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Operator's Handbook
Instructions for Video Assist System

\$100.00

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**Use AC only in an emergency.
Do not use generators.**

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Send me comments, critique what-ers, but communicate: wolfvid@comcast.net I might send you a new edition if I can incorporate the ideas, experiences, ... funny war stories ... etc...

Open circuit voltage as read on meter on front panel	Percent state of charge	
11.8V	0%	ABSOLUTE CUT OFF
12.1V	20%	
12.3V	40%	
12.6V	60%	
12.8V	80%	
13.0V	100%	

HELP

Make notes anywhere; this is a working manual. Also its pretty old, keep that in mind

Better to ask a dumb question before the shoot than to look stupid while people are watching.

MANUAL READING

My own personal experience in the art of manual reading. I, like everybody else, have an attitude about manuals: They are written for people of low intelligence and therefore I really don't have to read them at all. Just look at all the stupid little drawings Sony includes. It's for people who don't speak any language except picture language.

Well....

Here I am on the set and some dumb, simple-minded, obvious monitor does not do what it should... I flip through the manual quickly to scan for what I need to know. Of course I skip the relevant passage because it has those simple-minded foolish graphics next to it. Now under more pressure, a second scanning of the manual, just proves that you can't trust anybody who writes manuals. Finally the pressure is really on. The dumb piece of equipment won't do what it needs to do. The operator is thinking of mystifying bullshit excuses to make it through the day. Maybe he gets away with it. Maybe he gets fired at the end of the week. Maybe he never gets rehired by that company. Of course he is not getting any kind of positive word of mouth to expand his client base.

CONCLUSION

Read the manuals at home, away from the pressure of the set, where your whole attention is focused on the piece of equipment or procedure. Have the equipment with you so you can go through all the functions, punch all the buttons. It becomes a visceral (touch, feel & see) learning process. Practice what you learn.



READ INVENTORIES

Manufacturers are letting themselves be pressured into producing equipment that does more and more with fewer buttons. It's cheaper. Every button now has at least 2 functions. The interesting stuff is naturally the undocumented functions. We try to put the often used but easily forgotten function on the inventory sheet that goes with each piece of equipment. So look at them!

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A NOTE TO THE OPERATOR

Despite the new total disrespect and abuse given to video assist operators on the set, this is a vital position – and directors and producers know it. Stand up straight and you will get the respect deserved.

If there is bad video assist on a commercial shoot, the agency loses all control over the director and will not hire him again. You can be sure you won't be working for this director again. On the other hand, if you try as hard as you can and deliver good images early, no one will thank you either.

On features producers and directors make a big deal out of hiring a video operator. They will check references (several) and call video operators and UPM's they know to get references. Video is how the producers keep check on the director and has a lot to do with a director's "sell" to the producers.

Just because you get no respect on the set, don't think that you are not a critical hire! So why don't they pay you Y-1 like the mixers? And why don't assist operators on features today get a second person – helper???

POWER FOR THE SYSTEM

USE BATTERIES – ALWAYS (OHH THOSE WERE THE GOOD OLD DAYS BEFORE COLOR!!)

The system is designed and built to be operated on batteries. Use them! Today batteries are really only backup as the color monitors draw too much.

110V AC POWER (FOR EMERGENCIES ONLY)



This part is important. By being careless here you may endanger a life, not least of which is your own.

By running an extension cord from the rear of the large monitor to an outlet in the wall, you power the video assist system with 110V AC.

STOP

4 LIGHT TESTER

Use your multi-light tester to check the wall plug for AC or DC and 110V. AC both electrodes glow; DC only one is glowing - you must see 110V AC, otherwise **do not** plug in.

4 LIGHT TESTER must show 110V with 2 electrodes glowing

***Insert pix

THREE LIGHT TESTER

Then use your 3 Light tester to check for proper hot, neutral and ground. You must see the "correct" indications.

***Insert pix

3 LIGHT TESTER must show CORRECT

THINK

3 light tester shows "correct" - **NOW THINK:** Is there really a good ground?

The 3 light tester is a guide only. The 3 light tester often shows "correct" when **no ground** is present. Typically, this happens when you are plugged into a generator, even with modern electrical equipment. HMI's are being used and the electricians run a ground wire connecting all lights and generator. (HMI has become a generic term for several different bulbs that use the same high voltage electronics). **THE PROBLEM IS THIS:** the ground at the generator is attached to a stake in the dry earth, WHICH IS NOT ADEQUATE GROUND! In fact, there is heightened danger if all lighting and video equipment cases are connected

together. If any one light develops a fault, the voltage showing up on its case will show up on all video gear and the camera dolly. HMI's run on 15,000 volts internally. Stay away from them.

**IF NO GROUND: USE BATTERIES.
GENERATORS ARE BARELY GROUNDED!**

USE GFD - GROUND FAULT DETECTOR



(Located in plastic box in main box.)
Available from: Wolf Seeberg Video \$ 40.00

Many home wiring inspectors carry this little screwdriver-like gadget called a GFD. It indicates if the case of an AC-powered unit is grounded or not. **It indicates a very small current flowing from its tip through your body to the earth.**

You do not want to see this thing light up when touching anything that could be touched by human beings!!

It must be used with brains in gear. It is a very interesting tool, though. Use it; it's in your main box in one of the plastic boxes. If it flashes only very briefly when touching a Light or dolly, this is a very small amount of static electricity draining through your body. It is safe to touch the hot or neutral with this tester.

Note: you get a bright glow in the "hot" outlet but no glow if all is well with the neutral (low) of the AC leads. If you see a dim glow when touching the ground hole in an outlet you know that the grounding connection is defective. It's important to understand this thoroughly, this little gadget gives many lifesaving hints. Show it to the gaffer of the day. Don't confuse this with their "electricity is here" tester.

Earth ground vs. Generator ground vs. House power ground.
You must understand the difference. Some electricians do.

PLUGGING INTO THE TAP PROCEDURE

Check your cable with GFD. (You're measuring the current flow from the tip of the GFD touching your cable to the ground you're standing on.) Keep one hand in your pocket, touch metal on cable BNC.

Check dolly with GFD. (You're measuring the current flow from the tip of the GFD touching the dolly to the ground you're standing on.)

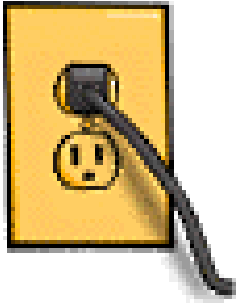
Hold your cable to end of GFD and touch dolly with tip. Keep one hand in pocket.

If no light on GFD on all three circuits above, you are probably safe to plug BNC to dolly.



Use the video iso-transformer at main box end of cable always and you are even safer. It separates the ground of your system from the camera ground.

PLUG IN AT ONE PLACE ONLY



Use only one AC wall receptacle. Always run the extension to the large 17" monitor. If you need additional outlets, use the ones on the back of the large 17" monitor and run extension cables from there. Do not plug extra monitors (or any gadget) into odd outlets you find on the wall somewhere. This caution applies also to the sound recording system or the Teleprompter. If the sound recordist or Teleprompter operator use 110V AC, have him/her plug into your 17" monitor. If they do not want to do this, plug into their power strip.

DANGER

If you do not follow this advice you will eventually hurt someone. Ground loops and bad or no grounds will show up as various stripes or wavy patterns in the picture, or - as severe shocks to any person touching camera or monitors. More on these hazards later.

PROTECT YOURSELF

Using the extra outlets on the back of the large monitor guarantees that your ground comes from a common place. Very important. Use these outlets!

GFI (USE THE OUTLET ON THE 17" MONITOR)

The back of the large monitor gives you additional protection with its Ground Fault Interrupter (GFI). Theoretically the GFI will trip (the red button will pop out) before anything too serious occurs. If the GFI button pops up, disconnect each piece of equipment until you find the bad piece. The GFI will protect only those items that are plugged into it (that are downstream from it), not what it is plugged into. Also it does not provide a ground where there is none, such as the typical movie generator. Today we have a GFI at the power input to each system on the main box..... use it!! It will save someone life sometime.

GENERATORS: HAVE NO GROUND

They are virtually never grounded. The electrician's bull prick stuck in the (soil) ground is not an electrical ground. As of 2000 they don't even use this anymore. To make a ground according to the 1979 code: Run a #10 (that is fat!) stranded wire to a 6 foot copper rod laid in the bed rock and buried. Since this is a task of some proportions, take the simple way out, use batteries.

AVOID GENERATORS!!! USE House power or BATTERIES!!!

If you are outside and you must use AC, because you do not have enough batteries, run an extension cord to the nearest good outlet in a house. The kitchen, bathroom, or laundry room usually have better outlets. Of course it's best to use your inverter with these gadgets.


AC CONDITIONING BOX: GFI



GROUND protection: The GFI will protect from bad grounds downline and disconnects AC before someone gets hurt. (Keeps the lawyers from your bank account.) Water resistant yellow warning color. On heavy duty 6ft AC extension with 4 rain covered outlets. Modifications: 3x MOV spike arrestor, over voltage and DC protection and 15A fuse. **With 3 light AC tester installation** to show reversed wiring etc.

AC PLUG IN PROCEDURE - SHORT

Test power before plugging in.

Do not use this equipment with a generator!! 



Use the 4 Light Tester:

- If only one electrode lights up you plugged into **DC**. DO NOT PLUG IN !!!
- If both electrodes light up you are plugged into **AC**. OK to plug in the equipment in.



2.) Use 3 Light Tester: The 3 light tester tells you if your power is "**correct**". If power is not correct, do not plug in!! You may hurt yourself or someone else. Ask a qualified employee (the gaffer or chief electrician) where to find a good "correct" power outlet with a good ground.



3.) Use the Ground Fault Detector (GFD). Only this will really tell you if there is no ground! The light in the end will start glowing at a very small current flowing from its tip through your body to your feet. This light also indicated the presence of RF so you have to engage your brain. This tester is the lifesaver, do no ignore the results.

Warning: Avoid movie generators: When generators stop and start, they produce electrical spikes that will damage this equipment. Unplug everything from generator when starting or stopping it. Remember motor homes are hooked up to a generator too. Generators are unreliable.

Use the Inverter instead: Use the included DC to AC inverter. It makes a reliable 110V AC from a 12 Volt battery. It's safe, cheap, quiet, reliable. You can ship our batteries safely on an airplane. If you do not understand these instructions, get qualified help.

SAFETY QUESTIONS

If you have questions on the set, call Wolf Seeberg Video. The answers you get on the set from electricians are usually based on poorly understood movieland practices. They do not care for your and the director's safety - only you do.

Most electricians are nothing but lamp carriers; they do NOT know electricity. Gaffers (head of the electrical department) should be the most qualified electricians. But they may have learned by practical experience only. They may be young and inexperienced. So why trust them?? Use batteries.

Often you will be told to "go plug in somewhere else". That is the worst answer of all. It may relieve some of the present problems, but is not a solution. USE BATTERIES. Only through the recent use of HMI lamps have electricians become aware of the importance of "ground". They know they can get serious shocks; few know what a ground really is. So do not trust the advice you get on the set. If you think you are in a dangerous situation with AC - use batteries!

Lawsuits will abound should someone get hurt. The average director is worth several million today. Lawyers will attach your earnings for years to come if someone gets hurt and you are at fault. And you know the lawyers will do it.

THE VIDEO COAX CABLE GROUNDS THE DOLLY!

When using AC, the Video Assist system provides the only electrical GROUND for the camera-dolly unit. You must provide a safe drainage path for any stray electricity. You must have a good ground to use AC.

WHEN USING DC BATTERIES YOUR GROUNDING WORRIES ARE OVER - YOU ARE SAFE.

OTHER EQUIPMENT ATTACHED TO CAMERA

If anything else attached to the dolly needs electricity (Tele- or Computer- Prompter or lights or boom boxes) you must be aware of how this equipment is grounded. If the operators of this equipment won't plug into your outlets on the back of the large monitor, you must use batteries. Especially on stage.

WHILE DOLLY IS BEING PUMPED UP, DISCONNECT CAMERA COAX

If you notice the dolly grip is itching to "pump up" the dolly and he won't make the effort to plug in the back of your large monitor, or if you know that the dolly pump will draw more than the 10A fuse will hold (and most do), DISCONNECT THE CAMERA COAX and let him plug in anywhere he likes.

Now your system and your ground are disconnected from his. What and where his ground really comes from is always in serious doubt, especially on stages, especially with old dollies. (Most wiring systems found on stage originated in the days of 220V 2 wire DC, eons before the invention of sensitive electronics or safety procedures.) When the dolly stops pumping, reconnect your video.

AC WARNING

Use one outlet for everything connected to the dolly.

Everything connected to dolly must come from one AC outlet, preferably your outlet at the rear of large monitor protected by the 10A fuse, and the GFI. All video equipment chassis are connected by the shell of the coax. So all Teleprompters, computer prompters, obie lights, camera speed regulators, should come from the same outlet. 24 frame video sync setups are often connected to many monitors on the set. Yes, they all should plug in the same place. Remember only 300 mA can KILL !!! Video "Sync boxes" for 24 frame pass their video ground to the film camera - Watch Out!

A PERSONAL NOTE FROM WOLF

I cannot remember being on a film set with a complex video, 24 frame, etc., setup where even minimal attention was paid to safe AC wiring and grounding. Since mistakes in this area will kill, I cannot emphasize enough that you must understand this topic fully. I am happy to discuss, help, supervise, come to the set, and solve any problems associated with safety - anytime, even at 4AM. Rather than wake me up, use batteries, please!

SAFETY FIRST - THINK

***insert PICTURE 2 (AC OUTLET)

RULES & RESPONSIBILITY

The above advice - rules and procedures - on AC and grounding must be obeyed. If you do not follow these guidelines, you will not be allowed the use of WSV equipment.

BAD AC EXAMPLES

There are no assumptions that are too dumb. I have come across real world examples of all of the following:

You see a 4-hole outlet on the wall. You would assume that all 4 holes come from the same place. NOT SO!!

I have seen AC on the left pair, DC on the right. Or AC from one power mains on the left, AC from another power mains on the right. I have seen AC hot leads and grounds reversed on one side but not the other. We found 220V AC in one of these, etc. This means:

USE ONLY ONE OUTLET HOLE IN A 4-HOLE ELECTRICAL OUTLET BOX

Plug in a power strip only for the coffee machine (equipment far away from camera). Everything else should go through the large monitor or one power strip.

PHYSICALLY TIE OFF AC CABLE

Tape and tie AC cord near the outlet. Unless yours is mechanically, firmly attached to the wall, when you are not watching, someone is likely to replace it with their own, on purpose or by mistake.

Stages, new and old, usually provide the worst power. In one older downtown building where many police episodic series are shot regularly, we found 220V AC in a regular good new outlet. (It blew the AC power supply on top of the large monitor several times because someone really smart insisted on replacing the fuses with larger ones, till finally it really smoked the transformer... burned!!) Replace fuses only with labeled values or smaller values.

Red 4-hole outlets in new hospitals or stages are a good place to plug in. They are called "Tech power." They are specially conditioned and isolated power for hospital computers or technical (video) equipment. They also carry separate wiring for the ground pin. This is, of course, a much better way of doing it. The normal household wiring runs the ground only through the conduit. This is seldom properly connected behind the sheetrock in the walls. The ground path often has a fairly high resistance to the real earth ground. It is always surprising to me that not more goes seriously wrong than it does. But we do not want to rely on our luck.

AC POWER HAS TO BE DEALT WITH
PERFECTLY & CORRECTLY EVERY TIME.

NO GROUND AC DILEMMA

PROBLEM

You are in an old house all outlets test "open ground" with 3 light testers.

ANSWER

USE BATTERIES, USE THE INVERTER,
DO NOT USE GENERATOR.

You need AC for 3/4" or 20" Color because you did not take enough batteries: so... look in kitchen, garage or laundry room for new good outlets.

GROUND TO OUTLET

If you have no good ground in form of a third hole next to the AC, but you find out that the electrical box itself is grounded, you can use the special cheater plug: You can use the "cheater plug" with ground wire (in spares case), and hook the ground wire to the screw in center of outlet. Now you should read "correct" on 3 light tester.

If still not correct -- MAKE A GROUND by running a separate ground wire to cold water pipe. If you do not have time to do that, test the generator. Since the mid '90's generators are never grounded! Watch out for new houses with plastic water pipes to the street.

TEST THE MOVIE GENERATOR

Use 4 light AC-DC tester.

Use 3 light tester.

Use the screwdriver-type Ground Fault Detector - GFD

Ask chief electrician (gaffer) if his generator is grounded well.

If he says "yes," use the generator, but you must tell production company you are using the generator.

If there is no ground for the generator, which is usual, use the house with no ground, but tell the production company.

"I can't find or make a proper electrical ground for my AC. The generator is not grounded, the house is not grounded. If you want me to, I will plug into the house, probably the lesser of 2 evils." This alleviates some of your personal liability for any accidents that may occur.

Remember 40 mA (milli Amp = one thousandth of an Amp) will kill.

That is .040 A = 40/1000.

That is so little you'll never light up a tiny light bulb with it. The reading light on the main box draws 400 mA. That is .4 A, ten times as much as necessary to kill a healthy, adult male.

What to do when in doubt: obviously, use batteries.

But there is more to the story: If there are parts of the same system (anything attached to the dolly) that have to run on AC, like Teleprompters or heavy lights, use one source of AC. Everybody connected to the dolly should be on one outlet.



EVERYTHING HOOKED TO THE DOLLY BECOMES ONE ELECTRICAL SYSTEM

Even when it's called a camera speed controller or such. The groundwire is connecting everything. The ground is normally carried by the third wire in the AC cable. The ground is also carried by the outside of the video coax. The electricity that gathers on the ground wire must have a common place to drain: The common outlet. Therefore, use only one outlet. Make that common place the back of your large monitor. If that's impossible, use one power strip.

From the common place you plug in, any stray electricity should be drained to the natural ground: The earth we stand on. You have to provide a good path to that place of equilibrium. To provide no ground is as bad as a partial ground. To provide many grounds will always lead to crazy, confused, dangerous situations.

You must provide ONE ground! And only ONE!

If you can protect all power outlets with a GFI so much the better. Your large monitor does that to anything plugged into it.

LEAKAGE

Every item plugged in has a small amount of leakage from the 110V AC to its shell. This leakage must be drained to earth by a wire. If there is no ground/no ground wire, electricity will take the easiest way - through a person's body.

Electricity is not fussy: someone's sweaty body is nearly as good a conductor as a copper wire. Someone's heart muscle is a larger and better conductor and a shorter path to ground than a long, half-broken copper ground wire attached with an electrician's dirty bull prick and stuck into dry soil.

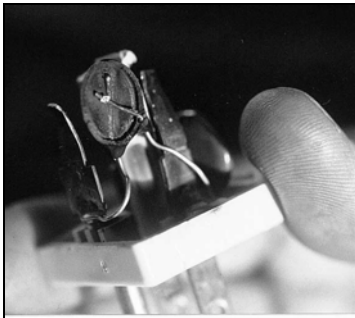
WORST CASE

What is the worst that can happen: somebody's body acts as drainage to ground and that person dies of electrocution. Are you ready to accept responsibility for this?

**First Aid for an electrocution victim:
TURN OFF THE POWER!
PULL THE PLUG!**

If you cannot turn off power, remove him/her from the source of electricity that he/she is stuck to. Pry them loose or even hit them with something that is NOT metal (non-conducting) e.g., wood (yes, a 2x4), plastic, good rubber gloves, etc., if that's what it takes. It's still better than letting the victim fry...Don't endanger yourself while doing this. Make sure there is some non-conductor between you and the victim until he/she is separated from the source of power.

MOV - SAFETY DEVICE IF BRAIN IS NOT ENGAGED



This is a small disk-like piece of electronic protection circuit that will short out when presented with more than 135 Volts. We have these devices also called spike arrestors, because they are often faster than the electronics behind it, installed on all AC cables as a first defense against spikes and higher voltages such as 220V. They are destructive and only work once, usually with a bang as loud as a .22 rifle shot. If they go think about why they went. Basically because someone made a major mistake, someone screwed up royally, someone will get fired.

Here a picture of a MOV that did its job, it exploded shorting out the AC coming into it. Hopefully there was a fuse in front of it. It seems the fuse was a little bit too large.

SAFETY STORIES

KEITH COLLEA ON "THE 13TH FLOOR", MARCH 1998

Downtown L.A., raining:

"The electricians were scrambling to hook up power quickly. The Sound-Video trailer got 220V, so the mixers and my UPS were totally fried."

DAVID SCOTT ON "BLOODHOUND, INC.", JULY 1999

"Before anybody plugged into the gennie, there was a big thump from behind us. I turned around and saw the electricians running toward a burning HMI ballast with a fire extinguisher. The honey wagon was blamed even though I saw a neutral unplugged from a distro box.

LESSON: Use batteries, otherwise, the flushing toilets will muck up your electricity.

CHUCK WEISS ON "HIGH SCHOOL HIGH", 1995

"Two generators on set. I unplugged a camera video cable (another one went to the trailer) with one hand; had the other hand on the cart. I got blown back into my chair. The electricians measure 60-200 volts between the two. There must have been a bad or no ground on the trailer (that became the ground to.)?"

FIRST HMI PRODUCTION

Rick Foster tells the following story.

"In 1971, I was given a couple of HMI's from Mole Richardson for free "just to try out. I touched two lights on the set with my hands. I got heavily shocked. I stood there shaking and unable to scream for help. Norm Tobak (the producer/director) was watching and laughed...

"This was before the manufacturer and N.E.C. required grounding for these lights. My best boy was aware enough to unplug the electrical supply and saved my life."

Isolating a Source: Rick Foster further advises:

"Put the HMI ballasts that are on the camera car on apple boxes and keep them isolated from the chassis of the car. Do not touch those ballasts. Generally, why touch HMI at all??"

Solution: use batteries.

Many times you run into situations that are so complex and have so many mistakes in power distribution it's impossible to be safe unless you use batteries.

CPR-CARDIAC + PULMONARY RESUSCITATION

Take a course at the local Red Cross or community college. Wolf Seeberg Video will pay fees and expenses. The life you will save will be one of your family members or coworkers. That's who you spend most your time with. Learn mouth-to-mouth resuscitation and heart pumping. Do not stop till a doctor or paramedic says to stop even if the victim seems obviously dead. Miracles happen in medicine more than in videoland.

COURTNEY GOODIN STORY, FEBRUARY 1996:

Courtney is doing 24 Frame playback on several computer monitors. "The electricians give me a 4 hole box and I plug in my power strip. I plug in the first 3 Sony computer monitors. All is fine. I plug in monitor #4 and there is a loud explosion. Smoke comes from the monitor and everything dies."

What happened: Sony monitors have world power. They don't care if you plug them into 110 or 220V. The fourth monitor did not have world power and did not like the 220V and destroyed its power supply, the power strip and the fuse in the 4 hole outlet.

The lesson: it happens to all of us...Use the 4 light tester every time to tell you voltage; don't trust someone else's word.

LAURIE'S TRUE STORY: AS TOLD BY WOLF

"In the earliest beginnings, when Wolf Seeberg [Video] used the same silly, slow, awkward system of distributing power (and video) as all the other video companies still do today, Laurie Seligman accepted the challenge of making it work."

"The background was bearable: It was a job for Hobbie Morrison at Michael/Daniels in the Hollywood Hills. We were shooting gorgeous models lounging for Diet-Slurp-a-Pop around a swimming pool. Wolf was impressed, Laurie was not. The weather forecaster's certain sun turned into a light drizzle."

"All our video monitors were still powered by AC. The heavy triplex cables (audio, video, AC) were tied together with plastic cable ties that ripped one's hands when coiling them unless one wore gloves. Who wants to wear gloves when policing cables??"

"So here we are, shooting all over the back yard with monitors everywhere... in the house, in the pool house, by the camera next to the pool, etc."

"Laurie, smart lady that she is, conveniently places her monitors close to the modern outlets that are everywhere. Now she has to run only the nice smooth easy-to-coil video coax. She plugs the monitors in wherever she finds an outlet."

"It's a new house and all outlets are the modern, good looking, grounded type (3 holes). Since they look so good why bother with the 3 light tester. While plugging in the second monitor she feels a little tingle when connecting the video cable. Well... must have been a quirk or something. 'Electricity and video share in the mysteries of the Bhagavadgita anyway.'"

"The 3rd monitor gives Laurie a tingly little jolt that makes her jump about three funny inches in the air. Luckily, the tingle stops as soon as she is airborne."

