of the tally lights from the original neon bulbs to three-color LEDs, each color independently controllable. We also aligned the other two monitors that had not been aligned by the previous monitor teams.

### ***Video Monitor Used at Mac Final Cut Pro Video Editing Workstation***

We spent one day aligning this monitor. It's not complete, but we fixed the problem of it not displaying the entire frame.

Doing this monitor (made in the late 1990's) after doing the monitor trio (made in the mid-1980's) also gave us a chance to work on a more modern monitor just as a comparison. In addition, it gave us some more practice on monitor alignment on a monitor that was easier to work on because it was physically smaller than most of the other monitors, but large enough to work on it fairly easily (more easily than on the monitors in the monitor trio). It was also easier to work on than the bridge monitors, for which we would have had to stay up on a ladder to adjust because we wouldn't want to do the relatively heavy lifting required to lower the bridge monitors prior to alignment and lift them back after alignment. Since we had easy access to the monitor and its size was small enough, we could more easily perform all appropriate elements of monitor alignment.

The above is part of my reasoning for not immediately starting on the bridge monitors (which we would have started on immediately after doing the Final Cut Pro video monitor). Also, I used the privileges of power as guru to align the monitor I'm using to edit the outreach video, to avoid if possible any artifacts resulting from that monitor needing alignment. We spent one lab period on this monitor, so it wasn't much of a cost given the benefits.

### **Future Vision**

There is still lots of work to be done on the monitors.

### ***Monitor Trio Used at Video Server Workstation in Control Room***

The tally lights need to be hooked up on these monitors. Also, now that there are three colors on the tally lights, some system of using these colors needs to be designed and implemented.

The physical mounting of the monitor trio needs to be evaluated. It doesn't seem that secure in the long term.

## Monitors Transfer Report

### **Control Room Bridge Monitors**

These are the monitors most in need of alignment and having highest priority, since we use these monitors to evaluate the output of the cameras and the inputs coming from various video sources, including the video server.

### **Diagnostic and Editor Monitors**

The alignment of the monitor at the Final Cut Pro workstation could be completed.

The alignment of the monitor at the Sony linear editor could be done since it seems out of alignment and the camera team is using it to align cameras.

The monitors in the server/white room could be aligned, especially the ones within that kludge of a video path where the alignment of the monitor in the center rack of the set of three racks next to the door to the control room has an impact on the signal being sent to the video server when recording.

## **Challenging Questions and Answers**

#	Question	Answer
1	How useful is electrical tape?	Not very useful; we should avoid using it as much as possible because there are often better supplies to use to solve a problem one is tempted to solve with electrical tape.
2	What two considerations are appropriate when choosing a current-limiting/voltage-dropping resistor?	The amount of voltage drop provided by the resistor's resistance in ohms, and the amount of power dissipated by the resistor so that you can choose a resistor wattage rating sufficient to dissipate the power allowing for a safety multiple.
3	How should Molex connectors be wired when they are used to serve AC mains power?	The female pins should be used on the power side (AC mains) side of the wire, and the male pins should be used on the equipment side of the wire. Notice the example of the standard equipment power cord: the pins are at the end that goes into the wall receptacle, and the jacks are at the end that goes into the equipment. It would be a serious safety hazard if we had pins carrying 120V coming out of the wall instead of recessed jacks in power receptacles.
4	How to install heat shrink tubing when one side of the tubing must butt against the end of a larger component?	Heat the end of the tubing farthest away from the larger component first; this helps keep the tubing from shrinking away from the larger component.
5	What was one of the potential safety hazards encountered when wiring the monitor trio to allow them to be	The main power cord had its green ground wire connected to the chassis holding the three monitors together. When independently powering one of the monitors and removing it

## Monitors Transfer Report

#	Question	Answer
	independently powered by a three-wire power cord?	from the chassis, the green wire connection was lost and had to be explicitly added back.
6	Why was there a 3.7 megohm resistor between grounding and grounded wires at the terminal strip handling power coming in through the main power cord?	It bleeds off static electricity while keeping transformer primaries ungrounded (often there could be capacitor or resistor/capacitor combination in other equipment).
7	What's the remedy for Windows claiming that it doesn't have the driver for the color analyzer sensor?	Reinstall the driver (it probably already exists on the system) from the location within the Sencore folder set within Program Files.
8	Where is the little Sony pattern generator located?	In the lab racks where the VOMs and frequency counters are.
9	What is the name for the type of connectors used to handle AC power in the monitor trio?	Molex.
10	Where are Molex connectors also commonly used?	In personal computers.
11	What are Molex connectors used for in computers?	To supply DC power from the power supply.
12	What's the first step in monitor alignment?	Degaussing.
13	What's the labeled duty cycle for the degaussing rings?	One minute on, 15 minutes off.
14	What precautions to take when using a degaussing ring?	Keep it away from video tapes and credit card stripes that have magnetically-stored data you want to retain.
15	What are the typical signals required for monitor alignment?	Crosshatch/dot, flat field, registration chart, SMPTE color bars.
16	What gets adjusted during the purity adjustment?	Purity rings on the neck of the CRT.
17	Registration on cameras is analogous to what adjustment on monitors?	Convergence.
18	What additional measure can be taken to improve purity, especially in the corners, if adjusting the purity rings doesn't completely solve purity problems?	Adding magnets to the bell of the CRT in accordance with the service manual.
19	What general practice is advised before performing a specific alignment step?	Completely read through the instructions for a step before starting the step.

## Monitors Transfer Report

#	Question	Answer
20	What does TRS stand for?	Tip, ring, sleeve –the three parts of a three-conductor RCA jack.

### Recommendations for Training New Team Members

Recommendations include:

- read the service manuals for any monitors being aligned
- dig up those notes from last year regarding monitor alignment (the ones that should be in our black books)
- there isn't any substitute for doing the work of aligning monitors
- start on monitors that are physically easier to work on (that are not too large to move around easily, or that are not mounted in some awkward location that makes working on them more difficult) until you gain more experience

### Apprentice Assessment

Submitted separately in e-mail.