"WOW.....WHAT WENT WRONG?????"

"Well it's hard to understand. It was all so convenient. It's always something... If it isn't one thing it's another... It must be something in Wolf's gear... Yeah... That's right ... Yeah... Something in that geek's brain with all these wires that don't match up. So.... we'll just tell everybody and the clients not to touch the monitors and all will be well.... and whosit better fix it later, fer shure!... or could it have been... or was it by any chance... SATAN???... Well now, isn't that special?..."

NO, NO, NO, the real cause was:

ELECTRICITY FINDS THE SHORTEST PATH TO GROUND

The shortest path was Laurie's body to wet cement around the pool. She replaced the ground wire with her own body. Remember that the case of each unit (be it monitor or deck or Teleprompter) is connected to the ground pin (the 3rd pin) at the end of the AC cable. The case drains any stray electricity through the 3rd pin to ground. All these ground pins should meet in one place: one AC outlet: at the back of your large monitor.

If your body or someone else's body is the shortest path to ground, electricity will take the shortest, easiest path. So even if you have good outlets and a good ground and do everything correctly, you are not safe.

LIGHTNING STRIKES

April 1, 1992 (really!):

Lance calls Wolf Seeberg's mobile phone in Glendale at 2:10 p.m.: "I am here at SIR Gower, Stage 3, and this serious lightning storm is passing over Hollywood. The main box, the large monitor and 9" all went out

and started smelling funny. What shall I do?" Wolf, "Whatever fried, fried, so run on batteries to start with and see what works."

2:15 p.m. Lance: "Yep, all is dead and smelling. I am running on spare equipment though."

2:50 p.m. Wolf Seeberg employee arrives at SIR with all new equipment. Lance is back, fully operational at 3:00 p.m.

Steve Carter reports having seen a huge lightning bolt over N.E. Hollywood at approximately the same time. Clients reported seeing smoke come from the 17" monitor.

April 2, 1992:

Closer examination shows: 9" monitor AC & DC and video are dead. 17" monitor's AC section is fine so no damage was caused by 110V power. 75Ω arced, input video connector arced. Panasonic NV8420 deck is dead. Main box video out wires from video DA to plug #1 evaporated (20 ga. wire). Molten plastic is all over inside of distribution main case. 4" diameter burn mark on the inside of case. 3" monitor in main box is okay, but video is dead.

WHAT HAPPENED?

Obviously, no voltage spike came down the 110V supply. The 17" which takes all that first was okay. The massive electrical energy that exploded the wire and components inside the metal main box (CVU) had to be generated from outside the system. The main board runs on 12V regulated down to 8V. The regulator is rated at 1 amp. This would not be enough to melt the insulation on the wire, much less evaporate the wire itself. This would not be enough to cause several components to melt and/or explode.

The explanation is simple:

Our video system acted as a traditional lightning rod. The metal shells of all equipment are grounded and the ground goes back to the 110V wall plug. This ground is carried first on the video cable shield, then on the 3rd pin of the AC cable that is plugged into the wall. **The purpose of this ground is to do just what it did—drain any excess electrical energy away from personnel near the equipment.**

A large electrical charge (several thousand volts) discharged through our ground system into the wall. A charge building up inside a building is rare but not unheard of. The building had a wood roof and probably no lightning rod system (this would be unique in West coast construction). This charge was either a sudden jolt, such as a small lightning discharge, or a large static charge which built up in the proximity of severe lightning discharges or in and around thunderstorms. The production company is responsible for any damage to equipment in their possession. They paid.

The operator ran the system as usual with all the customary precautions. This was an unusual accident what insurance companies call an act of god.

What could have happened:

Someone could have been touching some of our equipment and made a shorter path to ground than the 3rd AC wire. That person would have become the lightning rod and possibly been hurt bad.

MONEY TRAIN

"An electrician picked up a light stand with a burning light on dry ground, screamed and stood there screaming and shaking. Someone kicked him to the ground and kicked the light fixture out of his hand. He was okay."

THE FLOOD, DECEMBER 1996

"A grip called Tom stepped out of the water onto a dry platform and held onto a lightstand. He screamed that "blood-curdling death scream," fell back in the water and passed out. He regained consciousness in the infirmary, went home for the day and reported for work the next day."

SET SURVIVAL ADVICE: DO NOTHING AND STAY AHEAD.
Copyright: "Collective Grip Wisdom"

ROCK AND ROLL TRUE STORY

From my personal contacts in the world of Rock and Roll, I hear about an average of one stage worker or musician a year is killed due to improper grounding.

Usually the guitar amp which grounds the guitar is plugged into a different or worse wall socket than the House Public Address system. The P.A. provides ground to the mike stand. When the guitar is touched with one hand, and the mike with the other, the musician completes the circuit! ...ZAPP..BOING...

PETER RAND IN "PACIFIC BLUE" 1995 TELLS FOLLOWING STORY

"Non-union operators blew up two generators in the same day. Then they switched us from AC to DC in the process and blew up just a 9" monitor, not to mention how many lights."

DOUG SCHMIDT TELLS THIS STORY

"On August 15th I am plugged into a 4 hole wall outlet on Stage 6 GMT in Culver City. The cappuccino maker arrives mid afternoon, plugs in the same box and my decks do not stay at speed anymore."

Proposed lesson: the cappuccino machine draws so much current through a poorly wired outlet that the voltage varies too much.

Conclusion: use batteries. Don't worry about cappuccino; be happy!

Editor's note: It must have been an ancient deck (pre-WWII) that governs its speed with AC voltage. Everything inside equipment from the '70s on has an internal crystal that is the reference for speed. If you feed most video decks on external reference (like a camera signal) the deck will lock to that.

GMT STAGE

In August '91, the house power outlets tested "ground okay" with the 3 light tester again at GMT Stage 6. When you look at the ground stake outside the stage you can see that it was painted before the ground wire was attached. This ground wire connects to the conduit only. This is a poor arrangement. This pathetic wiring job does NOT meet Code. Today, in 1997, GMT is still wired the same way. Someone will have to die before the insurance company forces them to fix it.

Conclusion: Use your brains, the GFD, and the 3 light tester.

MIKE SCHMIDT, GMT STAGE 3, 1991, TELLS

"Before I plugged my BNC video plug into the camera, I touched the dolly with it and saw a blue spark fly. I forgot what I did to fix this problem."

CONCLUSION: touch before plug—great idea! Never grab two electrical objects with both hands. Use your GFD first! It will save your life someday. Note that electricians working on hot panels have one hand in their pocket, if their brains are good.

MIKE SCHMIDT TELLS THIS GENERATOR STORY

"We have 4 Honda 650 Put Put generators and really had no trouble at all. Except once an assistant plugged in his battery chargers which drew too much current. Then we plugged in an 8950 and it blew up! It was a \$300 repair for a new power supply (8950 internal)."

Conclusion: It's hard to verify and draw lessons from stories that are half understood and half forgotten. So, if you have stories to add here, please make some quick notes so others can learn from your experience.

JOHN GARRETT WRITES

"I have only one story where the special smoke (they put inside electronic components to make them do what they do) leaked out on me. I was doing something for DEC, partly sync/playback. I had just finished doing playback on the rented deck and a new lighting setup was getting underway. I was running the rental (playback) machine on batteries and my own Nagra 4.2 on the ATN. The gaffer struck a 4k HMI and my Nagra died! Very lucky for me I was done with playback and still had a working machine to finish the sync dialogue for the day with. This was about 12 years ago.

After about 20 minutes of scratching my head, here's what I came up with: First, ATNs are NOT regulated power supplies, so output voltage is probably only limited by the component ratings and hysteresis of the

transformer. The old HMI ballasts were not very clean, electrically speaking. When he struck it, the heavy current dump into the lamp caused a huge back-voltage to come from the ballast. I'm on the same leg as the HMI, bye-bye DC input caps on the Nagra."

Note: stay away from any electricity that is used by HMI's, generators or stage power. Use house power.

The lesson: USE BATTERIES!

Recommendation: Read the Heathkit ELECTRONIC FUNDAMENTALS (see page 68) book in WSV lending library. You will be able to anticipate problems because you know the basics. You need voltage at a certain amperage to power your equipment.

Don't be a fool; use your GFD on any metal surface you are about to touch!

IF YOU HAVE ANY DOUBTS AS TO AC SAFETY OR GROUND, USE BATTERIES!

A NOTE ABOUT ALL THE STORIES

1. They are real.
2. They happen every day to somebody.
3. You may have been lucky so far.
4. Because these stories happened to these individuals, don't think these experiences are unique. They serve only as examples of certain situations that will occur to you sooner or later.

No harm is intended. No blame shall be apportioned. No liability implied. The stories are written up so you can learn from them.

MIKE SHORE TELLS THIS STORY

"In 1986, Hill Production Video Assist was operating with a Hill-BNC camera conversion on stage at Raleigh Studio. The dolly grip (who is a friend of mine) plugged in the old Moviola dolly in order to pump up the hydraulics... CRASH - BANG... The Video assist camera exploded and threw molten pieces of metal and glass as far away as 6 feet. Luckily no one was in the vicinity."

LANCE VELAZCO ON "GREAT FALLS HIGH" ON 7/31/98

"The two 13" monitors were on AC, plugged into a generator. The gennie died for .5 seconds, came back on and one of the two monitors lost half the picture, permanently."

TOM GRUBBS STORY

"On a commercial with Robert Stack being shot by Allen Davio. I was leaning over the dolly holding onto a lamp and dolly. I locked on (froze) to lamp bail and dolly handle. I felt the electricity go through my heart. The lamp was miswired. The grip, Bucko broke my hold with a flying tackle at my waist. The worst thing is that the mind works perfectly. I knew "they" were thinking I was joking, when I knew I was dying! I could not get a scream out. All I could say was "beep beep."

"Mel Maxwell (a gaffer) got lit up once and taught me to tap with the back of my hand any electrical gadget before grabbing it. It's become a habit."

Lowlife conclusion: tap that metal you are about to grab with the back of your hand and "feel" the electricity.

TOM GRUBBS AGAIN

"On location with a DC plant, I noticed three foot flames coming out of Home Ec's microwave. She plugged into the first available outlet. It was DC. She did not ask anybody anything. That was the end of the microwave."

MIKE WALDEN TELLS US IN 1997, AFTER 30 MONTHS IN THE INDUSTRY

"Last Dawn" January 1997, a new electric guy came on and pulled the neutral. All fuses blew in every monitor and deck. I was down only an hour. [Editor's note: needless to say, this could ruin your career.]

"Post Office Commercial" 1997, my power supply on back of cart blew up and caught fire and destroyed the power strip and video printer. [Editor: someone must have put fuses in that were larger than specified.]

12 VOLT FIRE

Wolf got smoked. On January 8, 1998, a Fahrenheit shoot for Kia, Wolf sits in the back of a pickup cab with Miles Gormley recording video assist with a combo owned by John Maffee. All of a sudden the cab fills with white acrid smoke. The driver looks dumbfounded, Miles looks dumbfounded. Wolf notices the 5ft cable from Maffee's 60Ahr battery on the floor to the combo smoking and bursting forth with little flames. Wolf, not being able to take a breath of the smoke-filled air, yells at Miles to pull the battery plug. Miles pulls the plug and the wire instantly stops burning. There is only a small surge mark on the plastic seat covers. On further investigation it was found that the fuse inside the battery was replaced with a ¼ inch bolt, carefully cut to the right length. Whatever went through the moron's head who did this and never told anybody is hard to fathom. If no one was present, the seat would have caught fire and one minute later the whole cab would have been engulfed in flames.

The lesson:

Replace fuses only with same size!

Better check your fuses before you use gear with heavy current sources – all of your batteries, large or small.

Whose fault? Who would have to pay? Well, the lawyers would tie everybody up in court for months to answer this: the production company because of an accident at work, the video assist operator for negligent operation, the video assist rental company for poor equipment maintenance, the previous video assist operator for circumventing safety equipment.

Moral:

So on the next run Wolf asked the grips/gaffers for a fire extinguisher for the cab of the pickup. He was laughed at; who needs an extinguisher before a fire occurs?

JIM NEIDHARD TELLS THE FOLLOWING STORY

"September 1986: I was working on the CineVideo stage with one of Wolf Seeberg Video systems. I was using the AC outlet on the wall next to the large master power distribution boxes. It checked out on the 3 light tester. So far so good, a normal type of stage setup. The lights were new IANIRO Italian-built incandescents. A lightstand was moved and touched the dolly. Several people saw a spark fly. The video went dead. A 9" monitor was seriously destroyed. 1 square inch of the electronics board in the main box was turned to charcoal. Luckily no one was hurt.

"How did this happen? It seems one of the new lights on stage developed a temporary fault. One of the hot wires touched the case for a moment. The electricity was routed to ground through the video system ground. This is what should happen in case of a fault like this. If a person would have touched the faulty lightstand with one hand and the dolly with the other hand, that person would have become the conductor for the electricity and would have been seriously hurt."

Why did Jim Neidhard's GFI on the other 17" not trip?? Because the dangerous current flow was not between hot or neutral and ground downstream from the GFI. Instead the voltage (most likely from another AC outlet) from the faulty light found its own path back to the shared ground at the power distribution panel.

Why did the circuit board burn? It was the smallest diameter conductor between earth ground and the high voltage on the dolly. It acted like a fuse.

Had Jim been using batteries there would be no ground and no drainage path. The dangerous electricity from the faulty light would be on the dolly and the first person touching the dolly would complete the path to ground. Dangerous!

LESSON

"You cannot trust someone else's electrical gadgets."

LESSON

It is always safer to use batteries for you because you are not creating the problem. How to deal with a faulty light? Have good grounding for all lights on stage.

DOUG JACKSON TELLS THE FOLLOWING STORY

"I was working with Video Axis equipment for my brother's company on a stage in Hollywood 1989. I am plugged into the wall. The grip's plug is in the wall on the opposite side of the stage somewhere to pump up the dolly. BANG...The video tap started smoking... Clairmont's bill to repair the tap was \$700."

LESSON

Unplug video BNC while dolly is being pumped up.

Dollies usually draw a lot of current and blow the large monitor AC fuse, if the grip were to plug in these.

LOUIS DE SOTO'S GLOWING EYE

Location: Standard Paint Store, Glendale, CA, USA, June 1995.

Video operator: Randy Baldwin. Witness: Wolf Seeberg.

Wolf tells this story:

"Louis steps on the Fisher 10 dolly and puts his eye to the leather-covered eyepiece of the Arri BL while the dolly is being 'pumped up.' He screams, 'Aye!' Jumps off the dolly, holds his eye and complains about having been shocked on the side of his face."

What happened: no one on the set could figure it out. The highest tech test instrument the electricians had was a 3 neon light tester. It read "okay" on the outlet the dolly was plugged into (the generator). Randy Baldwin had his video stuff plugged into the store house mains and that showed "correct" on his 3 light tester.

So what caused this shock? I do not really know, but it seems:

There was considerable current flowing between Louis' feet and his face. It seems that even though the generator cabling system was plugged in as currently recommended by the City of L.A. (i.e., the cable harness ground attached to the generator chassis), there was a current potential between that ground and the ground pin connected to the city power on the wall. There was a current potential between the camera and the dolly. (The screw holding the camera to the dolly was going through so many anodized surfaces that there was only a partial electrical connection between camera and dolly.) Louis made a better (lower resistance and shorter) path between the current and source and its drain.

THE SOLUTION: USE BATTERIES.

SAFETY TIP

UNPLUG the coax going to camera (at main box) while dolly is being pumped up. (This, by the way, eliminated the shock.)

So what was the problem?

Since the shock was only there while the dolly was being pumped up (plugged into the generator), the generator ground seems to be the source of all evil. But maybe it was faulty wiring in the dolly. I have seen only a few dollies that have good wiring. HMI's were being used which adds to the complexity. I have never

yet seen an electrical system with HMI's burning where the ground wire system, even if properly installed, was at earth potential. NEVER EVER!! HMI's generally do not conform to any of the consumer safety regulations like UL. HMI's seem to always have serious leakage of all kinds of currents into the electrical ground system. When using a generator with the ground system connected to it, no real earth ground drain exists. That seems to be the problem. I have often measured 15V or more between the electrical generator ground and a 1" probe stuck in the dry earth. This seems to be a problem not addressed by anybody. SO.....beware!

USE BATTERIES.
Stay away from AC power and wiring in old homes!

Power the slo-mo deck with battery and inverter.

If you do not know how to use the GFD, NEVER USE AC!

A ground is not a ground unless you thought about it, looked at the wires and tested all objects connected to various grounds. Dailies, cameras, lights, HMI's, monitors, Prop control electronics, set motor devices, etc., all have to be touched by the GFD in your hand and none of it should cause the GFD to light up.

GROUNDING, ELECTRICITY AND SAFETY EDUCATION

LA City College offers a 60-hour course (open to anyone) in electricity and safety rules. The National Electric Code of 1987 is covered. This is a 3-credit community college level course. A cash bonus will be paid 1 year after completion of course.

Part of the course covers temporary grounding. A ground rod has to be 8 feet long buried in the earth at bedrock level (below fill) and connected to the electrical system at only one point to meet code. City inspectors recommend contacting the company management, then the fire safety officer, then the City Dept. of Building and Safety if electrical conditions are not up to code (for example improper grounding). A City Dept. of Building and Safety officer will issue citations and fines on the spot for improper grounding procedures. Company owners may be held criminally liable. That includes the production company owners!

IF YOU HAVE ANY DOUBTS AS TO AC SAFETY AND GROUND,
USE BATTERIES!

ANOTHER WOLF SEEBERG - MCDONALD'S STORY

Summer 1994, DeSoto Productions.

"We are filming on a bus. We are towing a trailer with 3 small lighting generators. It's very hot and sweaty. One of the lights in the bus shocks an actor who touches it when the bus accelerates and he is thrown against it. What is done? 'We are in a rush, we can't stop to change the light, the sun is setting, nobody touch the light,' says the A.D."

Smart? NO, DUMB, very DUMB. The A.D. is exposing himself and the company to a wrongful death suit! If someone gets killed, everybody gets sued. Only the rich get off. The lawyers get rich.

THE BILL WEISS STORY

Bill Weiss tells the following story:

"Wednesday, September 20, 1989, AA Stage in Van Nuys. I am set up as usual. The video tap is connected to the slo-mo video in and the slo-mo to the main box. The slo-mo AC wire is plugged into the back of the 17"

monitor. The director is controlling the speed of an on-camera turntable with a rheostat sitting on the dolly. The rheostat is plugged in by the electricians... somewhere...everything is fine for a few hours...

"Problem. Suddenly, I notice a flash in my peripheral vision. I look up at the tap and notice a small column of smoke rising from it. The taps were changed, we get a new slo-mo, change the rheostat that shorted out internally and continue."

WHAT HAPPENED?

One of the hot AC wires inside the rheostat broke loose and touched the case. The case was touching the metal dolly. The electricity flowed from the rheostat to the dolly through the bolt holding the camera to the head, through the camera, through the video tap, through the shield of the BNC cable to the input of the 8950 Slo-mo. The shell of the input video BNC is the "case ground" of the deck. This is connected to the 3rd pin on the AC power extension. The video system's ground did what it is meant to do - drain the stray (dangerous) electricity from a faulty device to the ground directly. If it did NOT do that, a person's body might serve as the drain to the ground. This could KILL/maim/or at least hurt that person.

THE SOLUTION

What can you do to prevent danger/damage described above?:

1.) Plug the rheostat into the large monitor. Now all that would happen if the rheostat goes bad is the ground fault interrupter (GFI) on the back of the large monitor would pop, probably before any damage would be done.

2.) The rheostat may draw too much current for the 10A AC fuse on the back of the large monitor. This is a difficult situation. If you isolate the rheostat from the dolly by putting it on an apple box, you prevent it (if it is faulty) from shorting out against a good, proper ground. But you set up the rheostat operator for a surprising shock. He may touch the rheostat and dolly at the same time. He will make the electrical connection and get hurt. You have to see that all gadgets within arm's reach of the dolly share a common ground. If the rheostat cannot be plugged into your source of AC, (back of the large monitor), see that you and the rheostat are plugged into the same outlet. Put a power strip protected by a GFI there. We have several at Wolf Seeberg's SHOP.

What happened here with a rheostat applies to sound man, teleprompter etc., etc. The obie light (front fill) the electricians want to mount on the dolly or camera has all the same problems, of course.

Use a common ground for all gadgets attached to dolly.

3.) Use batteries if things get complex.

DAMAGE REPORT

The tap was fried - \$800.00 worth of damage. The 8950 slo-mo was ruined beyond economical repair. Cost of a new one - \$2500. The \$30 rheostat was changed for a new one by the electricians.

LESSON

All gadgets using AC and connected to the dolly should be plugged in at one place. Preferably the back of the large monitor. There, everything is protected by the GFI.

Isolate the 2 sources of AC physically from each other. Put rheostat on an apple box. With extreme caution, use a cheater plug on the accessory piece of AC equipment.

THE GARRY CUNNINGHAM STORY

1988 Warner Brothers Stages, Gary Cunningham tells the following story:

"Someone 'helpful' plugs a 19" Sony Color Monitor into 220V DC. The monitor emits a loud noise like crackling paper, starts to smoke and burns internally. The fire extinguishes itself."

LESSON

Always plug in yourself; do not accept "help".

ALWAYS CONFIRM THE SAFETY OF THE EXISTING GROUND OR USE BATTERIES.

THE PAUL MURPHEY, MIKE HOGAN STORY

Mike Hogan tells the following story:

"We have been working on "Tango and Cash" for months without problems. We are powering our 2 3/4" deck system off the movie lighting generator. All is well half way into the day's shoot. Suddenly, everything goes blank. Poof! - An electrician decided to switch the output of the generator from AC to DC. He did not warn anybody. Poof - went 2 decks, 2 large color Sony's, 2 9" color Sony's. Poof."

LESSON

Do not use generators, ever!

Another reason for NOT using generators. Gaffers set the frequency of the generator manually. They usually measure for 50Hz to 60Hz while under load. Do not be plugged in at this time.

PAUL MURPHEY AND TIMOTHY PRINCE STORY

Tim tells the following story:

"Paul and Tim were working on a big movie. Paul was doing video assist from his custom wired truck parked off the set. The dolly grip plugs in the dolly to pump up the hydraulics. Tim watches 200ft of video coax, that is connected to his truck, MELT down."

This story sound highly exaggerated. It takes serious amps to melt a video cable. Something different from what Paul and Tim were aware of happened. We don't know what.

CAUSE

This is an old story. Since no one was there who understood what happened, it is hard to draw a conclusion that can teach anything, except that using battery power would have prevented the problem.

POSSIBLE CAUSE

One of the hot wires in the internals of the dolly was touching the dolly chassis.

PREVENTION

Disconnect the video coax for those 30 sec. the dolly is being pumped up. Just unplug it. At either end. Why try to educate the dolly grip to plug AC into your large monitor - It's inconvenient, to say the least. It's a new habit and as we all know, he "never had a problem before." Note from Wolf: If I hear that stupid phrase one more time, I'll kill...)

CAMERA ASSISTANT GETS SHOCKED IN ARM

A&M Stage, 7/29/92, The Association, KCBS Local Spots

Wolf Seeberg tells the following story:

"The ARRI 535 sits on a Fisher 10 dolly. The dolly is plugged into the electrician's power. They say they are using a third green wire for a ground. The ARRI (Sony) tap is plugged into Stan Harrison's video system with a coax.

Stan is plugged into the house power. Several people saw a sudden arc at the camera base. There was a 1" square smoke and burn mark on the sliding base plate the 353 sits on. The Camera Assistant, Steve Hiller, suddenly got shocked in the right arm while holding the ARRI zoom control. He is wearing rubber running shoes and standing on a linoleum floor on top of the wooden stage floor. The video tap (wired through the flicker reducer in the ARRI) dies. It works OK later again when wired to the direct output. Testing the video system AC power with a 3 light tester shows OK. Testing the AC power to the dolly pump shows all 3 lights on. That's bad and we don't know what it means.

Later examination shows

The green ground wire is wired wrong. It does not lead back to the wall; it only goes to another box with a green wire. So... something is wrong with one of the 3 items plugged into the 4 hole where the dolly is plugged in. Testing this 4 hole, the 3 light tester still shows 3 lights. Now the electricians plug the green wire from the 4 hole into their green ground PIN using a green spider splitter. BIG SPARK! Only the center light on 3 light tester is on now -- meaning "Open Ground" (that doesn't make sense). BUT, a 3 wire extension cord (Stinger) to the rented Xenon follow spot starts smoking. The Xenon is sitting on an electrical hydraulic molevator which is not grounded.

Danny Buck, the Gaffer, says: "Throw that tester against the wall, unplug the ground, put in a new Stinger. Don't touch any two gadgets at the same time, wear your gloves." The shoot goes on.

CONCLUSION

Obviously there is something wrong with the electrician's power. They don't know what. I don't know what. No one wants to know of problems.

HOW TO PREVENT THIS PROBLEM

Use batteries and your video system will not create a hazard. You won't provide a second ground to the camera dolly unit.

RATIONALIZATION

Bad experiences, dangerous experiences are easily repressed or forgotten. Who wants to be the total doomsday predictor? Some potentially dangerous experience connected with AC power has happened to all of us. It really is natural to want to forget in what a dangerous electrical environment we work all of the time. So do not look on these stories as just anecdotes. Please try to learn a few of the most basic safety principles. The life you save may be your own.

THE WOLF SEEBERG STORY

May 1986, Lake Tahoe, "Hot Dog, The Movie"

This is a union shoot. We had to take a lot of ski lessons!

We are shooting nights outside Mr. Stanley's Estate (of Stanley Tools fortune) on the shores of Lake Tahoe. The whole 4000 sq.foot living room overlooking the lake is lit. Production, in their infinite wisdom, has covered the 6"-deep, handwoven, custom New Zealand virgin wool carpet (that matches the wallpaper and couches!) with a plastic painters drop cloth "to protect the carpet from the electricians' dirty shoes."

15 openfaced 2K lights are plugged in. Everything is running off of a big movie generator on the 40 footer. Aggie, the gaffer, happens to be standing next to a baby mole as it shorts out. The low amperage fuse in the paddle does not blow. The high amperage fuse at the generator does not blow. Instantly, the generator speeds up to make up for the voltage drop compensating for the short. A 13 V increase over 110V is enough to blow bulbs. All 15 lights in the house see a much higher voltage instantly. 15 light bulbs explode at once. Thousands of pieces of molten glass fly out of the lights hitting the walls and floor. A few small fires are started in the virgin wool. Aggie kicks the paddle to the shorted baby out of the 4-hole. Damage - only \$15,000. The insurance paid. That was the old days. Today they don't pay, they sue.

LESSON

Do NOT plug into a generator EVER.

EXCEPTION

The battery chargers are pretty well protected. All you are doing with them is charging unattended batteries. Feel free to charge your batteries off the movie lighting generator or even the little generators in the motor homes. Even a Honda 650 putt-putt will power your chargers and fill up your batteries.

RICK FOSTER TELLS THIS STORY

"We were using F & B Ceco's equipment with #8/3 strand wire to get 220 single phase. The sound system was plugged in. It blew. Power amps and all."

Why: The power "Y" as rented from F+B, was wired wrong. The sound mixer, Lewis Rosen got 220V down his AC cable.

LESSON

Just because it is rental gear does not mean that it is wired correctly. The opposite is usually true.

THE BOB KERTEZ STORY

Bob Kertez is shooting a music video on video on SIR Stages in 1985. He tells:

"We are doing a dolly shot and the dolly touches a 10K light stand. Big flash of light and the two arc weld themselves together. A puff of smoke comes out of my \$37,000 video camera. After looking for a cause I notice that the arc weld blew a 400A fuse in the main power panel. We had someone come down with an acetylene torch to cut the 10K from the dolly. As the gaffer replaces the hot fuse, I notice that all 3 legs are fused. So the panel is 208V 3Ø. The best boy thought the ground leg was the neutral leg."

If you work with people like that, you better learn to protect yourself.

Note: Ground is never fused. Neutral leg is never fused. If there is a fuse in central leg, it could be 440 (like in supermarket freezers).

THE SCOTT WARNER STORY: AUGUST 1989

Scott Warner tells the following Story:

"I was working at NBC Burbank. My orange AC cord was lying on the floor not yet plugged in. A quick electrician 'helped' out by plugging it into the nearby 4-hole 110VDC while I was looking for good AC house power. Moments later, a monitor blew up."

LESSON

Do not leave loose plugs lying around.

Luckily, this only took out all internal fuses in an 8950, a Panasonic 17" and a Sony 19" industrial color. All that equipment was down for the week for repair. The parts bill was only \$ 0.60 for fuses. Labor, however, was \$300. Lost equipment rental time because of repairs - \$900...Scott says the clients never noticed that anything broke.

LESSON

Always be in control of all of your cables.

THE JERRY RIGHTMER STORY: SPRING 1989

Jerry was working on a 10-day cruise in the Caribbean. His friend, the director, Marc Coppos, couldn't do without working 15 hours a day on board the luxury liner. The electricians were using heavy large transformers to convert the ship's 220 VAC 50 Hertz to 110 VAC 50 Hertz for the lights. Someone "helpful" decided the 8950 slo-mo power cord needed to be plugged in somewhere. "They" found a cheapo Radio Shack solid state 220V to 110V converter. Something popped. \$500 and two weeks later, the 8950 was working again.

LESSON

Thanks for helping out, but...don't.

Remember: even when the AC Power switch is "off" on the front panel of the 8950, it is only partially disconnected from the wall. The internal power supply is always on. Why did they build it that way?? "Infinite wisdom of ancient Asian mind may withstand many probes...but not this one..."

WHAT WENT WRONG?

The 8950 needs good AC. That means 60Hz sine wave. The Radio Shack converter puts out a square wave like many small cheap converters. All equipment with transformers at the internal power input (that's just about all of our stuff) will eventually blow with these converters. (The transformer will short out its primary windings.) These cheap converters are made for razors and hairdryers, not video gear.

RUN THE 8950 ONLY ON OUR 12V-110V CONVERTER from a battery.

DON LUSBY'S RELIGIOUS EXPERIENCE AS TOLD BY BEVERLY FELDMAN

March 1991 - Feature: "Skinning Through"

Beverly said: "Don had plugged in his Audio feed. Sometime later, I saw, with my own eyes, the Sony Combo VTR explode in a flash of white smoke and acid smell."

"Don admitted that it was his fault. I figured on bad power. Lusby thought the problem was 'one of those little, little things that you don't see.' Then he 'fixed' it."

Beverly's moral: She is going into real estate.

What happened: Hard to tell what happened really. If no one knows the basics, he/she will never learn. It was another lucky case where no one got hurt.

How to prevent accidents:

If you have no idea of how power is distributed on the set, you will not learn from this incident.

The purpose of this manual is to give you an idea how to plan a complex electrical setup and prevent accidents. You as an operator are responsible to prevent accidents. If you choose to ignore basic safety rules as explained here you will be held responsible and criminally liable if someone gets hurt. So wake up and learn and practice vigilance every day.

AARON KATZ TELLS FOLLOWING STORY

"Do not ever let a Gaffer plug you into anything!"

"On ALMOST AN ANGEL, we were working nights and this Gaffer, Dwight, plugged me into 220V. The monitor, panabox and sync generator blew. The monitor made a BIG bang. We replaced fuses and had things working again in one hour. No one noticed. The monitor had to be fixed later."

"I was filling in for the last four days on ALL I WANT FOR CHRISTMAS when the neutral wire got kicked out. I had a voltage regulator on my cart. It did not go. All decks blew up."

"On ALWAYS, I noticed that the cameraman was getting shocks. We didn't know what to do. I was working with a PANA flicker free box. I was plugged in on House power; nothing else was connected to the dolly."

WHAT HAPPENED?

The 3rd pin of the AC plug probably did not provide a good ground. The cameraman's body drained any leakage. All the video equipment shells are connected to the dolly by the "shell" of all video cables.

AARON KATZ AT UNIVERSAL

December '91,

"I am working at Universal, Stage 26 on SNEAKERS. The electricians provide AC power. There are no city electrical outlets on stage. After lunch, I plug my AC safety box (spike arrestor and fuses) into the back of a large monitor.

BANG! Smoke, burning smell from AC box. All fuses went for me as well as the 24 frame computer guy's. We fixed all fuses. The electricians gave us a new power feed.

The next day, the same thing happens. **WHY?** No one knows and the ones who know won't tell because it will make them look bad, and liable for damages."

LESSON

"Don't trust anyone. Always plug everything into back of large monitor so you have spike arrestor and GFI protection."

LIABILITY

You as operator are responsible for safety. If you choose to ignore safety, you may be criminally liable and get stuck in jail when someone gets hurt. You know what the lawyers are after! So wake up and learn!!

CHAIRS

Biggest suit in the production industry in 1990: An actor sat down in a director's chair. The chair collapsed. The actor hit the floor. Suits abound. A lot of people's time is wasted with depositions and appearances. Lawyers got rich and fat. The insurance company settled out of court.

HMI

A lighting company manager tells the following story:

"An electrician on a ladder touched 2 HMI's. He fell off of the ladder. He got hurt. He filed a claim. The lighting company, against their own insurance company's advice (who wanted to settle), fought it in court and lost. 5 years later the insurance company for the lighting rental company had to pay half a million.

DAVE MCGRAW STORY

Dave McGraw has been doing video assist since 1981. In July 1991, he tells the following stories.:

"I have known five people who were killed while working on film shoots. I never take anybody's word for what's safe."

"I have seen four or five taps being destroyed:

- Sean Penn was driving a car with a BL camera sidemount in the movie COLORS. He was driving a high speed chase down an alley in Watts. 108th and Wilmington. 3/4 of the way down the alley was a telephone pole. Sean, without rehearsing, drove down the alley, smashing the back of the BL camera into the telephone pole and spun the camera on its mount. The BL was destroyed. The video tap was dangling on the coax. It fell back through the window into Sean's lap. As I approached the car, the tap went flying out the window and hit the sidewalk. It was a total.
- Blake Edwards' shoot 2 AM. An electrician dropped the neutral off the generator. My gear saw 220V AC. All fuses and the large monitor were destroyed.
- Another friendly, helpful electrician plugs me into 110 V DC. Wipes out everything. The big capacitor in large monitor melted and juice dripped out through the bottom.
- I've had one or two occurrences of tingles through the dolly when the dolly was being pumped up.

- I will not get on a camera car with more than 8 people on it. I know safety rules are rules, not guidelines. Kerry, a camera assistant, was killed on a car shoot somewhere. I've known 3 people who got killed on camera cars.
- People were on the camera car in the DUKES of HAZARD accident. (Totally overloaded). 2 got killed on this one.
- Dar Robertson was a friend of mine who got killed because there was no ambulance on the set.

HELICOPTERS - JUST SAY NO!!

"Helicopters: Remember the TWILIGHT ZONE movie. Stay away from helicopters. "

"DO NOT TAKE ANYBODY'S WORD FOR ANYTHING!"

Helicopter Shots Garrett Brown writes:
4/1/98 garrettcam@aol.vom 5:37 AM PST

I suggest you do not do helicopter shots in general. I have lost five friends in the business due to crashes. If you must, hire an experienced film pilot..... GB

VOLTAGE STORIES STEPHANIE STORY

Stephanie (formerly Harley) was working on JO JO DANCER. We hear that a new electrician pulled the neutral on her twice in the same week. Both times her equipment saw 220V and blew up.

JOE PENDALL STORY

Joe Pendall tells of working on HONEY, I BLEW UP THE KIDS. A helpful electrician plugged his equipment into 110V DC. Everything blew up except for his 8420.

MAGNETIZATION

A cautionary tale: As a kindness to various customers I lend out a Sony 9020 monitor from time to time. One cameraman brought it back on the first occasion complaining of dreadful color and when I checked it was indeed heavily magnetized. The entire frame needed serious degaussing. I lent it to him again a few weeks ago and he again complained that as soon as he switched it on the colors were all over the place. Once more I found it magnetized to an incredible level. Even large speaker magnets would have a job producing those sort of effects.

I knew that it had been fine up until then so I suggested that it must be to do with the way he was transporting it. He is a good sort and had been very careful, he assured me. Having no flight case he had sat it in the passenger's footwell of his (diesel) Landrover for safety. This solved the problem.

As 4x4ers will know the battery is housed under the front passenger seat cushion and the main cable to the starter motor runs under the floor there. At start-up it carries several hundred amps - potent stuff. We both had a good laugh as I knocked the odd Tesla off once more.

There is a lot of **unnecessary panic about magnetization of tapes** - they are usually very hard to hurt. But I reckon this sort of scenario is probably one to take seriously. Don't leave the stock in a box in the footwell of a Landrover - and even be a bit careful about the passenger seat.

Chris Woolf, Britain Chris the Woolf <chrisw@mail.zynet.co.uk>

Also watch out in tube trains (the underground in England), don't put the box of tape on the floor if you are in the sideways seats, the traction (drive) motors are right underneath! Rupert Brun

THE TUBE TRAIN STORY IS AN OLD URBAN TALE !

The motors are NOT under any sideways facing seats on (London) tube trains and I remember that when I was in the BBC in the 1960's I was told that this was a good way of getting a taxi rather than using public transport.

COLD WEATHER EXPERIENCE:

I recently had a job in which i had to record at the USGS ice core storage facility. We had several locations in this facility, we arranged our shooting sequences so that we started in the warmest areas first and then proceeded onto colder locations and then out of the facility all together. Our warmest areas were -8 Fahrenheit our coldest were -38. If we went from the -38 environment to the -8 environment we would have had a significant risk of condensation Here is what I did, i wrapped my DAT machine in a heavy fleece coat. I let it warm up-about an hour and fifteen minutes by playing a blank tape once in the cold room. The DAT machine was nice and toasty, being a stelladat I this really was not a great feat. I used a Sanken CS-3 shotgun and aspen Nimh NP batteries. I was getting about one half the life that i usually get with the aspens. When i got a significant break i plugged into a AC power supply-the DAT machine was never powered down. I treated the sanken very carefully-pistol grip only, used the least amount of cables, and tidied all my cables as much as could to reduce the risk of cracking them.

When we were done (in the -38 location) **we placed everything in heavy plastic trash bags. Squeezed out as much air as possible and sealed the bags.** We then returned to our staging location which was 70 degrees. We did not open the bags for at least an hour and half. i was able to open the stelladat bag because it really never got completely chilled. We could not wrap our tripod it was too big-it was dripping wet in less than a minute when we warmed up.

that's my experience with extreme cold - a bad day not trim my nose hairs-ouch! And did my headphones ever come off? NO!!!!

john gooch philadelphia, PA

CITY OFFICIALS WHO HAVE THE FINAL WORD ON SAFETY

LA CITY DEPT. Of BUILDING and SAFETY:
Bill Greenwald (Head of Department: said to know his stuff)

Electrical code specialist advises and enforces electrical codes in LA. He shuts unsafe conditons on a movieset down. He can impose fines on the spot! He might prosecute. Unfortunately his office is mainly concerned with situations where the public is present: Audience shows.

PHONE #: (213) 485-2333
ADDRESS: 200 N. Spring St., Rm. 460, Counter P, Los Angeles, CA 90012

His office covers only LA City. Each city has its own different building and safety inspectors. There are 127 different cities and inspectors around LA. LA has 2 OSHA (federal) inspectors. California OSHA is the California State Department of Safety. They have some safety inspectors.

LA COUNTY: Connie Galavco (Administrator).

PHONE #: (818) 458-3180
ADDRESS: 900 S. Fremont, Alhambra, CA 91803

Both of these people are mainly concerned with new home installations. It is really hard to have them show up anywhere in less than 30 days.

128 DEATHS IN TWO AND A HALF YEARS:
OSHA published statistics that caused this article:

"OSHA believes that there have been far too many unnecessary injuries and deaths from electrical accidents. It reported 128 fatalities and 98 injuries caused by unsafe electrical work practices from April 1984 to December 1986."

Economist Paul Leigh of San Jose State University and Stanford University Medical Center wrote in a recently published study that **300 people a year die of electrocution accidents at work**. The study was published in the Archives of Internal Medicine, a journal published by the American Medical Association. The authors used 1992 as a base year, using analyses of data from several government agencies and other studies.

GFI OR GFCI - WHAT IS IT?

Every day, people are injured or killed by electrical shock in their homes... even though the electrical systems in those homes include circuit breakers or fuses as safeguards. Why?

Because a small amount of electrical current — an accidental "leak" — that is weak enough to flow without tripping a circuit breaker or blowing a fuse, may still be strong enough to kill. Silent, invisible, potentially lethal, this hidden hazard is called "**ground fault**".

HOW GROUND FAULTS HAPPEN

Ground faults can occur in any electrical appliance or extension cord — in fact, in anything that carries electricity.

***insert picture here (scan from GE brochure)

Here's an everyday example. Electrical current flows into an appliance (a dolly, a monitor, a light) when you press the ON button — and leaks through broken insulation, inside the appliance. The main portion of the current continues on its normal path, with enough strength to operate the appliance. The leaked portion of the current flows into the metal housing of the appliance.

When you touch the housing, the leaked current flows through your body to the ground. If you're lucky, you get only a slight shock and you can pull your hand away.

HOW A TINY CURRENT CAN BECOME A KILLER

Part of a regular electric current leaks through broken insulation, and into the metal housing of an appliance. It is now a ground fault.

Electrical current is always seeking a path to ground, and will use the human body as a conductor or path to ground. The ground fault will pass into an appliance user's arm, through his chest and heart, to his feet and to ground. This problem is particularly acute in wet and damp areas, as dirty water is an excellent conductor of electricity.

If the user had been standing in a dry area, but touching a metal ladder or pipe with his other hand, the ground fault would have flowed from arm to arm — through user's chest and heart.

HOW DANGEROUS ARE GROUND FAULT SHOCKS?

Ground-fault shocks range from a light tingle — to almost instantaneous electrocution. Ten milliamps of ground-fault shock — 10/1000 of an ampere; not even enough to light a Christmas tree bulb — can cause a muscle contraction that will keep the victim from releasing his grip on the faulty device or wire. This is called the threshold of "**Let-go-Current.**" Currents above 20 milliamps make breathing difficult and unconsciousness possible. Sixty milliamps — enough current to light a 7 watt light bulb — can kill. The table below indicates the possible effects of a ground-fault shock.

Perception Current - women	0.3ma
Perception Current - men	0.4ma
CB3 Trip Level*	6.0ma
"Let-go Current" - women	10.5ma
"Let-go Current" - men	16.0ma
Electrocution Level - adults	380.0ma

*Trip level established by UL

GFCI IS THE ANSWER

As you can see, even a low-amperage ground-fault shock can be deadly. But now there is a device to safely limit the duration of ground-fault shock exposure. It's called a Ground Fault Circuit Interrupter – or GFCI. It is built into our 17" B&W monitors and some special outlet boxes we have. Ask for them if you need to use AC.

HOW GFCI WORKS

Electricity travels in circuits. It flows, let's say, from a wall receptacle through a turned-on appliance and then back to the receptacle. And normally, the same amount of electricity that flows from the receptacle *returns* to the receptacle. But now let's say there's a leak—a loss of current escaping from the normal flow of electricity—because of a ground fault in the appliance. In that case, the same amount of current won't flow back to the receptacle. If the flow loss is as much as 6 milliamps, the Ground Fault Circuit Interrupter shuts

off the electric power within 1/40th of a second. About 30 times faster than a heartbeat! Normally fast enough to prevent serious injury.

The 1981 National Electric Code (NEC) requires certain receptacles to be protected by Ground Fault Circuit Interrupters in new construction:

on all 125 volt, single phase, 15- and 20-ampere receptacles installed outdoors of dwellings
in the bathrooms of all dwelling units including single-family, multi-family, and mobile homes
on all 125 volt, single phase, 15- and 20-ampere readily accessible receptacles in garages of dwelling units
on all 125 volt swimming pool equipment and receptacles.

The Code also recommends GFCI protection for receptacles in workshops, laundries, and kitchen circuits. It does not deal with temporary installations like movie lighting.

In addition to these, Ground Fault Circuit Interrupters are desirable safety features for any circuits where portable electrical equipment — a lawn mower, hedge trimmer or barbecue, for example — is used in a damp area. And the reasons are simple. Electrical insulation can break down without being seen or heard, so current leaks can occur anywhere electricity is used. And current leaks pose special hazards near water or damp areas.

You got 'em, so use 'em! They will save your or someone else's life!

BATTERIES

RULE OF THUMB

The main battery (60 Ahr) is good for 12 hours on B/W system.
The large monitor battery (2 x 20 Ahr) is good for 10 hours on 17" B/W monitor.
You have a battery lifetime chart under the foam in the main box. USE IT!

You will ruin a battery if you use it till it's "empty". When people talk about cycling batteries they are talking about Ni-Cad Cells, not our lead acid batteries. Even NI-Cads should be taken down to a certain voltage, not emptied. No battery will live much after it has been emptied.

CHARGE BATTERIES EVERY NIGHT

Always start the day with a fresh charge. And, why not plug the batteries into the charger at lunch? It gives you that extra stretch for the 13th hour. Why not plug the second 2x 20Ahr battery in on the set?

12V 40Ahr:

Typically you will have a 12V 40 AHR Battery (with one 4 PIN XLR connector) [or the 60A] hooked to the rear of the cart to run the main Video Box. It sends power to any small B/W monitors plugged in with the 7 Pin gray cable.

Unplug this battery when you are forced to go to 110 V AC off the wall. Otherwise the power supply on top of the 17" will overcharge this battery and ruin it. Main boxes have a battery OFF switch. If you unplug, you will have to throw this switch first to save the pins on the cable.

12V 2x20Ahr or 12V 2x25Ahr:

You will also have the double 12V 20AHR batteries (two 4 PIN XLR connectors) for the large 17" monitor. The cables for this hook up are kept in the large monitor case.

HINT

Keep one or two of the small 20 AHR Batteries nearby as spares to power:
extra 9" Monitors
the extra deck for a quick remote record or playback
the tap, if the camera assistant runs out of batteries. (Video Taps love eating batteries; they draw 1.2 A. !!)
Keep checking with the battery tester.
as a backup for the 40 AHR on the Cart
use two of these as a spare for the large monitor.

MAIN VIDEO BOX

To check the 12V 40Ahr battery powering the main box you have 4 indicator lights in the counter of the Panasonic 8420 video deck. The deck will shut down when the voltage gets too low, so you can't kill this main battery too badly. Stay on top of the state of charge to know how many hours of battery operation you have left. When you see the last bar blinking, watch out - 10 min. left maximum.

17" LARGE MONITOR: (THE BATTERY KILLER)

This is the **battery killer!!** Keep on top of the state of charge with the charge indicator. You got 10 hours max. With 40Ahr battery, 13 hours with 60Ahr battery. Plug the 40Ahr in at lunch!! Turn the monitor off whenever no one is watching to battery extend life.

BATTERY CUT OFF IN 17"

Most 17" monitors will pop a button under a rubber protector on the side of the monitor with a definite noise just before the battery is empty. Plug in a new battery and reset the button.

**CAUTION: You will DESTROY the DC batteries if you use them until they are empty.
Use the Battery tester frequently.**

STATE OF CHARGE: (HOW FULL ARE THEY)

Be aware of the state of battery charge (how much life is left in them) as you are using them. There is no magic to batteries. Their capacity is in direct relationship to voltage left.

You have a battery charge indicator. It has 5 LED lights that reads the percentage of charge. Use it to check the two 12V 20Ahr batteries powering the large 17" monitor. Checker works only on batteries that are disconnected (no load). Unplug the load; wait 5 minutes, then check the battery. Check the battery condition regularly. Set your watch count down alarm to remind you. Do not try to "stretch" the batteries past 25%. If the meter says empty, that is 0%, disconnect immediately or you will have bought \$ 200 worth of batteries (plus installation labor charges). Our battery state of charge indicator is good for our batteries only!

CAPACITY: (HOW LONG THEY LAST)

Battery weight is in direct relation to their capacity. There is no magic. Capacity translates into hours of use. Capacity is measured in Ampere hours (Ahr).

Your batteries are all 12 Volt:

- 1 Ahr (for inside the deck)
- 20 Ahr (as general auxiliary), gray Pelican case
- 40 Ahr used for main box in Pelican or Fiberglass case
- 60 Ahr used for longer days on main box
- 2x20 Ahr (case with two XLR connectors) used for the large monitor.
- 2x25 Ahr (case with two XLR connectors) used for longer days on the large monitor
- 80 Ahr used for very long days on main box, or the 500 watt inverter, or 2x 13" color monitors

Example:

A 20 Ahr battery discharging at a constant 2 A (Amperes) will last 10 hours.

20Ahr: $2A=10hr$

How about a safety margin? Disconnect battery at 25% reading; that's about 11.6V.

You have to run a battery totally down to 0 volts only once and it is a throw away.

CURRENT CONSUMPTION

Large monitor 17" use two 12V batteries in one case:

First 12V battery draws 2A

Second 12V battery draws 2A

You have a battery box with two 20 Ahr batteries. They are wired to be in series inside the 17". That gives 24V at 20Ahr. $20Ahr/2A=10hr$. This means that you will get at best 10 hours of useful life out of these batteries. So change batteries at lunch time. If you are a battery miser and turn off large monitor during lengthy setups, they will last you all day, easy.

Generators are OK to plug battery chargers into. That's about all they are safely useful for.

MAIN VIDEO BOX	B/W	Color
9" monitor	1A	3A
3" monitor	1A	1A
Deck	1A	1A
Worklight	.5A	.5A
TOTAL	3.5A	5.5A

2nd 9" monitor	1A	3A
TOTAL CURRENT USED	4.5A	8.5A

Example:

The Main Video Box uses 3.5 A (B/W) and you have a 40 Ahr battery. You will get:
 $40\text{Ahr}/3.5\text{A} = 11.43$ hr useful hours of operation.

It's easy to conserve power by switching off what you don't need for the moment. Switch off deck's power and switch VTR/LINE to LINE. Switch off your small monitor when you do not need it. You save 2A, nearly doubling the life of your battery.

OTHER EQUIPMENT (Current use):

Video Tap (old)	1.2A
2" or 4" Watchman	.7A
Transmitter	.4A
D.A.	.2A
Extra 9" monitor	1A
Tuner Diversity	1A
Tuner Sony1110	.2A

The Video Tap used to be the main battery killer. No one ever checked the voltage of the battery until the picture went soft. This is too late. By then the battery is down to 6 volts and dead forever. Might as well throw it in the ocean. Luckily now the CCD taps are powered by the camera battery because they draw so little current.

HINT

Expecting a DC only shoot? TAKE EXTRA BATTERIES. Take as many as make you comfortable. We have plenty.

LEAD ACID BATTERIES TRANSPORTATION SAFETY :

All of our lead acid batteries are unregulated by DOT for transportation by truck, rail, ocean and **air transportation** because they meet the requirements of 49 CFR 173.159 (d). The only transportation requirements are: The battery must be securely packaged in such a way to prevent the possibility of short-circuiting.

The battery and the outer most packaging must be labeled "NONSPILLABLE" or "NONSPILLABLE BATTERY".

All of our lead acid batteries are unregulated for **air transportation** because they meet the requirements of **Special Provision – "A67"** as promulgated by the International Air Transportation Association (IATA) and the International Civil Aviation Association (ICAO). They also meet the Vibration and Pressure Differential Tests of the International Maritime Dangerous Goods (IMDG) regulations.

AIRLINE TRANSPORT

All of our batteries are 12V Sealed Lead Acid. They are safe to transport or use in any position even on aircraft. They will never leak or expel dangerous gases if treated properly, says the manufacturer. The only thing that will make them gas is charging them when they are very hot. We have letters from the Federal Aviation and Department of Transportation Authority that approve airline transport. If shipping agents at airports want to see those, we have them. Show them only if asked for. See appendix for Xerox.

BATTERY WIRING

All batteries have 4 pin XLR connectors. Pin 1 is negative 12V, pin 4 is positive 12V. This wiring is the standard as in most recent ARRI camera batteries.

Sony professional Video gear uses the same plugs, same polarity. Sony batteries are usually NiCad (Nickel Cadmium) voltage 14.4. Not compatible with ours or with our chargers.

All video taps modified by Juergen or Otto Nemenz or CEI or Clairmont are wired to this standard.

Heavy duty batteries are wired 1=2, 3=4. Each pin is good for only 6A if you parallel two pins, they are good for 12A, of course.

Panavision uses their own 24V 3 pin XLR arrangement. Not compatible. Do not use their batteries on any of our stuff.

OVERDISCHARGE OF BATTERIES

This is the easiest way to ruin a battery. You only have to do it once, then you might as well throw the battery away. Use your state of charge indicator.

PROTECTION OF BATTERIES

Remember the main deck (8420 VHS) will shut down when the deck sees less than 11 Volts or so. This will protect the main battery. The 17" monitor will shut down when one of the two batteries reaches approx. 11 V. This will protect the battery powering the large monitor.

CVD-500 PROTECTION

The 250W inverter will beep and then shut off when the battery voltage is too low.

HOW TO POWER 13" COLOR MONITORS WITH 80A BATTERIES

One 80A battery has two parallel outlets. Plug in one 250W inverter into each monitor. Each monitor draws 6A from the battery.

Sony 13" buzz on inverter. Use the ones in black cases. This baffles the buzz so it's acceptable on the set.

Request sine wave power supply. This computer ready power supply puts out a pretty clean sine wave, so you do not get a buzzing monitor.

2 monitors=12A 80A:12=6.5 hours

In the real world it's only five hours! The harder you draw from a battery the less it puts out.

CHARGING BATTERIES

HOW TO CHARGE BATTERIES

The batteries will charge only at room temperature.

Plug charger into battery. If batteries are cold, they will absorb charge slowly as they warm up.

Plug 4A charger into 110V AC. Notice that the AC tally LED light comes on. Notice that the charge LED light comes on.

Later when charge light goes off, battery is full, and ready to use. (Light starts blinking at 96% charge).

You may leave batteries on charge as long as you like; it is good for them.

Provide ventilation to chargers as they get very hot and will ignite a blanket or carpet and cause a fire.

It is okay to plug charger into generators. The chargers are pretty much fool-proof. They, too, are on a regular maintenance schedule.

IN AN EMERGENCY RUSH?

Use larger heavier chargers. We have 10A models.

In an emergency, parallel 2 chargers to one battery with "Y" cable. This fast charging reduces battery life considerably.

WARNING: You will destroy the DC batteries if you charge them when they are hot (hot, like in the sun in the desert).

Do not charge batteries that are HOT (over 50° Centigrade, 105° Fahrenheit) from sitting in the sun, or in a car trunk. They will "gas out" (awful smelling explosive fumes) and self-destruct instantly.

COLD WEATHER BATTERY NOTES

100% battery capacity out of lead acid cells for "Normal" temp:

From 30°F-120°F or 0°C-50°C.

With very cold battery, plug in charger in cold battery. Put charger and battery in warm room. As it warms up overnight (slowly) the battery will charge. If it's very cold like -15°F (-25°C), you get 50% the capacity out of a battery. So a 40 amp hour battery will act like a 20 amp hour battery.

Secret trick if you can't take the batteries to the motel at night: wrap the battery in an electric blanket and keep it plugged in all night. How to keep smaller batteries warm all day in freezing weather: throw the battery with chemical hand warmers inside a picnic cooler. Don't open the cooler. They will stay nice and toasty and as long as they are over 32°F (0°C) they will give you 100% of what's in 'em.

AND...Cold weather battery

Battery capacity for "Normal" temp: From 30°F-120°F

Low 0°C-50°C Battery 50% capacity at -25°C = -15°F

With very cold battery, plug in charger in cold. Put charger and battery in warm room. As it warms up overnight (slowly) the battery will charge.

4A BATTERY CHARGERS

These are the separate boxes with two LEDs. They come 3 to a pelican case. The chargers are all interchangeable. Chargers are sophisticated and expensive. They have AC fuses. They are pretty much foolproof. They automatically sense and supply battery requirements.

RATE OF CHARGE

The battery first charges at a high rate. Later, when charge light starts blinking indicating that the battery is 96% full, the charge rate switches automatically to float rate and charges battery up to 100% and maintains that charge. They will not overcharge

OPERATING TEMPERATURE RANGE AS PROVIDED BY MANUFACTURER

	Fahrenheit Degrees	Celsius Degrees
CVD-500	41-104°	5-40°
Computer		
5" LCD	Some die at 95°	
Sceptre 12" LCD	32-122°	0-50°
13" monitor	32-95°	0-35°
20" monitor	32-95°	0-35°
GV-S50	32-104°	0-40°
Lead Acid Battery – discharge	5-122°	-15-50°
Lead Acid Battery –charge	32-104°	0-40°
Charger	32-95°	0-35°

We find these values are very conservative.

AC SOURCE

The preferred place to plug the chargers in is, as always, the wall (house current) rather than a generator. They are well protected though and it would be real hard for a generator to hurt them. If all you've got is a generator, use it. Motor homes, emergency vehicles, and fire engines always have generators in them!!

IF AC DIES, THIS WILL NOT HARM CHARGER OR BATTERY

If the batteries are plugged into the charger, and if the charger is not plugged into anything (or the 110 AC dies or the generator dies), the batteries will not discharge into the charger.

CHARGE IS MAINTAINED DURING STORAGE

If the fully charged battery sits for 2 weeks without charging it will lose 10% of its charge and after 6 months it will have lost 50% of its charge. This does not do any harm though. Just charge them. If you are not using the batteries, recharge every 6 months.

9A XENOTRONIX BATTERY CHARGER WITH LOUD FANS

This 10A charger puts out a continuous 9A with the fans on. This charges large batteries over 30Amp/hours very quickly.

**On high 9A rate, use with 40A and higher batteries only.
For all other batteries, switch to normal rate.**

The 9A charger is a heavy duty battery charger. The two fans keep it cool so it can put out maximum current to the batteries. The smaller 4A chargers without fans reduce their output to approximately half their rating once they get hot (after 1 hour) and then charge batteries slower. This charger will charge 80A batteries in 10 hours from 0% capacity (11.8V) to 100% capacity (13.0V).

Fans off: If you turn the fans off the charger will still charge but at a slower rate. If possible charge batteries at the slowest rate convenient. It's much better for the batteries in the long run.

This charger (since it's an antique) needs to be unplugged from battery after 24 hours. Only this charger is not idiot-proof!

UNPLUG 9A heavy duty Xenotronix CHARGER AFTER 24 HOURS. All others turn themselves off.

20A + 10A SWITCHING CHARGER

Totally automatic. Not hot.

CHARGING 80A BATTERIES

One battery – two parallel outlets. **Charge with one 20A charger only!** Switch 10A or 20A charger to "WARM" and "GEL". If you are in a hurry, switch charger to "COLD"; this is hard on battery. Only in dire emergency charge with two chargers. You will reduce battery life from six years to one year if you keep doing it. You will extend the life of the battery if you use the smaller chargers.

One 80A battery, one 20A charger.

12A current drawn through one 4XLR connector (1=2 3=4) will warm it up. This is okay but less current is preferred. (Each pin is okay for 6A current)

20A through a big fuseholder (as inside 80A battery) will heat up 40A fuse and holder where fuse is clipped in. That's okay but, again, less current is preferred.

Why are hot connectors bad? It means they are under-designed for the current used. There is too little metal for the current used to pass through. When connectors get older and dirtier, they will get hotter. Finally they will get so hot that something melts, something will short and not work. If connectors are not fuse-protected, something will catch fire.

Hot connectors mean trouble! Check them occasionally.

Connecting four 13" monitors on one connector will draw $4 \times 6A = 24A$. It means warm wires and fuse. That's okay in an emergency only.

If you use battery charger as uninterruptible power supply, always plug it directly into battery for best contact, least heating. NEVER "Y" out charger! Never charge two batteries with one charger.

20A + 10A CHARGER: HOT/WARM/COLD SETTINGS



Charger must be switched to HOT if battery is used at same time to power something.

Charger is never switched to COLD unless it's freezing. It is not a good idea to try to charge batteries below 32°F or 0°C. Room temperature 60-70°F is best!

Normally charger is switched to WARM to charge batteries quickly.

40A FUSES ON 80A BATTERY - MAX. CURRENT 12A!

80A battery uses 40A 3AG fuses. Why?: Plug in 2x 250W inverters each feeding one 13" monitor and turn on both monitors at the same time and you need 40A fuses to be able to handle the large turn on surge. This fuse is too large for normal continuous operation and it is conceivable that if you draw 39A continuously, wires and connectors will heat to such a temperature that they will melt down arc over and cause serious damage: fire not excluded. So even though the 80A batteries are fused, be careful! Keep track of current you are using. Do not draw more than 12A per outlet.

80A Batt with AGU fuses:

The big fat fuses will hold up to 30 amp safely.

TO CHARGE SMALL PANASONIC DECK BATTERY

A battery should be drained to the point where the deck shuts off. It takes 10 hours for a full charge (the ones that get inserted into 8420 deck).

DISCONNECT AFTER 10 HOURS.

You need the CHARGER ADAPTER CABLE for small batteries :

Plug any of the regular large chargers into adapter, and connect to battery.

Disconnect these small batteries from charger after 10 hours maximum.

To ensure long battery life, recharge immediately after use. These small lead acid batteries will form a memory of sorts. The large ones will not.

These small batteries have a safety sensor that stops them from charging or discharging above 105F (+50C).

The large batteries you should not charge above that temperature as you know, they will "gas", which means emit a stinking gas and self-destruct very quickly.

RADICAL, EMERGENCY-ONLY PROCEDURE

If you absolutely have to charge the small batteries in 10 minutes, short out the current-limiting resistor in the shell of the Female XLR connector of the charger adapter. Now you are forcing the full 4 Amperes the charger delivers into the tiny battery directly. Make sure you do not leave the charger connected for more than 10 minutes. This method reduces the battery life from 300 recharges to maybe 5 or 10, so use it only in a REAL emergency. The battery may explode (it usually does not), so keep a furniture pad over it while charging... another reason to reserve this procedure only for an extreme situation!

FACTORY CHARGERS FOR SMALL PANASONIC DECK BATTERY

The NVB58 is the large gray power supply/charger kept in the shop. It has a slot in front to insert the deck battery.

The NVB59 is the thin AC power supply unit that normally slides into the 8420 deck battery compartment. It can charge batteries with a special little adapter cable. Both units are usually kept in the shop.

Both of these will charge a battery to 95% in 1.5 Hr. That is much too fast to insure a long life of the battery. THEY MUST BE DISCONNECTED after 1.5 hr. These chargers will overcharge after that and ruin the little battery.

That's right - Panasonic built it that way.

EMERGENCY PROCEDURES

Read this once just so you are informed of the possibilities; no need to remember any of this section. If you have any doubts about the procedures below, don't attempt them.

GET CAR BATTERIES: If you are in the boonies and your batteries are approaching 25% and you forgot the chargers at home, buy or steal 3 car batteries to continue the job. If you can't do that, read on:

EMERGENCY CAR CHARGING PROCEDURES

If necessary you can charge the 12V batteries by plugging them into the lighter plug in a car with a running engine. You have a special cable to do this.

Better yet, connect your battery in parallel across the car battery with engine running. You have a special cable with 2 alligator clips to do this.

If the car voltage regulator is OK, your battery will be OK too. Connect positive to positive, negative to negative.

If you are really stuck you may charge your car battery with our chargers. It's slow and safe, but works.

CHARGERS CAN BE USED AS POWER SUPPLY

You can use chargers as an emergency power supply for the system. If they can't supply the current being used, they will shut down. This may take 1 sec or up to 10 minutes. To reset charger, unplug AC cable and plug in again. Shut down extra current sucking gadgets or parallel 2 chargers with "Y" cable.

If using chargers instead of power supply, always parallel 2 chargers with "Y" cable.

If using the 10A charger, set it to "NORMAL RATE", otherwise it may introduce flicker into the picture as it switches from "high rate" to "normal".

On the other hand: Power Supply (on top of large monitor) is NOT a Charger!!:

NEW: You may not use the AC power supply as a battery charger. NEVER!! Even if you think you have to. All power supplies are now boosted to a real 15.3 Volts. Batteries will die quickly with this high a charge voltage. You will destroy them. Don't do it. EVER!

Disconnect batteries when powering system with AC power supply.

Special power supplies for 24V systems can and will charge batteries safely.

STATE OF CHARGE + VOLTAGE

If you are curious as to the state of charge of a battery, use the battery tester. Your digital Voltmeter measures the battery's voltage at the battery terminals, or the 4XLR female connector on top of battery case.

Open circuit voltage	Percent state of charge
11.8V	0% ABSOLUTE CUT OFF
12.1V	20%
12.3V	40%
12.6V	60%
12.8V	80%
13.0V	100%

These voltages are accurate to within 20% of the rated capacity of the battery being measured if it has not been charged or discharged within the past 24 hours. The accuracy increases to 5% if the cell has not been charged or discharged for 5 days. Yes, there is a settling period for charge and discharge.

There is no magic to batteries. They are a simple chemical system. The same chemistry as the lead acid battery in your car, only they have no liquid to leak out!

Remember: Over-discharge a battery just once and you might as well throw it away. Any voltage below 11.8 is an over-discharge. Use your battery capacity indicator.

BATTERY STORIES

Dave Katz, August '91, tells: "of putting a 12V 24A/hr Panasonic cell on a 4A Xenotronix charger on a Friday night in a normal temperature room and returning to battery charging room Monday AM and noticing a foul smell. The battery was leaking diluted sulfuric acid and was too hot to touch."

WHAT HAPPENED

One cell in the battery probably shorted internally. The continuous current (2A) pouring into the battery made the other cells expand and overload. We disposed of the batteries in an environmentally safe method by dropping it off at Sears. This is a rare occurrence.

MIKE GERRY TELLS

"We had 4 Gates cells (24A/hr) in parallel being used in one of my company cars as a car battery. One cell shorted and the 65A car alternator poured so much current into the other cells that some of them blew the plastic lids off!"

BATTERY SAFETY CERTIFICATE

Panasonic states in their manual the batteries are safe for airline transport. Gates got the DOT and FAA to certify in writing that their batteries are safe in airline transport.

The document is included here in the addendum at the end. Also we have stickers for all Batteries with the DOT approval No.

POWER SUPPLY

This is the box that is fastened to the top of the 17" monitor, converting 110V AC to a good regulated safe 14.3V DC replacing a 12V battery. When on, a pilot light in the ON/OFF switch comes on.

It can be used to power the system instead of batteries. For protection, it has a fast SCR (Solid state switch) turning DC off when the 12V DC shorts out anywhere in the system. The SCR is usually faster than the fuses in the D.A.(main video box).

THE POWER SUPPLY IS NOT A BATTERY CHARGER

Operate system on one only: either batteries or power supply.

UNPLUG batteries when using power supply!!

IN AN EMERGENCY:

If power supply is dead and you have no batteries, you may use two or three 4A chargers to power the system. Use "Y" cable to connect them in parallel. One battery charger may do it, but the problem may be: It gets hot (10 minutes) and reduces its current to 2A or so. This is not enough for the system. The charger may shut down.

One or two chargers may be just at the verge of switching from high rate to standby. This switching is accompanied by noise that shows up as a glitch in video. Try three chargers if necessary. The three chargers do not have to be all plugged in the main box. One can be plugged into the monitors directly.

POWER SUPPLY FOR COLOR SYSTEM 16A

These heavy power supplies put out 14.7V. Plug in cable to color monitors at main box. The 9" color Sony 8041 will get enough voltage.

PUBLIC RELATIONS

Or Fear and Loathing on the Movie Set

KEEP SMILING

Pay attention to the director and the AD to get paid that day. Charm them to get called back permanently. Producers will call you if you are friends, but directors will lock you in if you make their lives easier.

FEEDBACK

If you are asked to playback (or anything else) respond loudly, so that busy people know you heard and care!

KEY WORDS

"YES, SIR/MA'AM, OF COURSE; NO, REWINDING; READY FOR PLAYBACK". (Sounds stupid, but this makes for decent communication.)

BE THERE

Stay in earshot of director. If you leave the set (even for a fraction) at anytime, check out with assistant director (AD) and/or 2nd AD, producer, or his representative.

Better be on time to work. Be on time on returning from lunch.

BE ACTIVE

Don't be lazy: roll the main box on dolly wheels to keep within earshot of the director. Roll the 17" into the client's face. Keep the headphones on; listen to the director's small talk, so you are ahead of the game.

"WE ARE MOVING"

Probably the most important words ever spoken by an A.D. If you have rehearsed all the possibilities of a move in your mind, you will be ahead of the game and won't be surprised ever. We want no surprises; we want control. So keep a few extra cables on the cart. Do not leave your spare case in the car. Have all cases "on the set". You get paid for being there. If you DON'T have to say: "one minute please," you will get called back. BE PREPARED, (be a good Boy Scout).

MISTAKES

If you make a mistake, 'fess up and do better. (Blame can be put off on someone else only once and this becomes obvious very quickly.)

LARGE MISTAKE

Keeping someone waiting.

LARGE MONITOR POSITION

The A.D. or production manager usually has very firm ideas of where they want the clients.

AUDIO - PRIVACY

Switch the client speakers ON only for playback of takes. Conversations on the set are private and are not to be distributed. Embarrass a director just once and you'll never forget it.

CAN'T BE IN 2 PLACES AT ONCE?

The client says: "Playback the last one, now!"

The director says: "Record the next take, now!"

The doctor says: "In the case of 2 bosses giving you conflicting orders, turn to the Assistant Director whose job it is to coordinate (ramrod?) all activity on the set. He/she is being paid for prioritizing work and taking flak. He/she will undoubtedly make a wise decision and tell you what to do. Then you can point your finger when someone frenzied is unhappy.

Don't forget that some people love to live in a state of permanent frustration. Do not deny them their pleasure, but do not share it.

CHAIRS

If you don't want to move them, train a P.A. to set up chairs for the clients in front of the large monitor, at every move. Make sure the clients are pampered. They sign the checks. On features chairs are usually the concern of the props department, on commercials, it's the domain of the P.A.

THEY ASK THE IMPOSSIBLE

Vidiots are rumored to say: "It can't be done" - Do not let that be your attitude. You say: let me work on this request a few minutes to accommodate you. (Then get to the phone; get help.) Be prepared! Better to ask a stupid question on the phone than to give a stupid answer on the set.

FEATURE THE GOOD

The video image of our system does look better than any other; show the results of the image enhancer off. Our system sounds better than any other, unfortunately only rarely a sales point. We have hi-res. and large video printers, slo-mo and special effects. Someone will care someday.

THE BOSSES, PRODUCERS, AGENCY PERSONNEL:

"WHERE IS THE SHOW??"

Show off your personality, your clothes, the gear. Tell them how unique our system is. Tell them about the advantages they get hiring you. Expose the printer to view. Give them the remote control button for the printer. Get them involved. Tell 'em about color Video Assist.

THE COMPETITION

Be friendly; do not tell them about the advantages you provide for the producers. Offer to fill in for them if they need help. Trade jobs!

SECRETS

This document is confidential and house internal.

Details of the master video box should not be bantered about. They are great inventions, of course, so keep 'em secret to keep our edge over the sedate competition.

SUB-RENTING EQUIPMENT: DO NOT QUOTE PRICE

WSV has accounts and insurance with all major video/audio suppliers in town. These take time and energy to set up and maintain. Sub-rentals should be handled by WSV home office.

If, in an emergency, you have to get something from, say, ASC Video or Berc, go ahead, do not hold up the shoot. **DO NOT QUOTE PRICES!!** Tell the producers to call WSV for pricing information. The prices quoted by other rental houses must be marked up by WSV to cover our overhead. Insurance and account maintenance do not happen by themselves and are not free.

If the company wants to rent something it's, of course, their prerogative!

GOOD OPERATING HINTS

It's knowing all these little tricks that makes the difference between working regularly and collecting unemployment. To be considered a professional you had better know this stuff and practice it on a daily basis. Wake up!

BAD VIDEO TAPS

Find out as early as possible while the camera assistant is still setting up (off the set) if the tap is good or bad. This includes a test record.

If it is anything but good, ask the production department (Producer, coordinator, P.A.) to get you a new tap right away. Of course, explain to them why you need a new one, in a way that makes sense to them.

Do not try to "get by" with a so-so tap. It will make you look bad in the end. It will create worse problems as you go along. It is not your fault that some rental house sent a lousy tap. They all do occasionally, some more than others. Generally, one out of ten taps is bad. They are all eager to help. They make lots of money with their taps, more than with camera bodies.

IRIS ON VIDEO TAP

This is the single most crucial adjustment on the whole system.

TEST TAPE

FIRST adjust your monitors. You have to have your monitors set to correct brightness and contrast first. To get to this "mean gray value" setting, use the test tape and adjust monitor contrast and brightness for an even-stepped gray scale.

SECOND adjust your video tap iris so you have a decent picture. Do a test record and ensure yourself of proper playback, before the whole gang is watching.

The Iris adjustment has to be correct before you change any of the other gadgets: enhancer, video gain, monitor brightness, etc.

Tip: Make a small strip of white tape with markings A,B,C,D and tape this next to the video iris adjust stub on the video tap. Now you can communicate with the camera assistant without confusing camera F-stops and video iris settings. Don't yell at the assistant to open or close the iris. Walk over to him/her.

PLUGGING IN PROTOCOL

Have the Power supply switch on the large monitor "OFF" until all 7 pin gray cables are plugged in. Do not plug any cable that carries power into monitors or main boxes. If they are switched on, you will burn the delicate pins. Of course it is OK to plug hot cable (cable that carries voltage) into monitors that are turned OFF. Turn power ON with AC-DC switches in the rear after plugging in. It is easiest to keep power switches in front of monitor ON.

The switches are built to carry the heavy currents we operate with at 12VDC; the pins on the connectors are not.

AC POWER SWITCH

Most Japanese equipment that is powered by AC is not disconnected from the AC line by turning off the power switch. Typically only some of the internal electronics is turned off. Tape decks (like the 8050 SloMo) keep a lot of electronics powered up when the power switch is off. The counter memory is preserved.

The 19" & 20" Monitors turn off everything, except the input filters to the power supply.

If you are told by the electrical department that they are disconnecting your source of power, pull your AC power plug immediately.

LESSON: TURNING OFF POWER SWITCH IS NOT ENOUGH -- UNPLUG!

POWER SWITCH OFF BEFORE PLUGGING IN

Never plug in any electrical instrument that is switched "ON". As the male pin goes into the female receptacle, there is an intermittent large surge current. This current heats a filament such as in a video tube intermittently. This sets up an irregular magnetic field around the filament. This often blows the filament while in the unstable cold state. This applies to filaments in Nuvicon video taps or monitor tubes or lights. Maximum current is being drawn while plugging in. This current also creates sparks that burn the delicate connector's pins.

IMAGE ENHANCER AND VIDEO GAIN: (REMOTE BRIGHTNESS)

At first, to simplify things, keep enhancer in "bypass". Keep gain in "calibrate" also called "normal". To judge what affect their adjustments have on the video watch your best or largest monitor. Your 3" monitor won't tell you how much to enhance. If you have any image quality problems at all, go to enhancer "bypass" and video gain "normal" so you are back to the basic starting positions.

VIDEO GAIN ON MAIN BOX

The video gain is used very seldom and sparingly. If you try to correct a badly adjusted iris on the tap with this adjustment you will get a poor picture quality. Set iris first. Use the gain to make up for dim night time lighting.

HINTS FOR THE ADVANCED

Keep your iris at the wider setting you need when the film camera is running, use the main box gain control to bring down all monitor brightness when the camera shutter is stopped. Switch brightness (or gain) to normal on start of film camera.

VTR-LINE

Will show you how the video AGC (automatic gain control) in the deck affects the image. The AGC should not work at all if the iris is adjusted properly. When switched to VTR-LINE, there should be no difference in picture brightness. If you have high contrast images you may want to cheat a little on the low density side.

CEVAX

Used as input gain booster and control in low light situations. Controls are very touchy. CAUTION: You must do a test record-playback. The CEVAX loves to screw up your sync.

DIODE: (CLIPPER) [AN ABSOLUTE MUST WITH PRE 1988 VIDEO TAPS]

If you hear that an older tap has been ordered, always get a diode. If it is Clairmont camera, get a diode ordered by the production house. Clairmont will always forget to send it. It is used as an input clipper. It cuts the peak (white) voltages. You set the limit of this white peak voltage with the pot. It saves you from hot backlights, and in high contrast situations. Must do a test record with it in proper position. Some diodes smear the highlights.

TIMING

Keep out of the way around the camera. Keep tap coax out of way of operator. Have a short coax running from the camera to the end of the dolly, so that even the dolly grip can disconnect when it's time to move and you are busy doing a playback. Convert the BNC break to RCA male & female and you have a good weak link. It's also preferred by the old non-technical bunch.

9" B/W MONITORS

SYNC: always switched to "internal".

H.AFC: normally switched to "long", especially on high contrast images. Experiment when playing back tapes.

DC RESToration: usually in "off" position, in some high contrast lighting situations may best be kept "on". Experiment!

75 ohm termination: "on" for last monitor in daisy chain.

7 Pin custom inputs are direct parallels to standard connectors: video BNC in-out, Audio 3MXLR-3FXLR, Power 4MXLR (there is an internal fuse between 4MXLR and 7 pin inputs). You must turn 75 ohm switch on with 7 PIN cable too!

B/W Monitors - buzz on DIR. MON. output when MUTED.

Only when the DIRECTOR MONITOR 7 pin output is connected to a B/W 9" Panasonic and switched to MUTE is there a buzz on this output on its monitor -- AND this happens only if the B/W does not have a transformer in the audio input! All other monitors seem okay without transformer. The transformers are the little silver round things in rear of monitor.

13" PANASONIC ON 24V

The 13" Panasonic runs on 12V. Need to run it on the 24V extension cables? It can be powered with 24-12V (gold) inverter. Input 4.3A @ 24V. Output 4.4A @ 12V. It uses 48W and gets warm! Has 2AG 10A fuse inside. Needs to run with fan ON, otherwise, it gets too hot! Half hour with no fan is okay.

DAISYCHAIN

A monitor is plugged into the Main Box via the 7 pin cable. If this is the only monitor, terminate it. If you want to run a remote monitor from the first monitor, just use standard BNC video cable as extension and terminate the last monitor in this chain with the 75 ohm switch, otherwise funny stripes and visual warbles or double images may result. If you need the extra brightness from a non-terminated monitor and all looks okay, go ahead and break the rules.

D.A. (DISTRIBUTION AMPLIFIER)

This lets you send individual feeds to each monitor. If each monitor is the last one in the chain, turn on 75 ohm termination. This is the star system of distribution. It gives the best results.

AUDIO MUTE 2 SWITCH

Mute the small director's monitor (output 2) while leaving the large client monitor (output 1) sound on. (Assuming the large monitor is out of earshot of the microphone.)

3" MONITOR "FOLLOW-VTR" SWITCH

This switch affects only the 3" operator's monitor in your control box. Now you can playback at the console while all other monitors watch live. Yes, if the VTR-LINE switch is in VTR position and you toggle the 3" monitor switch from follow to VTR, you will get a glitch and a drop in video level on all monitors. So.. switch VTR-LINE to LINE first, then switch 3" monitor switch all you like.

OUTPUT 4

BNC output 4 is daisy chained with 3" operator monitor. Some main boxes daisy chain 3" operator monitor to output 1: 7 PIN output.

TAP CABLE ROUTING

Run cable out of the way of camera operator. Have a break point in the BNC cable at end of dolly. If you are powering the tap on the camera, use a short 7 pin gray cable close to camera that ends at the dolly rear, so you can disconnect from camera quickly when camera starts moving.

Use RCA-RCA weak link with BNC-BNC connectors

POWER FOR 9" MONITORS

9" monitors may be powered only by our batteries with our power cables. Other rental houses' cables have destroyed the 9" monitors power supply. Some rental houses have 16V Batteries even though they refer to them verbally as 12Volt batteries. Measure the voltage and polarity. Do not trust a camera assistant's quick word.

Use only our batteries and cables.

Our PIN Configuration on 4 PIN XLR connectors:

PIN1 = negative -

PIN2 No Connection NC

PIN3 No Connection NC

PIN4 = positive +

Some heavy 2x 25A or 60A or 80A batteries ready for the inverter have:

PIN1 = negative -




PIN2 = negative -

PIN3 = positive +

PIN4 = positive +

PANASONIC NV8420 BATTERY INDICATOR

This is how to translate the display lights into battery reserve.

	BATTERY VOLTAGE	% CHARGE
	max. 15.5	100%
	12.3	40%
	11.4	-15%
E ^b	10.9 shut down	-50%

When the last light starts blinking, you have 10 minutes left to operate, before the deck shuts itself down. When the deck shuts down it is already very late for the battery. You have already done some damage to it because of the deep discharge you put it through. You're at -50% of useful capacity.

VHS VTR HEAD CLEANING: USE WET HEADCLEANER CASSETTE

Don't clean heads unless obviously necessary - i.e., you have bad noise in picture or no picture at all ONLY use the provided commercial VHS head cleaner cassettes with the provided cleaning fluid; both are found in spares case. Drip fluid on tape as described in directions. Do NOT over-wet. Never use some other cleaning fluid!

Push play to wipe heads with cleaner cassette. Only for 1-2 seconds. The cleaning tape is very abrasive. It can wear heads down. If the head is not clean in 2 seconds, it'll never be clean.

8MM HEAD CLEANING

Sony recommends to use their dry head-cleaner for 3 seconds at a time. I recommend one second twice!

It may take 3 to 6 cleanings to really get the grit out of a badly polluted head.

8mm tape may muck up the heads anytime. Sometimes it takes 5 months; sometimes it happens 3 seconds out on a good tape

Do not use Sony tapes. Maxwell, Fuji, TDK are okay.

DO NOT USE ACETONE, ANYWHERE, EVER

There are manual head cleaning pads in the yellow small accessory box for experts only. These are for dire emergencies only. Be very gentle when rotating head underneath these cleaning pads. This is a very delicate procedure! Experts only. Ask the shop to show you how if you have never done it. Wet the pads with cleaner unless they are wet already.

Do NOT do this unless someone qualified has instructed you on deck disassembly. If you ruin the deck by taking it apart, you will pay for it. The ONLY maintenance you should do is :

Change fuses

Use head-cleaner cassette.

Open anything with a screwdriver, you pay for the damage.

CONSISTENCY IS MORE IMPORTANT THAN QUALITY

Once you have an image on the screen and people are accustomed to watching it, keep it there. If you have a way to improve the image, wait till viewers go to get coffee. It's very hard to predict why clients watch the screen and you may just be disturbing a moment of mass hypnosis or meditation by doing your technical improvements. Clients are like lost wild animals in the zoo; they stare at the monitor not knowing what else to do or what they are looking at. Keep sun out of their eyes. Has someone provided seating? If not, get the P.A.s busy. The clients' comfort is key in commercials. They sign the checks.

PEOPLE ARE IMPORTANT, NOT GEAR

Watch where the director has his eyes. What does he see? How to make him comfortable? Courtesy flag? Have the grips help you.

NAMES

The better you are at remembering names the more people will think you find them important. (To you it's just enough to know their names.) People like to feel important. Know all production personnel names including P.A.s. They are tomorrow's producers and will call you when no one knows any video guys at all!

USE A SCREWDRIVER, GO TO JAIL!!!

VIDEO DEAD, DIRECTOR LOSES ACCOUNT

Video has become so crucial to clients that if you can't provide video on the set for whatever reason, the director will probably lose his client. So if all your gear blows up and there is no video assist picture, the client can't see an image, the director loses the client, and you'll never work in Hollywood again!

LABEL YOUR CABLES

Make sure all the cables you use are color coded, so you don't have to scurry around tracking which cable goes to what to find out what is not working.

TROUBLESHOOTING HINTS

LARGE CLIENT MONITOR HAS NO POWER

HINT: You plugged in the AC and the power pilot light on the back of the large monitor does not come on:

You check:

The red pop-out fuse button on the GFI.

The 10A fuse in the AC fuseholder.

---Now the power rear pilot should be on.

Still no pilot light in front of monitor? CHECK:

Main AC ON-OFF switch (pull for Electrohome or twist for Panasonic) in front.

AC-DC toggle switch (in rear) in correct position?

The 12 Volt power supply on top has its own on-off switch.

It lights up to show presence of AC only.

It has its own fuse.

DC operation: your batteries have run down so far that the battery protection circuit popped the button under the rubber cap on the side of the monitor. Push the button to reset for 10 minutes use. Change batteries.

STRIPES IN PICTURE

Many video taps suffer from inadequate grounding to the film camera. Try a short lead with alligator clips and attach to bare metal on both cameras. Try tightening the video tap mounting screws.

Some video taps are sensitive to RF (Radio Frequencies). This may look like moving diagonal stripes in the picture. Try grounding taps here too. If these problems are bad, ask for a new tap. This may not cure the problem though. Silverlake is a RF troublesome area.

PANAVISION

Here are just a few points:

Focus of tap on pre-1987 Panavision video tap: You need a 5/32 Allen wrench 6" long to adjust focus from left side of camera underneath the magazine. (Ask camera assistant). Difficult adjustment.

Focal plane (left - right) adjustment on new Super Panavid: Tricky but it can be done.

SPX switch on new Super Panavid: under cover, must be thrown to drive tap camera with sync from SPX switcher.

Pre- 1987 AC power supply for pre-1987 tap often introduces diagonal stripes into the picture, use batteries.

Control Units: always get them ordered by producers. They give you remote control over iris.

Order extra Panavision extension cables. They only send 2. If it's a heavy battery shoot, get plenty of Panavision batteries. They get sucked dry quickly.

CLAIRMONT TAPS

Many pre-1987 have no crystal sync generator at all. Clairmont used to send out an external sync generator for their old cameras that have an RCA sync input. As the cameras warm up sync will vary. Check sync with pulse cross.

Clairmont Cameras used to put out a very hot video signal. Use their diodes which are better than our clippers to reduce the whites. Especially when the whites go into clipping levels

CEI TAPS

The older CEI sucks 1.5 Amps. Today's (past 1991) use 1A. Careful with batteries. Use someone else's. Use our 20A Pelican for 12 hours, then use battery capacity tester.

TRANSPORT OF 17" MONITORS

17" Monitors should be transported only right side up, upside down or on the two sides. NOT on their face or back. This will keep the yoke from sliding forward or back on the neck of the video tube and prevent a "tunnel vision" picture, the image either too large or round and too small.

17" MONITOR ON DC HINT

Keep the double 12V battery inside large monitor box.

Fold locking latches up, then close lid.

-Now you have room for the power cables to run out of the front of the box to the rear of the monitor.

-Now you roll around only one box.

-Tie down the monitor with motorcycle strap.

Alternative for rough terrain:

-Take a second cart.

-Hook monitor to cart.

-Hook double battery to rear of cart.

SHADES: NEED CARING TREATMENT

The large and small folding shades made by Wolf personally are made of a heat sensitive plastic. If you have the shades in the sun in a car even for 2 minutes, they will deform (warp) and not work anymore. I will charge you an excessive amount to replace them. It makes me sick how my labor is disregarded and taken

for granted: Small Shade: \$150; Large Shade: \$300. Well, in 1995: No one took my warnings to heart and all the fabulous custom shades are destroyed. I am sick over it but will not replace equipment treated with such contempt. Now all we provide are Hoodman shades.

You will have to hassle with the large, unwieldy Hoodmans.

DUST & RAIN HINT: USE PLASTIC BAGS

If working in dusty or wet environments, please bag the whole deck in the clear plastic bag provided in the spares case. Twist the plastic around the cables then the deck is safe, clean and dry. There is no heat build up. Do the same with the tape counter-controller. Tape the 9" and 17" monitors with garbage bags in Spares Case or Visquene (grip dept.).

CHEMICAL CLEANERS:

CAUTION: Do not use ACETONE anywhere.

"Fantastic" or "Simple Green" is good for dirt on outside of cases or stubborn stains on monitors.

"Goof Off" removes label residual glue.

3M Cleaner 051135-08984 is good for label removal.

"Windex" is good for monitor glass.

Petroleum based "Lighter Fluid" can be used to remove sticky tape stains and paper labels from the outside of cases. Keep all chemicals away from plastic surrounding monitor screens.

DAMAGE REPORTS:

Please label bad cables with tape. Write any comments or damage report on the outside of the main box on a piece of tape.

GOSSIP

This world rewards you greatly for the trust that is placed in you because of recommendations of yet others who only heard of your reputation. OR: Good gossip helps.

NOISE IN PICTURE WHEN CAMERA IS RUNNING

If attaching the ground lead with clips from video camera to film camera does not solve the noise, try sanding the aluminum anodizing off the tap, as well as the camera where the two surfaces meet. (Use very fine sandpaper). This works well for CEI taps on ARRIs. As soon as you turn on a Moviecam, the motor generates a lot of awful visual noise. You will see diagonal lines with white speckles across the picture. A new tap will cure this sometimes. Complain early and loudly.

RF NOISE IN PICTURE

(Usually caused by being close to an AM station or airport radar.) Or Walkie-Talkies very close to the main box or camera.

Sometimes RF (Radio Frequency) noise appears in large monitors before you see it on a 9". It may look like a waving (left-right) picture.

To get rid of those intermittent wandering diagonal lines in the picture is difficult. Advice: Keep the system simple. Keep VTR-line switch on line. Keep 3" monitor in FOLLOW. Avoid using gray cable to camera; use one short piece coax. Avoid several lengths of gray monitor cable. Keep everything close together. Keep cables short. Ground tap to film camera with clip leads. Use batteries not AC. Unplug extra cable not used. Sometimes a small change in cable routing will help.

Radical solution:

Try to figure out if RF gets into gear at the camera or in your cables at the camera the light sensor is most susceptible to RF pick up. The 1987 Panavision and Moviecam cameras used to be terribly sensitive to RF. If you are in really serious trouble, get rid of the fancy and complicated main box. Run everything on local batteries and connect with good short pieces of coax only. Forget AC. Forget sound. Good luck!

CABLES

Always wrap everything over-under.

Red AC extensions are the only exception. It is a good idea to plug both ends of 7 Pin together to keep dirt in cable box out of delicate female pin holes.

PROBLEM: DEW MOISTURE REMEDY – SILICA

We use silica crystals in cotton bags to keep the inside of the waterproof system dry. Dew is water vapor condensed on surfaces that are colder than the air temperature. You get fog (= dew) on lenses and video heads going from cold to warm. How to deal with dew:

Carry a hairdryer

Be prepared: take several small bags of silica gel and place them in a closed Pelican case with the deck before shipping. If that is not possible, put them in the case as the deck warms up slowly. (Remember: it's cold in the cargo bay of an airliner at 20,000 ft.). When a freshly shipped deck hits the moist tropical air on the ground, it will not work because of dew!

The silica in the case will absorb the moisture from the damp air. The video heads will warm up but all moisture is going to be inside the silica crystals, rather than on the heads of the deck. If you must work the deck right after shipping, put silica bags in the case before shipping. Professional equipment is sold with silica in shipping boxes, but it's not enough—the bags are much too small.

RECHARGING SILICA

Silica has to be warmed slowly in a microwave (or regular oven) at a very low temperature to lose all its moisture and regenerate. It takes 30 minutes in a microwave at low heat or 150°F in an oven for 30 minutes for the silica to dry out. You can tell if it is dry if the crystals turn dark blue in the bag if they are indicating silica (ours are not indicating). Also when the crystals do not seem to get hot anymore after a long time in the microwave, you will know that virtually all of the H₂O has been expelled from the silica into the air. It's the H₂O in the silica crystals that absorbs microwaves most and heats up. That's why a microwave is better than an oven!

BE CAREFUL. SILICA EASILY GETS SO HOT THAT THE BAGS CAN CATCH ON FIRE IN THE MICROWAVE IF HEAT IS TOO HIGH. YOU MUST CLOSELY SUPERVISE THE DRYING OUT PROCESS!!

After the silica is dried and somewhat cooled down, you place it in sealing plastic bags (zip-lock) so that it stays dry till needed. The plastic bag keeps moisture away from silica during storage. Silica absorbs 200x its weight in water from the air. In the tropics (Texas, Louisiana, Brazil) it's probably a good idea to keep all decks including combos in an air sealed case or zip-lock bag with silica, even just overnight.

Change to fresh silica everytime when opening the case (or bag equipment is in). Pelican cases are moisture-tight if seals are in good condition. The fiberglass coated plywood cases with aluminum edges are obviously not moisture proof, even though they will keep out rain (sort of).

DEW + COMBO

If there is heavy dew inside the combo, it will not even turn on its dew warning icon in the liquid crystal display. You will see only a ½ second of the green power light and/or you will only see a ½ second of the "DEW" letters in the LCD window light up. Then the auto power shuts down the whole combo. Again, carry a hairdryer like a good video boy/girl scout.

BEWARE: It's extremely dangerous to blow air that's too hot into a machine made of plastic. Something is bound to deform and stop everything from working. Plus, you are blowing dirt into your gear. Use the lowest setting.

WORST DEW EVER SEEN

Wolf was shooting a ski movie outside in Squaw Valley. After lunch we went inside the lodge into the hot tub room to shoot the naked scene. There was dew everywhere. The camera lenses were wet on the surface and between the elements. There was even dew (real water drops) on the Nagra heads. But who cares? Here the 1/4" tape wiped the moisture off and carried it away. NOT SO WITH HELICAL HEADS and video tape. Video decks just shut off and die for a long, long time.

WHAT TO DO

Everytime you open the waterproof system case, change the silica inside. Everytime you ship decks to humid places, keep them in a Pelican case with silica. To be doubly sure, put deck and silica inside a zip-lock bag inside the Pelican case. In other words, "double bag it."

Everytime you move from a cold environment to a warm one, use a deck that has been kept in the warm for hours already. Leave the "cold" deck outside in the cold.

Cost per bag: \$50!

Carry a hairdryer.

MAGNETIZATION: A CAUTIONARY TALE

As a kindness to various customers I lend out a Sony 9020 monitor from time to time. One cameraman brought it back on the first occasion complaining of dreadful color and when I checked it was indeed heavily magnetized. The entire frame needed serious degaussing. I lent it to him again a few weeks ago and he again complained that as soon as he switched it on the colors were all over the place. Once more I found it magnetized to an incredible level. Even large speaker magnets would have a job producing those sort of effects.

I knew that it had been fine up until then so I suggested that it must be to do with the way he was transporting it. He is a good sort and had been very careful, he assured me. Having no flight case he had sat it in the passenger's footwell of his (diesel) Landrover for safety. This solved the problem.

As 4x4ers will know the battery is housed under the front passenger seat cushion and the main cable to the starter motor runs under the floor there. At start-up it carries several hundred amps - potent stuff. We both had a good laugh as I knocked the odd Tesla off once more.

There is a lot of unnecessary panic about magnetization of tapes - they are usually very hard to hurt. But I reckon this sort of scenario is probably one to take seriously. Don't leave the stock in a box in the footwell of a Landrover - and even be a bit careful about the passenger seat.

Chris Woolf, Britain Chris the Woolf <chrisw@mail.zynet.co.uk>

Also watch out in tube trains (the underground in England), don't put the box of tape on the floor if you are in the sideways seats, the traction (drive) motors are right underneath! Rupert Brun

THE TUBE TRAIN STORY IS AN OLD ONE!

The motors are NOT under any sideways facing seats on (London) tube trains and I remember that when I was in the BBC in the 1960's I was told that this was a good way of getting a taxi rather than using public transport.

SOUND CABLE

Tie at mixer's end to bottom part of his cart. Have a break in the cable there, so you can disconnect quickly when moving. Use your cables. Do not trust anybody else's cables. Film mixers usually insist that you are in charge of this cable. We have special adapters to send mixer video through gray cable and get audio back to you. Have mixer plug into your AC outlet on large monitor.

FEEDBACK IS...

You know, you put a microphone in front of a speaker and you hear howling and whining. Of course there is an amplifier in between. How to get rid of feedback: lower the gain of the amplifier! Simple.

MAINBOX - THE OPERATOR'S ANNOUNCE MIKE

The mike is built into the operators main box (upper left). The mike amplifier is inside and the gain pot (potentiometer) is also inside and inaccessible. It's set pretty high. This amplifier in the main box sends a line level signal out the director's 7pin cable to the director's monitor.

So how do you control feedback from your slate mike to the set? Put gaffers tape over the mike! You may be surprised how easy it is to get feedback even when the speaker is in a different room. Why? The high frequencies that feed back first carry better than the mid and lows.

The AR speaker has gain (volume) Hi and Low equalization adjustments. You can change the gain of the speaker with the volume knob. This level should normally be at 1 or 2 o'clock for normal loudness playback from VTR tape in a normal environment. No matter what problems you have, do not ask the director to set his audio level back and forth between record and playback. It's the video operator's job. It make you look stupid, incompetent and you will not be called back because of your inadequate technology and preparation if you ask him to twiddle knobs. In the spares case you have an ON/OFF audio switch with RCA and XLR connectors.

DIRECTOR'S TALKBACK

The director's mike (the white one on top of his 9" monitor) has its own volume, ON/OFF switch and two AAA batteries. Its signal at line level is sent down the cable that plugs in the director's monitor looping 7pin output and is sent through the DIRECTOR-VTR headphone select switch to the operator's headphones. You have a headphone amp with a headphone level control. There is no electrical connection between this director mike-headphone and the talkback mike-director's speaker. The two are separate. This is not one PA type system, this is a talkback-announce system—two mikes, two speakers!

Feedback here is rare because of the low level of playback from the headphones, UNLESS you put the headphones right next to the operator's announce mike and press the talk to director momentary switch. The loop is then announce mike—director's speaker director's mike—headphones—announce mike.

Insert drawing here:

This is what a block schematic would look like.

Feedback elimination:

Quick answer: usually the feedback loop is your announce mike hearing the director's monitor speaker on the set.

Longer answer: sometimes your headphones are so loud or so close to announce mike that they complete the loop from set speaker back to your announce mike.

What to do:

Tape up announce mike.

Reduce headphone level or move them back from speaker.

THIS IS NOT ROCKET SCIENCE, so why is it so confounding to rock musicians with 100 years of experience?

STUPID PEOPLE

And then there are those who are always ready to say: "Well, I don't know, it was not a problem last time," or "I have been doing this for 30 years now and no one ever complained." Those defensive, lazy bastards who think this is any kind of an answer to a problem do not deserve to breathe the same air hardworking knowledgeable people live in. Of course they will never understand this and I am sorry that one has to work with these idiots so often. Or is it that these people have been worn down so much by the strenuous conditions of the "business" that they don't give a flying...., except to protect their jobs?

If there is a problem, solve it. If you can't get on the phone, get help. If you just don't care and come up with the excuses above, you will not be around for long. Guaranteed.

WEAR YOUR HEADPHONES WHEN RECORDING SOUND

Yes, you should have your headphones on your ears on every take while recording sound. How else will you know that the soundman disconnected?

TRANSMITTER HINT

As a backup monitor, it is good to take the old 9" Sony B/W Monitor-Tuner. Now you have got an independent spare TV. Keep it on a stand with a 20A Pelican battery for "extra" clients.

CLEANLINESS

Operators are expected to return equipment and cables in a condition consistent with "normal" use. Please wipe cables. If you persistently return dirty gear with tape and dirt stuck to everything, we will charge you a cleaning fee. If we sent you out, do the return favor of clean equipment returns. It keeps you working.

NEGLIGENCE

The beautiful large WSV shades were left carelessly in the sun in the back of a car where they warped and now no one can use them anymore.

When equipment is damaged on a shoot, make sure the production company understands that it was circumstances other than your negligence or you will have to pay for it.

ONCE USED & BLACKED TAPES

Easy to see drop outs. Easy to judge quality, just play it and you can see the dropouts. Remember they are always worst at the beginning of tape. Probably safer to use than new tape that may be defective and jam in machine.

17" B&W MONITOR ON DC HINT

Keep the double 12V battery inside large monitor box.

Fold locking latches up, then close lid.

-Now you have room for the power cables to run out of the front of the box to the rear of the monitor.

-Now you roll around only one box.

Alternative for rough terrain:

-Take a second cart.

-Hook monitor to cart.

-Hook double battery to cart.

FUSE REPLACEMENT: ONLY APPROVED MAINTENANCE

Replace fuses only with rated value. Usually the scientifically prescribed value is written next to the fuse holder.

NEVER - use a larger fuse. You blow fuses because of a faulty gadget. You do not blow fuses because of a rating that is too small. Any damage done due to improper fuse replacement will be charged to the operator.

By the way:

Changing fuses is the only maintenance you are allowed to do. Do not open any units and try to "fix" stuff.

You will be charged for damage. If a deck has swallowed a tape, it's dead. No matter who asks you to get it out by any means possible. You break a deck; you pay for it.

HAIR DRYER - DEW

Yes, every video field technician should carry a hairdryer in his personal tool bag. If you get a "dew" light on a deck, blow the deck out with low temperature heat till the light goes off. Do not heat delicate plastic parts to the pre-melting point. (Some plastic starts distorting long before it melts.) Be careful. Wolf will make you pay for equipment damaged by your negligence. You can get 12V hairdryers. They draw 6A. The combo will not turn on at all with "DEW" light on. No picture. So get out a B/W Panasonic in the meantime, so that the mucky mucks have something to watch.

USE A SCREWDRIVER ... GO TO JAIL!!

SPECIAL PROBLEMS

Here are some special problems and emergencies that can arise during filming and how they are usually dealt with.

FIRES

Occasionally there will be problems with a piece of electrical equipment and a fire will result. This can happen when someone replaces a fuse in an amplifier or monitor with a bigger one. A quick blast with a fire extinguisher will assure the safety of the room or stage, but a little planning can prevent complete loss of the equipment.

ELECTRICAL SHOCK

Nobody likes to get shocked. Musicians lay their lives on the line every time they pick up an amplified instrument that is not properly grounded. Nothing breaks your concentration like a nasty shock. In the world of rock and roll a musician is killed every year by electricity. Here are a few do's and don'ts.

Outside shoots near pools and golf courses are especially dangerous. Carry plastic tarps and if a storm comes up cover your monitors, amplifiers and speakers, grab your equipment and get to safety.

Do not remove the ground plug from any power plug. Although this is a quick fix and it sometimes eliminates ground loop hum, the shock hazard is great. You are breaking the law. You are liable for poor operating practices. If someone gets injured or killed you will be sued. Older monitors are especially susceptible to this problem. If your monitor has an ungrounded plug and a ground switch, have the plug replaced with a grounded one by a qualified technician. If you connect it to the system via an isolation box, use a transformer isolation box, which will prevent ground loop hum and keep your monitor grounded. This is the key to not getting shocked. If your monitor's power transformer has a little leakage (caused by insulation breakdown due to age) it is possible for all metal parts of the chassis to drift up to the full potential of the line voltage, 120 volts. The ground plug's job is to drain off these normal leaks before any real voltage potential occurs and your amplifier and your body become energized at full line voltage.

If you touch a grounded microphone with wet lips (or put your wet brow on an eyepiece) while holding a monitor in sweaty hands, you will never forget the experience, if you live through it. A plug-in AC tester should be used every time you set up to test each outlet you will use. (You will be amazed at the number of faults you find.) Also use your GFD.

BUZZES AND HUMS

Hum is usually caused by grounding or shielding problems. The most common shielding problem occurs when an unshielded cable is hooked up to an output of the system. This is the first place to check. Ground loops are the next place to check, and a whole chapter could be devoted to their origin and elimination. A ground loop is caused when two pieces of equipment are each hooked to ground (through their power plugs) and are also connected together by a shielded audio or video cable. All grounds are not created equal and there will be a difference in voltage between the two ends of the shielded cable. This induces large currents that get into all the equipment. The trick is to break one of the ground connections, so that the cable shield does not carry any ground loop current. A transformer isolated for video is usually the best option. The transformer provides a gap between the two grounds and breaks the current path while it allows the audio and video signal to pass unaffected. You can sometimes eliminate a ground loop with a ground-eliminator plug on the power cord, but this can be dangerous. If there is a short in the monitor can send the full circuit breaker capacity of the line (20 amperes or more) into the mixing board via its input connections, not a pretty sight.

Know your hot pins in unbalanced wiring Pin 3 in most of our equipment except what is made by outside suppliers. Understand how a 3 wire system is plugged into an unbalanced 2 wire system.

STATIC ELECTRICITY

Much consumer equipment is affected by static buildup between your feet on the carpet you are walking on. Your body acts like a nice capacitor and holds the charge for seconds or minutes. Touch the consumer router (switcher) you discharge into it and its memory will erase; if you are lucky, only temporarily. Solution: use pro gear and wear shoes that don't build up static. Spray yourself with anti Static spray (available from the wardrobe department as anti-cling spray).

THE ENVIRONMENT & DEATH OF VIDEO GEAR

BEACH PROTOCOL

Tape all connectors that lay in the sand with easy to remove paper tape to keep sand out. It only takes one grain of sand in the right place to ruin a connection.

Remember if you want an umbrella (or a 4x4 flag) for yourself, it may be easier to ask for one for the equipment.

ROLLING EQUIPMENT ON SAND

Load your gear on the grips' Western Dolly.

Get our 4 wheel carts.

Get a 4 wheel monster wheel cart with yellow wheels custom made and sold by Nalpack.

Get the old Hollywood tank track attachment made for lights called clickety clacks and adapt your cart.

Run very long cable.

Use transmitter.

Use our waterproof package.

LITTLE GRAINS OF SAND

The worst thing that happens on the beach in the sand is that invisible, very small particles of sand blow into the decks. This ruins the deck in minutes.

LITTLE FLOATING PIECES OF SALTY WETNESS

The high humidity around the ocean's surf-line is the worst for all kinds of electronics. This sticky, invisible salty moisture adheres to outside and inside of equipment surfaces and rots circuit boards, bearings, video head drums, aluminum and steel casings. It takes only one small grain of sand in the right place to make a connector useless.

KEEP IT CLEAN AND DRY IN PLASTIC BAGS

The best thing to do is keep all equipment in plastic bags for the day. People living 15 blocks from the beach in LA notice that their aluminum window frames rot (= rust = oxidize = are ruined) three times as fast as those in the valley. This salty air moisture is a killer of all kinds of metal, especially delicate electronics;

SOLUTION: plastic bags are the only protection.

Rental facility owners, like operators who do some thinking ahead, keep the rental house's concerns for longevity of equipment at their hearts, and exert themselves a little with those plastic bags that are provided in all our packages

P.S. We have huge clear ones (24x36") that let you watch a monitor through the plastic in the rain even.

FULLERS EARTH

Harmless to humans, but DEATH TO VIDEO RECORDERS is an inert natural mineral ground up into a very fine dust. Even a very small quantity that drifts into VCRs will destroy all mechanical bearings and video heads very quickly. Especially bad if it's windy or the Fullers Earth is used in movie explosions or as a "visual dust".

Fullers Earth breathed into your lungs is a carcinogen like all small particulate matter that is inhaled. This covers all smoke of which cigarette smoke is only the worst.

WHAT TO DO

Bag all VCRs in clear plastic and close the opening as well as you can (just twist it)! Whatever little heat the decks generate will escape through the sides (the solid) part of the plastic bag. Yes Plastic does transmit heat slowly.

DAVE DEEVER TELLS:

"I was in Jamaica April '98 on INSTINCT. We were shooting in the jungle and had to load our equipment on mules. Somehow the 13" Sony moniotr in a travel case got loaded on without the lids. The mule slipped, and the load hit a tree. The monitor had a huge gouge taken out of the screen but it worked. The company had to replace the monitor."

Lesson: NEVER TRANSPORT ANYTHING WITHOUT CASE. Notice that camera assistants don't even carry a camera lens across the stage. They walk the case of lenses to the other side, open it, take out the lens and close one latch to show the case is incomplete. Some fool always lifts open cases up and spills all contents in the spirit of wanting to help.

Lesson: WATCH OUT FOR MORONS "HELPING".

END OF SHOOTING ROUTINE

Label today's VHS or 8mm tape with:

Production Company

Product Name

Production Date

Put tape and log sheets into spares case.

Use another tape for next company's shoot. It takes the old company a few days to decide that they need their tapes in a panic. They always ask us: "The lab lost a camera roll.. What takes were on Camera Roll 13?" We have to be able to find old tapes quickly and accurately. The film editor wants to be able to look for non-printed takes quickly and easily. So make your logs easy to read. To others not on the set.

CASSETTE LABELING

Use new labels. Do not ever leave an old label on a cassette that you give to a client.

ONCE USED VHS TAPE

The spares case has 3 new tapes and 3 once used and blacked tape. Advantage of once used: you can play it and easily see the amount of dropouts at head of reel. We spot check tape for excessive dropouts.

8MM TAPE LABELS

Only use the ones provided in the box. Most computer printed labels are too thick and jam in the CVD-500. You are probably labeling the tapes for someone who has never been on the set and understands very little... like an assistant editor in a different country who speaks little English who wants to find some non printed take.

PERSONAL SURVIVAL

HOT, HOT, HOT... WORKING IN HOT WEATHER

The following are excerpts from copyrighted material...

Copyright 1995, Theater Safety Programs:

HEAT EXHAUSTION. The symptoms are sweating and dizziness, but heat exhaustion is not usually life threatening. The first signs of overexposure to heat is a hot, uncomfortable feeling and you do not feel ready to do much. This is not serious, but it is a sign you should get out of the heat and cool off.

HEAT COLLAPSE is caused by excessive pooling of blood in the extremities. The result is that the brain does not get enough oxygen. Heat collapse is sudden and unpredictable. Although similar to heat exhaustion, the body's heat balance is unaffected. This may be very dangerous.

HEATSTROKE (or SUNSTROKE) is a great deal more serious. Heatstroke sends your body temperature so high that you become unconscious.

Frequent exposure to these conditions can put a strain on your heart. You can risk stroke or heart failure. People with circulatory or heart problems are at greatest risk. Their bodies are least able to take the strain any may not cool properly.

By knowing the symptoms of overexposure to heat, you can avoid serious problems. Remember that overexposure to sun can also cause sunburn and skin cancer. Always use a sunscreen when exposed to the sun.

Here are the symptoms of a serious problem:

- Headache
- Dizziness
- Rapid heartbeat
- Nausea
- Cramps
- Excessive sweating
- Chest pains
- Problems breathing
- Extreme weakness
- Diarrhea
- Vertigo
- Clammy, moist skin

The signs of the more serious heatstroke are:

- Hot, red, dry skin
- High Temperature
- Rapid pulse
- Lack of sweating
- Convulsions
- Irrational behavior

The best way to deal with heat problems requires the same approach as any other hazard, PREVENTION.

Eat a well balanced diet, but stay away from heavy or hot foods.

WATCH YOUR SALT CONSUMPTION. Many people take salt tablets to replace the salt lost in perspiration. However, too much salt may be bad for you. Do not take salt tablets without a doctor's permission.

Dress for the heat. Wear lightweight, light colored, loose clothing. If there is sun wear a hat with a wide brim and put sunscreen on exposed parts of your body.

Drink plenty of fluids. At least one cup every fifteen to twenty minutes. You are sweating out a lot of fluid which you need to replace. Do not wait until you are thirsty. Cool (50 deg. F) water is the best drink. Avoid drinks containing caffeine or alcohol.

Acclimate to the heat. Slowly build up your exposure to the sun and heat. The sun is strongest between 10AM and 3PM.

Always use a sunscreen and cover as much of your body as possible with clothing.

Sun is even more potent when reflected off concrete, water, or sand. You can get sunburned even on a cloudy day.

If you feel dizzy, weak, sweaty or nauseated, take immediate action. Pay attention to cramps or to someone who tells you that you look pale.

If you experience any of these symptoms, immediately get to a cooler area, inside a cool building, into the shade. You should loosen your clothing, lie down, and put cool compresses on your skin. Drink plenty of fluids.

Heat or sunstroke requires fast action. Get medical help immediately. Get the victim, or yourself, to a cool spot and loosen clothing. It is vital to cool the body down as quickly as possible. Immerse in cold water, or cover with ice packs, if possible. If this is not possible, use water, cool compresses, even hose down the victim. Do not attempt to give an unconscious person fluids.

For sunburn, rinse or soak the area with cool water or cold compresses. If the sunburn is NOT blistered you may use a mild non-medicated cream. If there are blisters, see a doctor, they can be serious.

If a skin spot or mole has an irregular border, increased in size or one half is different than the other half or is a different color, see a doctor, as these are signs of possible skin cancer.

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Now, a personal experience... The symptoms I experienced when I was 18 scared the hell out of me and I knew what to do in heat. After hitting some tennis balls between 10AM to about 11:30 I looked down at my arms and noticed that they were beet red but that I wasn't sweating (it was only 101). Thinking, this is not so good I decided to go to the refreshment stand and get something to drink. So I walk up and order a soda, sat down at a table with an umbrella and close my eyes. My heart started beating very fast, when I opened my eyes the world went into black and white. I could have sworn I was having a heart attack. I alerted the staff at the stand who promptly took me to the bathroom which was air conditioned. Immediately upon entering the bathroom I began to sweat profusely and threw up. I sat in there for an hour before I left, they never called the paramedics and I now seem to have problems sweating.

Moral of this story:

Be aware of what is happening to your body while working in heat, it can kill you...signed pmb

WORKING IN HEAT

Wear a long-sleeve shirt (river rafting shirt), long pants, loose fitting.

Wear a large hat and sunscreen.

Wear a wet towel around the neck.

Cool batteries in front of air conditioner in motel before charging. Open case up! Or take 2nd set.

Combo is good up to 130°.

8041Q monitors are good up to 115°.

Trash bags, space blanket, paper tape for fast approaching sand storms.

Always keep all gear in the shade.

Wear hiking boots. They are cooler than tennis shoes.

Have extra gloves for cables too hot to touch.

Carry "blue ice" (gel that comes in foil packets) in ice chest, wrap them in zip lock bags (to prevent condensation), and put on camera taps to cool them down when picture gets wacky.

COLD COLD WEATHER

COMPUTER BOOT : At 15° F while booting, the computer gives an error message in white type on black screen. I believe the temperature sensors on the motherboard are out of range and cause this error message. The message asks you to hit F1 to continue, so hit F1 and continue... all is well. I would like to know what the message is exactly.

AVOID HELICOPTERS

One thing we have learned (from a helicopter pilot); if you must rig anything in or on a helicopter, from a clamshell recorder to a microwave antenna, you must do it very carefully with the pilot's permission. If the bird goes down (sooner or later, they all do), and it's determined that your equipment caused the crash, YOU are responsible for ALL the damages (to the ship, the crew, the equipment on board, the elementary school it crashes into... even if it's not your fault in any way, the crazy lawyers will sue everybody in sight. It's not worth going to court over. This is because your stuff isn't considered by the insurance company to be a part of the aircraft, and therefore not covered under their policy. So, if you feel insecure about how that antenna is attached to the skids (or whatever) DON'T DO IT! The transmitter with a rubber duck in the plastic window by the passenger's feet works astonishingly well. Before a helicopter job make sure that the WSV contract was signed. Call the office!

NUCLEAR RADIATION

From: David Marks <davmarks@ptd.net>

Gotta tell this one. Back in '85, I worked on a film for GPU, owners of Three Mile Island (that nuke plant in Central Pennsylvania that got a little too hot) GPU was trying to prove that the cleanup from their little boil over was just fine. We went into the "interesting" parts of the plant several times. We wore dosimeters and every time we came out, they sent us through walk-thru radiation detectors. Everytime I walked through with the Nagra in its Haliburton case, the alarms would go off and somebody would run over and run a counter over the case. The second time this happened, I asked the guy why he didn't check me out. The metal cases absorbed radiation faster than the human body and set off the alarms. Give me salt water any day! -- Dave Marks

HOW THE VIDEO ASSIST OPERATOR IS SEEN BY THE "REAL" WORLD

No, I don't hate video assist.

I really find it is a great tool AS LONG AS IT IS UNDERSTOOD THAT IT IS A TOOL!

I'm just really tired of having to explain day in and day out to the ever-increasing agency/client types about:

+why there is a flicker,

+ "no, we are shooting color film,"

+ "the image you see is well beyond TV transmission,"

+ "remember, it's only a 1.5 second shot, it takes me 3 seconds to get the dolly up to speed.."

Is it just me, or is it an international phenomena: the agency folks are getting more ignorant of VERY BASIC production standards?

David Steinberg's definition of a client: "Six people who share a brain."

Jeff Scope235@aol.com a camera person copyright 1997 Scope235@aol.com cinematography-I

> To quote Dave Barry: "I'm not making this up!"

I shot stills on a commercial several years ago and had the first hand experience of seeing one of the "creative" types walk over to the dolly and try to look into the end of the pan handle. When he told the dolly grip "it looks very dark", the dolly grip and I left the set on a dead run. We barely made the door.

--Jerry (hey, let me open the stop a little for you) Wolfe

So **Ms. Coca Cola** arrives on the set fashionably late just after early morning nail appointment, looks at the monitor and says: "Oh, I see .. this is really neat, you add the color later, don't you?"

My girlfriend (this is John Doe), who's a PM, tells this story:

The Ad Agency Lady ("Creative Director") while watching the monitor: "The picture's too blue, can we take some of that out?"

My girlfriend: "Sure" (Adjusts a knob.)

Agency Lady: "No, I mean..." (points to the camera)

Girlfriend: "You mean in the camera?"
Agency Lady: (confused) "Yeah..."

So after a lengthy discussion about how video assist has nothing to do with the colors actually reproduced on film, and demonstrating by tweaking knobs on the monitor to turn the picture from red to blue, etc. The Agency Lady nods and points again. "Yeah... But can we take it out of there?"

Sean Peacock, Studio City, CA

While shooting in almost guerilla-style filmmaking, the actors climb over a fence, into, and onto a fountain. Of course we had NO permit for this, and were violating some community law. Just as we start to roll, the director yells, CUT, and asks me (the D.P. guy) ---- "do we have enough light?"

Couldn't ask me before everyone climbed in, NO, only when these actors were in the process of breaking the law. My response was yes, it's no problem, what could we do about it if we didn't? (Really stupid to reply, but these weird inopportune questions had been coming all day). The director's response was --- "I'm asking because if we don't have enough light, we can just move the camera closer"

Steven (I'm up to my waist in the Long Island Sound, and now you want to change the shot) Gladstone
copyright 1997 Veenotph@aol.com cinematography-I

True story:

The Director of Photography is madly in love with a married Producer--so their torrid affair is hush-hush. The day before a major two-month shoot, the DP catches the Producer "in flagrante delicto"--servicing the Client in one of the DP's own edit rooms. The Client flees. The DP quits and moves toward a locked cache of firearms. The Producer coolly assesses the situation and places her nude and willing body between the distraught DP and the firearms. Thirty minutes later the DP has had a change of heart and decides to stay with the shoot if the Producer will dump the Client. No can do, sighs the Producer. There is too much money at stake. Besides, the married Client doesn't know about the DP's intimate interest. Stick with the shoot and keep your mouth shut, purrs the Producer, and I guarantee that you'll both be taken care of. Between moments of frenzied jealousy over the next sixty days, the DP manages to do some of the best work of his career. The Client winds up happy as a clam--not realizing how close he came a couple of times to having a 12K dropped on his head. The Producer moved on to bigger (well, maybe) and better in Hollywood and still occasionally sends work to the DP. Since then, the DP has made a point only to date outside the business.

When the "idiots" are also your employers, yes, they do win.

With reference to the sometimes silly, or downright ignorant requests we sometimes get while working, usually from someone above us in the hierarchy:

As I have learned the hard way, sometimes saying what you think about the situation or person comes back to haunt you. (read: unemployment) So me and my crew have a code word we mention when we see another crewmember getting upset about this sort of thing: the observer says to the person getting upset, "Biscuits." It serves as a friendly warning that the situation is one of those times where discretion is the better part of valor and you gotta' go with the flow and give in, as nothing can be done about it. Just smile and say, "Yeah, sure we can do that!" and then go do it. But I always try to make sure I have a suitable method covered, just in case the "new" request doesn't work.

A friend on the web said:

"A few years ago I was having a bad day. The DP said to me, 'Ham and cheese.' 'Huh,' I replied. 'Ham and cheese, and (sticking his tongue out and grabbing it), hold the tongue.'

A letter I got with GOOD ADVICE:

I like your recommendation that always be liked first and I think you're right on! How you say things is so important and to be cheerful and caring about the job is appreciated, and remembered. They don't want a complainer; they want you to do your very best with the situation. The attitude thing can creep up on you when you're really tired, (I'm speaking about myself) but I stay positive no matter what. OK, enough of that. See ya,

SET ETIQUETTE

©Ron Dexter

Ron Dexter is a world renowned Director/Cameraman. He has been an owner of a very successful Hollywood based commercial production company since 1977. Ron is an innovative equipment designer, mechanic and teacher. He has shot in 20 foreign countries and 35 US states. His video tapes on various aspects of film production are available. For information contact: Dexter's Trix's 1-800/274-8749

ROAD MAPS --- CARTES ROUTIERES --- STRASSENKARTEN

In the entertainment business, set etiquette is a must. For a newcomer on a set it can be like being dumped in a foreign country. The language alone is a struggle. The rules are often different and the glamour factor can distort one's views. Without a carefully defined structure, a large shoot would be absolute chaos. On small shoots, departmental lines can become blurred, but certain rules of etiquette still apply.

These are not elaborate theories, but are observations and opinions from many years working in the business. There are definitely different ways that things are done on the different size and types of shoots.

Getting Along with the Locals

Don't think that just because you are in the TEE-VEE or MOVIE business that you are something special. To a local person, you may be a once in a lifetime opportunity to fame or emissaries from Hell. Your success on a location and the success of future crews on that location depends on your behavior. Everywhere you are treading on someone's turf. Tread lightly. Their opinion of you will determine how cooperative they will be.

The first impression is often the most important. Send in your most diplomatic person with the most in common with the area to make that first contact. Maybe . . . "Hello, how are you . . . You might be able to help us . . . We are trying to find out who owns . . ." NOT . . . "We're from Hollywood and we're going to . . ." They may see Hollywood, TV and movies and the big cities as the reasons that their children are tempted by drugs and sin. To a shopkeeper, you could be a potential customer or shoplifter. Clothes appropriate to the area make you stand out less as a city slicker.

Start any conversation with a perturbed local with, "I'm sorry, let me get these people out of your way." NOT, "We'll just be a minute." Being LEGAL or having permission from a higher authority, may not apply locally.

Drivers should park out of people's driveways and parking spaces. Get permission. Don't block traffic. When about to leave, find out the direction of the next location, get turned around and ready to roll.

Treat motels, etc, with respect. Use heating, cooling and lights as needed. Don't "borrow" towels for your own or company needs. Close the door, and turn off lights, etc, when you leave. Be quiet, especially early and late. Keep a low profile with the camera gear. Don't tempt. Word gets around a small town about your behavior.

Company Vehicles

Don't abuse a company or rental vehicle just because it's not yours. If you hear strange sounds, find out what they are. Occasionally turn the radio down so that you can listen for knocks and grinds. If you suspect a problem tell someone in production or transportation so things can be fixed. If on the road, stop and get it checked. Call production immediately.

When you get gas, check the oil and radiator fluid. Engines die for the lack of either one. Check the tires for proper inflation and if the radiator needs water. Watch the gauges and warning lights.

Don't trash a good vehicle with props and equipment. Protect the floor, roof and upholstery. Lock it up if you are not in it. Props, tools or anything stolen at night can mean a disaster on the next day's shoot.

Crews and their Own Equipment

Buying equipment to supplement one's income can be wise, but don't assume that it will help you get work. Would your employers be glad to rent from you AND would you then become competition to YOUR own

regular suppliers? If a camera assistant buys filters and batteries to rent he is cutting into one of the money makers for the camera rental house. The rental house loses money on camera body rentals, but makes it up on accessories such as batteries and filters. You might be jeopardizing your own standing with the rental houses.

It's tough deciding how to charge for equipment that you happen to bring along to the job. If something is requested, a rental price should be agreed upon. If you happened to bring along something that saved the day, be careful about how you collect for it. Some producers are fair,

and some not, no matter how much time and money you might have just saved them. Sometimes your future job may be at risk. It can be assumed that because you are not in the rental equipment business and that what you bring along might be regular tools of the trade.

Remember that your garage operation is in competition with the established businesses with more overhead to support; insurance, rent, employees, etc. In short, be cautious with your side line business. Don't let it interfere with your job that is your major source of income. If your toys make you a better technician, they are worth the cost even if you don't make a lot on them. You can't spend all your efforts on the set just watching out for your equipment. It's there just like anyone else's stuff. Everyone's equipment should be taken care of.

Some Etiquette for Leaders

Say "Hello," introduce yourself, and get to know people a bit before you give orders. Ask about the families of people you know. Use names. (Make a list.) Thank people. "Yes, Sir" and "Thank you, Sir" (or Ma'am) implies respect. Try it. (Works when you have forgotten a name.)

Appreciate people's efforts EVEN if they make mistakes. If they are trying, give them credit for trying. Maybe your instructions were inadequate or confusing. Assume that people are trying to do a good job and that they are trying to please you. Even if you think that your instructions were clear, it is wise for you to take the blame for not communicating. Try to understand their side first. It will give you time to plan your own approach. Your ideas will be better accepted if people are given a chance to contribute.

Let's say a director has very carefully researched and planned how to do something mechanical. Instead of telling the crew exactly what to do, he might start with, "I'm sure that you have a better way of doing this, but I had to plan this before you were on the job" or "I didn't get a chance to ask you about this. Let's go through it and see if my idea will work at all." You can reduce their resistance to your offering expert information by being humble. Even if your way is best, a crew may be able to add shortcuts and insure safety. Do listen, and let them do their job.

For runners and assistants, make sure that they understand instructions. Instruct them to call back if there are problems finding something or if things cost a lot more than expected. Sometimes the limited availability of things will require finding substitutes. Often suppliers, or unexpected things found out there, will offer better solutions. Tell them to call in repeatedly as things change.

Ask for forgiveness if you have to repeat things or explain things they may already know. Some egos are easily insulted. Use "I'm sure that you already know . . ." or "Forgive me for repeating myself . . ."

"The Big Break"

Most people are preparing and waiting for the chance to move up the ladder. Often that next chance is just a trial step to see if you are ready. Usually that chance is given when the opportunity giver thinks you are about ready, not when you think that you are ready. Your talking about moving up may be taken as normal ambition or a swelled head.

Once given a chance, don't assume that you have made it too soon. You may have to step back down to your old job for a little longer because of not being quite ready or just because there is no need for you in that new position at the moment. Breaks are often given on less demanding jobs so that you will have a better chance of succeeding.

Too often a break goes to people's heads and they think they are an old pro in just three weeks. Knowing the mechanical skills of a job is only part of the job. Every advancement requires additional communications

and management skills. Running a crew is a skill that takes time to learn. How orders are given is very important.

Taking on smaller challenges at first is wise before tackling the big ones. Getting the best help is wise and asking for help from the more seasoned crew is wise. A recommendation from a co-worker who has credibility is worth more than observations of bosses who don't have time to notice much of the working situation.

Success and Ego

Success in the entertainment business can be rocket propelled. But DPs and directors often don't know how to handle success any better than a rock star, politician or other whiz kid. Making big bucks and having everyone desiring one's services goes to most people's heads. Gandhi kept himself humble by doing humble things every day. It's human nature, power corrupts.

One of the casualties of the demise of the studio training system is the progressive rise of people through the ranks. Now people can move too fast, sometimes from bottom to top in one or two steps.

A little advice other than be humble. Don't be a threat to people. Let them feel worthwhile. Let them succeed too. Give them plenty of credit for their efforts.

My, My, My

A "my crew," "my set," "my shoot" attitude by a production manager or production coordinator, rubs most people the wrong way. Often, along with the "my crew" attitude, is an attitude that jobs are dependent upon making that production person happy. "Do things MY way, treat ME right and I will see that you work in this town again."

First of all, people are very uncomfortable working under such a condition. A director, producer, DP, key grip, gaffer, etc., can call their crew "my crew," but not the AD or production coordinator, who only puts out the work calls. The crew is usually selected by the director, DP, etc. The coordinator is just making the calls.

Often, along with this ME, MY, I attitude is never making a mistake. A scapegoat for any mistake must be found and admonished, often along with a job security threat. "If you want to work for me you must make me look good in the boss's eyes. "

For a DP or department head to talk affectionately about "my crew," he is saying "You had better take care of them," "Don't abuse them," "Don't try to take advantage of them."

Financial Responsibility

One measure of success is the ability to buy things that we couldn't afford on the way up. All the goodies out there to buy sometimes straps the technician, camera assistant or budding director with payments that can be a chain around his neck when the "real break" arrives. One often has to work for a lot less money or none at all when making that next big step up the ladder.

Lots of vans, boats, and even houses are lost for payments when the economy gets a little slow. Losing hard earned things is a blow to one's self esteem. You can blame the economy, some union out on strike, or changes in the business, but how far one extends oneself financially is one's own decision.

>>A note from a former Dxr employee we found on the internet: Ron never provided a health plan for his employees. Ron never considered paying into union health plans unless he had to under NABET in the early years. Ron was a typical film producer while trying to keep a nice face appearance. Ron thought of himself as a genius surrounded by morons who asked for too much. Ron thought giving someone new a chance was his contribution to making the world a better place. Really it was just an opportunity for him to underpay the new slave. Ron above all is a capitalist and he will deny it to the grave. And therefore we love him, don't we?! Or is it envy? Who was it who's labor bought him the million dollar properties he retired to in Santa Barbara? Without him what would there be? Only the desperate confusion of anarchy. And he is hardly any different from the rest of the film shysters and exploiters.

>>This is a quote from the CML list on the internet.

SUBJECT: CML: RE: VIDEO ASSIST/WEIRD DIRECTOR TRICKS

Wed, 30 Jul 1997 18:06:37 -0400 (EDT)

Quite some time ago I was shooting a commercial with some extreme close-ups of product shots, macro shots, actually. After the shots had been worked out and lit, but before we started to shoot, the agency folks expressed an interest in looking through the lens.

Since the shots were so tight, the desired depth of field required a stop of about T/22. We were shooting motion control, so the exposure was set and the set lit for somewhere around 2 fps, so once the stop was put into the lens, the finder went quite dark. Anyway, when the agency guy looked through the lens, I set the stop to wide open, and explained that that was how the colors and lighting would look, and then stopped down to the shooting stop to show what the actual depth of field would be. The guy quickly looked up and exclaimed "but that's much too dark!". So I opened back up and explained that at that stop, it looked more like the lighting would appear on film, to which he replied "but it's out of focus!". This went back and forth a few times, with complaints at each end -- out of focus, too dark, out of focus, too dark, etc. I tried to explain that because of the exposure time the "dark" image would appear as the "light" image on film, with the desired focus. The response was " But how do I know that?" At which point the production came to a screeching halt until we could figure out a way to prove to this clown that photography works. Finally, my assistant suggested we Polaroid the setup to show proper exposure and depth. Since we didn't have a polaroid on the set, we sent out for one with color film. It worked, though I was never sure the guy was completely convinced.
copyright 1997 CanfieldD@aol.com cinematography-l

How do I know that? Simple answer:- "Trust me, I'm the person you hired because I do know that."

Organization: LYNCH FILMS INC

More weird tales ...did a spot where we had two days of shooting, day one stills, day two film. Stills were lit using strobes, the film HMIs.

After day one looking at the warm modeling lights all day, the Creative Director was shocked when the HMIs came in ... "it looks horrible!" After vain attempts at education and explanation the gaffer went in the truck and grabbed a sheet of bastard amber. "Here" said my DP friend, "look through this".

SPECIALTY EQUIPMENT

ANAMORPHIC

In Hollywood Panavision and Clairmont (and others) rent anamorphic lenses for their cameras. Anamorphic lenses look and feel the same as regular ones. They take a very wide image and squeeze it horizontally on the regular 35mm negative. Later in the film lab the image is unsqueezed and projected as a wide format on a movie screen. 16x9 is not anamorphic. The feed from the video tap looks like everything is squished side ways. You have to counter squish from top and bottom to make a round face in front of lens appear round on a monitor.

ANAMORPHIC MONITORS

The easiest way is to record the image as it comes from the video tap on camera and do the vertical squeeze in all monitors. The following monitors are set up for it: Panasonic B/W WV5480 with custom switch
Sony Combo 9" with custom switch (nearly perfect)
Sony PVM8041Q with custom switch
Sony PVM2030 can be modified
Sony PVM1953MD can be modified with software by pushing buttons in front (5 minutes)
Transvideo LCD makes some that can be switched
Special Panavision 5" on board monitor has an anamorphic format converter built in that sends proper image out to video assist
Transvideo sells a format converter for \$1500 that does the squeezing and moves image L-R, top-bottom.

ANAMORPHIC FORMAT CONVERTER AND 16X9



Plug TRANSVIDEO Format Converter inline before your monitor or deck and it will display a 16/9 or Anamorphic image on any normal 4x3 video screen correctly. This accessory automatically generates black letter-boxes to fill in the rest of the 4x3 screen. Thanks to its digital processing, the Format Converter displays "unsqueezed" images with great accuracy, without cropping. The Format Converter accepts NTSC and PAL. With a weight of 10 oz. (300g), it can be velcroed to the back of any monitor, LCD or CRT. By Transvideo <http://www.transvideointl.com> 10700 Ventura Blvd., Ste. 2A, North Hollywood, CA 91604 818-985-4903, fax 818-985-4921. These units are slightly soft and not very reliable, they die a lot.

Main Features:

MOVE Function: to move vertically and horizontally the unsqueezed image into the 4x3 screen.
CENTER Function: to bring the unsqueezed image automatically in the center of the 4x3 screen.
Left/Right Flip: to flip the image horizontally.
Recordable: the signal at the output of the Format Converter may be recorded with all image manipulations.

Technical Specifications:

Nominal levels:

Composite	1V/75Ω
Input	video Composite on BNC
Output	Video Composite on BNC
Power Input	+8 to 28V DC
Power Consumption	330mA at 12V
Power Connectors	Hirose 6, Lemo 2
Mechanical:	
Dimensions in mm	157(l)x73(w)x30(d)
Weight	265 g (0.55 lbs)

SONY PVM1351Q MONITOR COLOR 13" ANAMORPHISIZING

The picture will shrink to 90% of nominal anamorphic viewing.

ACTION	RESULT
PRESS:	YOU WILL SEE:
Power ON	Power LED lights up
16x9 Button	16x9 Button lights up
MENU	Menu appears on screen
DEGAUSS + ENTER simultaneously	Setup menu appears on screen
MENU or ENTER to change menu numbers	Lets you cycle through menus. Menu number is right-most. (Menu numbers do not always match Sony manual or from monitor to monitor!)
+ or – to change value	Increases or decreases the value associated with Menu item. The memorized value is marked with a right arrow(>).
MENU or ENTER	To change to menu item 16:9 NOR DEF > XX 24 V SIZE <60>
+ or –	To change XX value to 0 (smallest vertical size)
To write to memory: PUSH DEGAUSS quickly PUSH DEGAUSS quickly PUSH DEGAUSS (that's 3 times)	WRITE WRITE * Right arrow appears and memory is set
To return to normal operation	Power OFF wait 1 second then power ON
To set linearity:	
Feed a standard signal generator showing cross hatch to Monitor	
MENU	Menu appears on screen
DEGAUSS + ENTER simultaneously	Setup menu appears on screen.
MENU or ENTER to change Menu numbers	To change to menu item 16:9 NOR DEF > XX 25 PIN PHASE
+ or –	To change XX value to best setting
PUSH DEGAUSS 3x	To set memory
To return to normal operation go to:	Power OFF wait 1 second then power ON
To set bowing:	
Feed a standard signal generator showing cross hatch to Monitor	
MENU	Menu appears on screen
DEGAUSS + ENTER simultaneously	Setup menu appears on screen.
MENU or ENTER to change Menu numbers	To change to menu item 16:9 NOR DEF > XX 26 PIN AMP
+ or –	To change XX value to best setting
PUSH DEGAUSS 3x	To set memory
To return to normal operation go to:	Power OFF wait 1 second then power ON
QUICK GUIDE:	
DEGAUSS - ENTER	Setup menu
MENU + ENTER	to change menu numbers
+ or –	To change values

Find for size	16:9 NOR DEF XX 24
Find for linearity	16:9 PIN PHASE XX 25
Find for bowing	16:9 PIN AMP XX2??
PUSH DEGAUSS 3x	To set memory

9" COLOR SONY KV9PT20 MONITOR

9" Color Sony Monitor - MUST HAVE REMOTE

Hidden function: you can switch the RF input plug on the monitor from CABLE to RF. The indication "C" for cable only comes on the screen for 5 seconds while switching from RF to CABLE. If you have no or poor RF reception of the air, suspect this switchover first. The button is ONLY on the remote. ALWAYS TAKE THE REMOTE! The monitor remembers which mode it was in while unplugged—for how long we are not sure. The "CABLE" setting is much less sensitive than "RF". Therefore, it does not receive broadcast signals very well, if at all.

19" COLOR MONITORS

Image quality on all these Sony Trinitrons is the same! All come with necessary adapters and are self contained in that way.

What are the differences between monitors?

SONY KVR 1901

Oldest, has a detailing knob that has more range than others, and you can really crank detail into picture.

SONY 1910

Comb filter cleans up hot whites and edges!

SONY PVM 2030

Newest (1991) sleek, black model. Directors swear this monitor "looks better" than anything else. Maybe, they get this from the "touchy feel" of the industrial design. Disadvantage: You cannot judge the settings of controls by feel or position of knobs. You have to hit reset button to get all controls back to "factory defaults," (preset internally.)

PROTON

looks really good. What an advantage!! Directors can sell their video dailies to clients with this good image. Worth the extra few bucks.

VIDEONIX Help Line (408) 370-9963, 8A - 12, 1P - 5P PST, M-F

Use DISPLAY button to change output to program in A, B. You should preview FX on right monitor. Proper termination is important.

LCD MONITOR CLEANING.

Some LCD monitors have been coated with special Anti Reflective Coating (a film applied after manufacture). Here the special care and cleaning instructions. The same instructions apply to "normal" uncoated LCDs, Computer monitors, LCD TVs etc.

The AR coating was designed to minimize reflection and glare but is susceptible to fingerprints and smudges.

Blow (canned air) or soft brush off screen surface thoroughly. Get rid of all solid particulate matter (dust). If you don't these particles will scratch the surface permanently.

Saturate a soft non abrasive cloth (good quality Kitchen-towel or lens-cleaning tissue) with 75% Isopropyl Alcohol. Better jet use commercially available pads such as used in hospitals to disinfect skin before injections.

Lay screen flat, wiping screen with even wipes and distribute Alcohol across whole surface uniformly.

Do not allow Alcohol to dry quickly as you would be wiping with dry cloth and grinding dirt into the surface.

Wipe evenly to avoid streaking.

repeat if necessary until all streaks are gone.

NEVER: wipe with dry cloth while dusty!!

Storage: Blow clean the surface and cover screen with soft Kitchen towel before storage. (Best: build a small box that keeps a small airspace in front of screen while in transit so the surface is protected [a lenscap])

The Anti reflective coating is expensive but it further improves the already daylight visible screen. It really works!

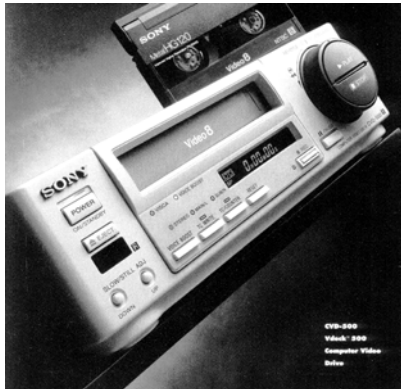
Some sources for screen wipes:

Alcohol preps (for Hospital use, very cheap)
very cheap in packages of 200
from Kendall - Webcol Order No: 5033 , Mansfield Mass. 02048
available from Hospital supply houses

LapTop screen wipe TX834 (expensive)
Large pads well saturated with undescribed solution that smells like Alcohol
The Texwipe Company, Upper Saddle River, NJ 07458
1-800-284-5577

Wet Pads FREON TES solvent MS176P (expensive, TES is a stabilized version that is not supposed to attack the ozone - if you believe that....)
Miller Stephenson Chemical Co., Inc., George Washington Highway, Danbury, Connecticut Tel.: (203) 743-4447.

CVD-500



CURRENT USE AVERAGE 1A AT 12V ON INVERTER

Deck on 50W Inverter powered by 12V battery .	
Standby (red power light on)	0.5A at battery
ON (green power light on)	0.8A at battery
Fast Forward	1.2A at battery

For figuring battery lifetime, use 1A for "ON", 1/2A for Standby. A 20Ahr battery will last for 20 hours approx.

MINIMUM VOLTAGE FOR INVERTER IS 11.7V! The 50W inverter will turn off without beeping, but its pilot light will stay on.

LEAKAGE OF CVD-500 PLUGGED IN AC

CVD-500s are consumer decks and have only a 2pin plug for AC.

.0001 A leakage = .1mA leakage = 100 μ A leakage

53V measured with high impedance V meter.

When CVD-500 is plugged into wall AC, the leakage to ground is as above. One deck is certainly enough to light up the GFD tester brightly. That's a warning! What does this mean? If you have several of these decks plugged into AC and connect them with video and audio cables their leakage adds up. If this leakage is not drained by a video cable to a good monitor that has a 3pin AC plug for example, it is easy to get a tingle (a pre-shock which may be serious in certain circumstances). So be careful. All gadgets with two wire plugs have this potential—a potential to shock, a potential to kill. Who gets killed first: the old, the weak, the sick, the stupid, the ones who let themselves be rushed by someone else. If you don't understand this, ask questions.

The solution: Use batteries and the inverter!

A general caution:

It's always safe to assume that other people's equipment is improperly grounded. Test it with the GFD. If it lights up, find the fault or don't plug in **and don't touch!**

If you have to plug the CVD-500 decks into AC:

Plug in the unit with a 3-prong plug first (a monitor, a ¾" deck). Check its ground with the handy-dandy GFD. Wire video and audio to the 2 AC plug unit, establishing a ground for that.

Plug 2-prong AC unit in same outlet as 3-prong. All AC comes from one plane right!

Note: this is not backwards. This is the safe way. Remember your signal flows from the deck to the monitor and return to deck. So why not hook up return first. Think about it!

CVD-500 INSTANT PLAYBACK HINT

If you know you will be asked for playback after the take, press TC/counter button to display counter in HH:MM:SS and press "COUNTER RESET", at the crucial moment just before the sticks clap the counter will go to zero. Keep recording as normal. At the end of scene press "STOP" then "TAPE RETURN" and you are back at the head of the scene after the sticks and the deck is parked. The powers that be will wonder that you can make your deck work as fast as a hard disk, because they will have hardly spoken the magic words, "playback please," and you will be playing back instantly.

It is less dangerous to do this on TC pre-striped tapes so if you must wind forward quickly to record the next take you will keep the TC numbers consecutive. You know, of course, that if you record on blank tape you will lose the consecutive TC and start again at 00:00:00.

CVD-500 SLO-MO TRICK

The IR remote has a slow-mo forward speed under a specific button. The deck plays same speed if you put it in PLAY-PAUSE and inch the rotary dial clockwise. The speed is 5:1 or 120fps transferred to video at 24fr/sec basic speed.

EJECT TAPE WHEN POWER DOWN

Do not transport CVD 500 with tape in transport it gets stuck sometimes and wont eject.

WIRED REMOTE RM-95



Switch on upper left "NORM ↔ ADJ" is taped off on the "NORM" position. Leaving it on "ADJ" is dangerous because you could change all settings inside deck! Keep switch in "NORM" position.

Tape return function only works from wireless remote. Deck must be in counter mode!

If you want to return to the head of a particular scene, press the RESET button on the VCR or COUNTER RESET button on the Remote Commander (RMT-540) at the desired scene beginning so that the linear time counter resets to "0H00M00s". You must be in linear counter mode, to get there press TC/Counter button. LED should be off. To return to the desired point after playing back (or recording) the tape, press stop, then press the TAPE RETURN button on the remote. The tape rewinds to the position where the counter reads "0H00M00s", and stops.

PRE-STRIPED TAPE

Its advantage is that you will never start recording 00:00:00 in the middle of a roll.

HINT

Press "TC/Counter" switch to change display to time code or counter.

MX-50 CHEAT SHEET



HOW TO FADE BETWEEN 2 INPUTS

select A and B bus

Mix [ON]

Bar - up down

FREEZE ONE INPUT

Digital Effect [ON]

Still frame [ON] (field is better)

you can freeze either A or B or both

you have to release either A or B individually

SIZE BACKGROUND AND FADE ON TOP

(Dailies video is too large for a fade on top of the video assist pumpkin outline made by the tap camera)

Use T Bar with wipe [ON] for sizing

Use  (lower right in wipe pattern selection area) and compression [ON] for sizing

To swap source 1+2 push A-B select for "T" bar

Use small Fade Control slider for fade [IN-OUT]

Video [ON]

Select B [ON]

Scene grabber [ON] to shift position with joystick (upper left on panel)

PROGRAM OUT

A or B or Effect [ON]. You want to have Effect [ON] if sending Effects to monitors. If A is [ON] the audience on program OUT will see A while you can rehearse on Effects output privately.

NOTE: MX-50 WILL NOT RESIZE AND CHROMA KEY AT SAME TIME.

Take an MX-1 to do the sizing and MX-50 for chroma key.

[SCENE GRABBER] makes black frame around position [ON] picture.

CHROMA KEY (p. 27)

Push [CHROMA KEY] button

[HVE] Knob lets you adjust color, use first

[slice] Knob cleans up borders

Use [Luma Key] for B/W keying

DIGITAL EFFECT: FREEZE

[STILL] freezes first push, releases second push. Can freeze [A] and/or [B].

COMBO INSTRUCTIONS

TO RECORD: GENTLY SLIDE THE RED BUTTON TO THE RIGHT

FLASHING GREEN LIGHT means battery is low, COMBO will shut OFF in 30 sec.

When the battery is close to depletion, the green power light flickers when starting to record. When the battery goes below 11V, the COMBO shuts off. This protects the battery. Plug in new battery. Cycle power switch OFF/ON. You need 1 battery for a normal day.

Audio mute switch hidden below screen kills speaker and line out audio.

Voltage Internal/External switch: "EXTERNAL"

Put switch in "EXTERNAL" position to use Pelican briefcase batteries. Hang battery on stand. "INTERNAL" position is for NP1 slide in batteries (not provided). They last only 45 minutes max. If there is no Internal/external switch then the internal batteries are permanently disabled.

Charge/Operate Switch ON REAR PANEL: "OPERATE"

Must be in "OPERATE" position. Otherwise only the red pilot LED lights up and nothing else works. Usually this switch is set with a metal switch guard.

CHARGE BATTERIES EVERY NIGHT

Battery Life: Average 8 hr

It is OK to wait till the combo shuts down because of low Battery voltage. The Pelican small suitcase battery has a capacity of 20 Amp hours.

In "RECORD", the Sony Video 8 Combo draws 2.5 Amps $20/2.5 = 8$. The battery is good for 8 hours of continuous recording.. In "STANDBY", the Combo draws 1.4A. $20/1.4 = 14.3$ This means the battery is good for approximately 14 hours in standby.

USE ONLY THE PROVIDED CABLES & BATTERIES.

Charger is foolproof

It takes maximum 12 hours to charge a battery fully. The chargers are pretty much fool proof. Yes, you can plug them into a generator. That is better practice than plugging the combo itself into the generator. Two (2) lights should light up on charger when plugging charger in battery. When charging light blinks, battery is 95% full. When charging light goes off, battery is 100% full. You can leave charger and battery plugged in as long as you like. Chargers get very hot.

HEAD-CLEANER

Use only provided wet head-cleaner cassette. Use it only when you need to: when you have a suspected head clog!. i.e. Picture looks very noisy or you see just white noise on playback. It takes only 2 seconds to clear a clogged head. The tape is abrasive. Be very quick with it. Turn it on and off several times rather than letting it run continuously.

SOUND ON SECOND MONITOR

When feeding a second WSV customized monitor with a custom gray 7 Pin cable, make sure the monitor has a transformer input, otherwise you will have a small amount of audio buzz (groundloops). YOU DO NOT NEED A BATTERY FOR THIS MONITOR. When recording with the audio kill switch off on the first Combo the sound will be killed on the second monitor also.

COMBO KEEPS NUMBERS WITH NO POWER

Turn power switch OFF. Unplug battery. The footage numbers in the window will be return when power is restored.

Do Not Use Generators -- Use Batteries

DO NOT DISASSEMBLE UNIT

NEVER use a screwdriver on this unit, ever. Very delicate internal parts are easily damaged by improper disassembly. You absolutely need the manual and training to disassemble. If you have a stuck tape, you have "lost" it until you get the combo back to a qualified service center.

USE A SCREWDRIVER - GO TO JAIL

SONY TU1040 TUNER VS. SONY TU1110 TUNER



SONY TU1040 (NEW '95)

Punch in a number and channel is set, 181 channels, fits under Sony 8" color monitors. 110V AC and 12V DC on 4pin XLR plug on its side (we have one for 24V), ours are 75 Ω Antenna BNC in, BNC video out, Audio RCA out, Size: 8-3/8x2x14 1/4". NTSC only.

The 1040 is very slightly more sensitive and has slightly less noise. Generally, though, they are virtually identical. The difference is about 1dB or less. Hardly worth any thought. The 1040 is 2.5 times the size, has 4XLR (on the side) for 12V and AC and NPI power. Wolf Seeberg has them in stock. He also has many hi gain antennae.

SLO-MO DECK 8950



Still the only affordable VHS deck w/ perfect Slo-Mo (jitter free, 4 dynamic tracking piezo heads adjust to tape) 6-960 frames per sec film equivalent, repeatable precise frames per second settings on external digital dial. Works fine on our 200W inverter. Sometimes sensitive to poor sync in cameras, so test playback early. Speed control boxes replace the area of speed arc that is marked from 0-2x. INT-EXT switch in rear of deck turns remote speed control on and off. If no remote is plugged in, switch to internal, of course. Read new SLO-MO manual.

VIDEO PRINTER - SONY UPP880



Read manual for DIP switch settings in back.

Paper types:

Type I (Normal)	UPP-110S
Type II (High Density)	UPP-110HD
Type III (Enhanced)	UPP-110HA

You must use matching switch positions on rear of printer! When you set the PAPER TYPE selector to II or IV, set the density gradation with the GAMMA selector.

- I Soft
- II Standard
- IV Hard Gradation

Do some test prints to prove to yourself these settings are effective.

MX1

Use DISPLAY button to select output of preview out. Connect preview out to monitor extra monitor so you can see what effect is selected. Capabilities: you can either size or chroma key, you can not do both at the same time. To do both, use two MX1s. Proper termination is important.

Yes you can flip right to left and top to bottom at the same time. Read the manual

THINGS YOU SHOULD KNOW

Menu Screen with mini pix on preview output:

Upper square - CURRENT selection – solid light

Lower square - NEXT selection – blinking light

Push **Fade** button

Find image to freeze

Push **Freeze** button

CAUTION: Over extension of “T” bar will cancel freeze frame.

FOR MOVING & SIZING SEE MANUAL PAGE 54

Select **FADE** option

Hold **SHIFT** simultaneously briefly pressing with [**Zoom/P- P**] (grabs NEXT selection)

“T” bar fades between the two

To move selected image: **▲**(up, down left, right cursor)

To zoom: **SHIFT+▲**(up, down left, right cursor) Be careful not to enlarge too much.

FOR CHROMA KEY SEE MANUAL PAGE 48

Select background with **CUT** button (on top) solid light

Select foreground with **ABCD** button (on bottom)

Press **CHROMA KEY** - cursor appears in Preview screen

Position cursor, press **OK**, move and add as needed

To undo last selection, press **SHIFT + OK**

To adjust brightness, press **SHIFT + UP** or **SHIFT + DOWN**

To adjust color range, press **SHIFT + RIGHT ARROW**

To cancel all, press **SHIFT + CHROMA KEY**

To cancel last and all fine tuning, press **SHIFT + OK**

To perform key, press **PLAY** (or use “T” bar) and “output” will display keyed image

To cut to background, press **PLAY** (or use “T” bar)

To end it all, press **DISPLAY** or **CHROMA KEY**

Suggested learning time: 2 hours +

Don't forget:

Video DA, Video Still Disk Recorder AG800 or AG810 or CVD-500 (Video 8) w/excellent freeze! Or NV6400, (VHS) Cart & Batteries

VIDEONIX Help Line (408) 370-9963, 8A - 12, 1P - 5P PST, M-F

DISK RECORDER PANASONIC AG810

Note: Seems to work fine on inverter.

With disk inserted AG810 will completely turn itself off after approximately 15 minutes.

Remote has on/off switch.

Quality: The playback is SVHS quality with a very small amount of horizontal jitter. It's so little you will see it on a very good monitor only. If you are recording an image off tape, you will record all of its defects of course. So if the tape has tearing or jitter this will be recorded and reproduced by the disk store. If this becomes a bother you would timebase correct this output like any other bad signal.

Poor Input Signal: The disk recorder (like any recorder) syncs itself to its input. In other words, if you keep a poorly performing 3/4” deck (the source of background material) hooked up to the input of the disk recorder, the disk recorder will put out a signal with the same bad sync its input is seeing. **Solution:** If in doubt, disconnect the input cable to the disk and let the disk create its own sync.

4 CAMERA - 8 MONITOR COLOR SYSTEM



With color printer, computer controlled Timecode decks and matrix switcher. Custom switcher sends any source to any monitor. Roll playback from 4 Time Code decks simultaneously in sync frame accurate with laptop computer control. Runs on 12V DC Batteries, Talkback system to director. VU meter, sophisticated audio muting, all balanced audio in/out. Video and audio Distribution amps. Rolls on big wheels. 16 units high, weight loaded: 80 pounds. Options: Signal distribution snakes: custom made 8 video, 2 audio cables in one shell any length.

Signal ground is centralized inside the video matrix switcher. A cable runs from there to front input panel where it appears as a banana termination plug (red). Consider hooking this to the overall shield of the blue coax (or any other coax) or earth ground to reduce any strange noises in video or audio. This ground is the same as the 3rd pin the AC strip, of course.

1X4 MINI PRO VIDEO DA



Perfect for on camera use with several monitors or decks plugged into one video tap (camera). Several monitors draw down the output level of a camera if not fed by a DA. Small LCD monitors often add garbage to the video signal if it's split many ways. This DA is the answer to those and many other problems. Insert DA as close to the source of the signal as you can.

This broadcast quality video **distribution amp** runs for 48 hours on a 9V lithium or **14 hours from a standard 9V alkaline battery**. Input 75Ω BNC — Output 4x 75Ω BNCs, need not be terminated.

Frequency Response	DC - 50 MHz (slew rate limited)
Input Signal Level	Nominally 1V peak-to-peak video within -1V to +1V range
Input Impedance	75Ω ±1% DC coupled
Gain	0 dB (unity gain) Fixed
Output Signal Level	Nominally 1V peak-to-peak video
Standards	NTSC, PAL, SECAM
Differential Gain	Less than 0.2% typically 0.04%
Differential Phase	Less than 0.3°, typically 0.28°
Power Requirements	6 to 12V DC ungrounded (floating) <24mA
Dimensions	1.6"H x 1.3"W x 2.12"L with 9V battery (not included) and connectors
Weight with battery	3 oz.

VIDEO ISOLATION TRANSFORMER

"Get rid of those ground loops!"



Eliminates shock hazard. Gets rid of "hum bars," double images and noise caused by ground loops. Cleans up audio hum and buzz. 75Ω in and output. No more ground loops between any two gadgets plugged in at different locations. Keep between camera and video system and never get shocked. Insert between monitors that run on different (dirty) grounds and never get noise or other garbage. Isolate yourself from dirty remote controlled camera heads or poorly designed and installed equipment. Insert the iso-transformer in the cable as close as you can to the input of the next stage. If voltage is over a few volts, Hum-buckers become ineffective. This iso-transformer is not the same as a

Hum-bucker; this breaks the DC connection between the video grounds going into and coming out of it. It is the transformer's superior common mode rejection that gets rid of virtually all induced noise currents from cables, where the Hum-bucker only suppresses 60Hz at a low level.

A must have safety and convenience device for any video engineer. Other manufacturers make similar devices but they are of low quality. This is a fully broadcast quality component designed and engineered by the top transformer manufacturer in the world, Jensen Transformer Inc. The iso-transformer is totally passive; it needs no power to operate.

Isolation: 120dB CMRR @ 60Hz, if you have 1V signal and 100V ground noise, it would be attenuated by 120db – never to be visible at a typical 80db signal to noise of broadcast video.

Bandwidth: -3dB at 10Hz and 10Mhz. Home broadcast bandwidth is 4Mhz as a comparison.

Input to output withstand voltage: 350 VRMS @ 60Hz – this is a test voltage only

Insertion loss: 0.55 dB

Diff. Gain: <0.02%

Diff. Phase: <0.02°

Luminance Non Linearity: <0.1% THD

Size: 3.45 x 1.70 x 1.8 Weight: 3oz.

Steel box guarantees RF integrity

INVERTERS 12V-110V AC



from 50 W to 1600W

these are stepped semi sine wave inverters and generate some RF so that tuners and antennae in UHF should be placed 10 feet away.

EMERGENCY EQUIPMENT NEEDS

Call WSV. If there is no answer at (310) 822-4973, call the shop direct at (310) 305-1286. Let the machine answer. The shop manager is listening. Say, "Hello, Help Help or some such..." He/she will talk to you.

Send a PA to pick up gear. If this is not possible, the shop person will deliver. See current delivery rate charge on price sheet. If the equipment that's broken is ours, we deliver for free, of course. If the company orders extra gear, they should pick up or we will charge them for delivery.

If no one is in the shop, try Wolf's mobile phone: (213) 379-0597. If there is no answer, only then call ASC Video: (818) 843-7004. They have a 24 hour beeper and delivery service. Very expensive!!

NEVER give out garage door combination to a PA or production company or friend or anybody! NEVER!!

If you cannot reach anybody at WSV, use ASC Video. Wolf will prosecute for theft if you give garage door combination to anybody. Wolf will prosecute for theft if you forget to lock up or set ALARM improperly. Negligence here is not acceptable.



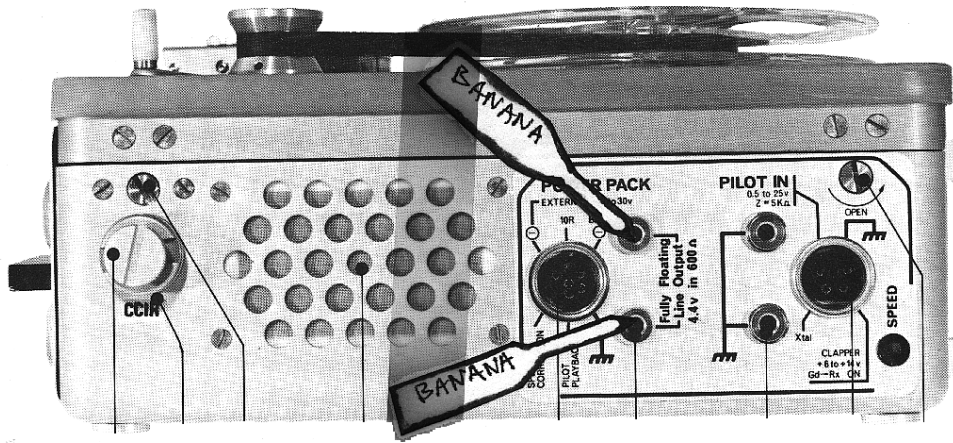
kinetta
from a 1952 Popular Electronics -- modeling the first "creepie peepie" -- built for use at the 1952 Political conventions.<

AUDIO

How to connect soundman's output to video input:

This is a must understand topic:

Quick and easy answer: use a Comtek and wear headsets.



Nagra 4.2 right side outputs:

BANANA CABLES

Find our 2 banana cable in the adapter case in the main box.

Plug either banana plug into "Fully Floating Line Output" on Nagra 4.2.

Run audio extension cable to our Audio in on Main Box.

Our LINE-MIKE switch should be on LINE.

Have sound mixer send you a "tone."

Input level pot should be set to show 0 VU on meter, usually about 12 o'clock.

BANANA COLORS:

Our 3XLR to banana cables are labeled pin 1, 2 3. Trust the labels not the color.

PIN3 Hi Wolf Seeberg standard as of 1970's:

- 1 - ground
- 2 - low audio
- 3 - hi audio

PIN2 Hi the world standard declared in 1993 by SMPTE is different of course:

- 1 - ground
- 2 - hi audio
- 3 - low audio

There is constant confusion about 3 wire balanced audio on 2 wire unbalanced. You've got to know what's what. Read on...

SYSTEM GROUND

On our video system (and virtually all others) ground includes all coax shields, the video camera housing and with that the film camera and DOLLY!!! and the ground pin on AC cable!!! You are grounding the dolly!

AUDIO GROUNDING: 2 BANANA VS. 3 BANANA

Under normal circumstances: Bal. (Balanced In) use the 2 Banana adapter. Now the Video Main Box Audio input switch controls the ground of the Audio extension cable. The sound mixer has 2 Banana plugs that go to the output transformer on his Nagra 4.2.

Special: Using the 3 Banana breakout, the soundman can choose to ground his Nagra (and with that, his whole system) to the Video ground = Dolly = 3rd Pin on AC plug.

Plugging in Audio: You and the Sound Mixer should wear headphones as you plug in the Audio connection. If he or you have problems, try all 3 ground lift switch positions as you listen and as you give him a visual cue of your 3 alternatives. 1, 2, or 3 fingers. He'll tell you what's good for him.

FILM SOUND - VS. VIDEO AUDIO

AUDIO INPUT SPECS OF MAIN BOX

Transformer balanced line level input. Load larger than 10K.

TYPICAL SCENARIO -

The Nagra output on its right side is a transformer balanced (3 wire) output at a +2 dbm level. When the mixer presses his/her "tone" button, his meter reads -10 or -8. Give the mixer the stupid sound cable (2 bananas). If anybody smart was around you would have a 3 banana cables. Use your audio extension cable and plug it in your main box. Leave groundlift switch on BAL. Leave MIC-LINE switch on "LINE". Set your audio input pot at 12 o'clock - You should be in business.

MIKE - LINE

Main boxes let you select what level signal you feed them. Have the sound mixer send you a reference tone and adjust that level to "0" VU on the meter.

Range of input signal that can be adjusted to read "0" on meter:

for line is -30 to +10db

for mike is -75 to -20db

MAIN BOX AUDIO INPUT CONNECTOR

Pin 1 is system ground.

Pin 2 is audio low signal fed to a transformer.

Pin 3 is audio high signal fed to transformer.

AUDIO IN GROUNDLIFT SWITCH

This switch lets you eliminate hum and noise from Audio. You can often find best position through trial and error.

1=2

means Pin 1 and 2 are tied together for unbalanced inputs. (Sometimes this loads a mixer's output!)

L=LIFT

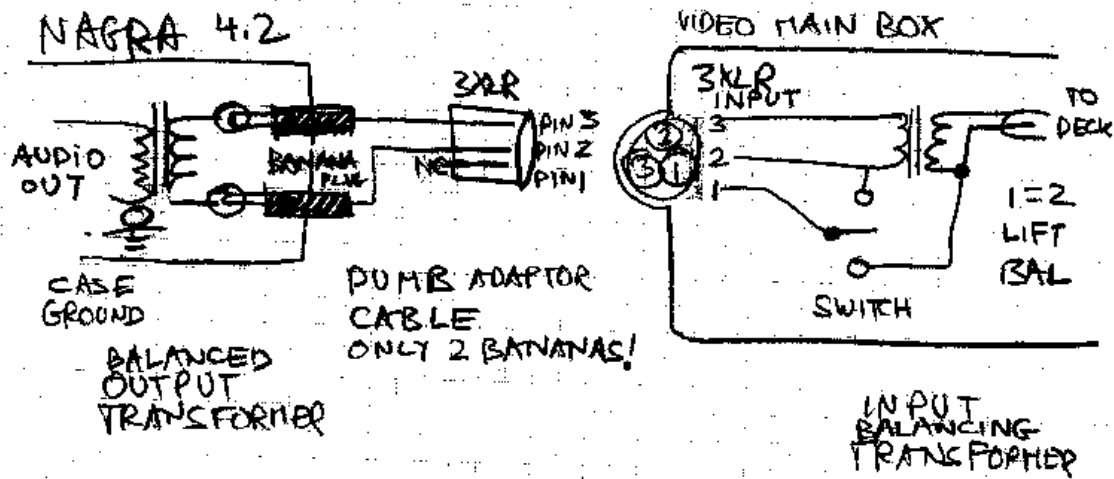
means Pin 1 (the ground) is lifted (disconnected). You would expect the soundperson at the other end of the cable to have the cable shield connected to his ground.

BAL=BALANCED

is the typical input position for a balanced source such as the Nagra. The cable shield is connected to your system ground.

VU METER

Main box front panel VU meter works for line-in position of Mike-Line switch only.

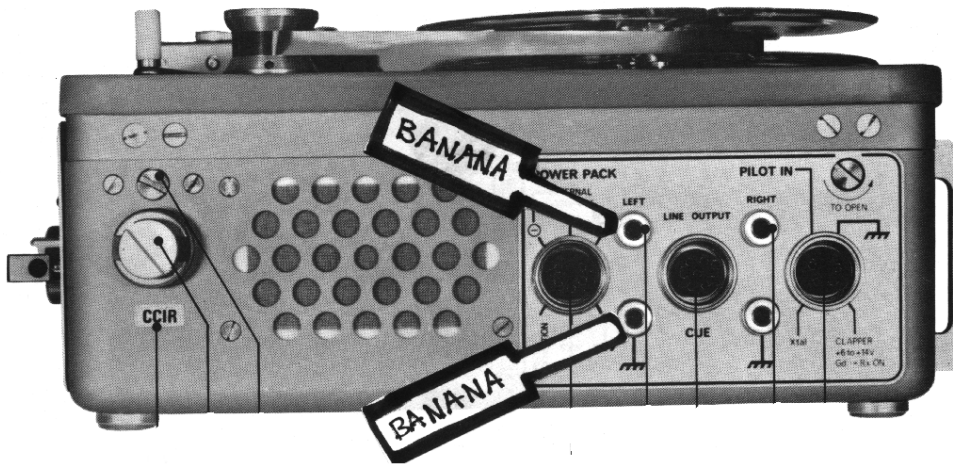


SYSTEM DIAGRAM

Someday when I have time I will replace this with a nice clean computer drawing. In the meantime accept this conceptual draft please. If you understand the concept behind the wiring in this drawing, you are in the 1% group of on set sound and video people who know what the heck is going on. I expect anybody associated with Wolf Seeberg Video to have a basic grasp of this. If you can't get it, read this page again and again, read the Op-Amp book, take a course, call Wolf or the technicians at home office to explain this, but you must get this!!!

GROUNDING ALTERNATIVES:

- NORMAL SETUP** Using the 2 Banana adapter (the dumb cable) the switch in the Video Controller Box controls the ground or lifted ground condition of the audio shield in the extension cable only. There is no 3rd Banana (pin 1) wired. Pin 1 the shield stays connected when switched to BAL in on your end only.
- SPECIAL SETUP** Using the 3 Banana adapter the soundmixer can choose to ground his Nagra (and with that his whole system) to the video ground = Dolly = 3rd pin on AC plug. If he uses AC, he better be plugged in same strip you are! And there still is great potential for ground loops! Of course you have control over your end of pin 1 with BAL-UNBAL-1=2 switch.
- AUDIO LEVEL** If the normal 2 Bananas are plugged into Nagra (right side as above) LINE-MIC switch (on Video Control Unit) should be on LINE, level pot should be set to 0 Vu at start of day with Nagra tone. That's all.



Nagra IV-S right side outputs: this is the standard Stereo Nagra or NAGRA IVSTC timecode Stereo Nagra

The differences between 4.2 (Mono) and IV-S (Stereo):

Output level: Stereo -6db unbalanced, Mono +2 dB transformer balanced

This means the low audio from a stereo Nagra is always the ground of the whole sound system. **Simple Solution:** You can isolate this ground from your and all video grounds by just using your 2 wire adapter cable. Listen to your headset if sound is clean.

Alternate Solution: Use your 3 wire adapter. Switch your input select switch to LIFT. Listen

Best Solution: Use a Comtek receiver so that there is no physical connection between you and the soundman at all and you do not have to worry everytime the sound crew plugs something in somewhere. Even if you (video) are on all batteries, if they (sound) plug into bad power or bad ground and you are on their ground you will send that bad ground to the dolly. You will endanger directorial personnel even though the mistakes were made by others.

Use the Comtek - it's safest

Some things you have to know and understand:

Transformer, output, input

Grounding

Shield, continuous, discontinuous, lifted

Balanced: a 3 wire system,

Unbalanced: a 2 wire system

This is what separates the vidiots from video operators. This is why you get paid the big bucks. You have better tools here than any other video operator in the field. Know how to use them! Most sound men do not know how to deal with this, so you have to. When working with sound, put on your headphones first and listen for system noise before you plug in outside sources. Also notice that as you add monitors that draw from the same power source your headphone amp draws power from, you will increase the noise you hear in the headphone amp most likely. You should not hear a higher level of noise in the amps in the monitors that power the monitors' speakers. A&R auxiliary speaker and some large monitors have same input switch: balanced, unbalanced 1=2, as you have at input to main system. This gives you control over various sound sources driving the system

ALC - AUTOMATIC LEVEL CONTROL

The 8420 decks have a built-in ALC. This is in effect an automatic volume control that insures sound is not recorded at too hot a level on the video tape. If it was, overloads sound bad, distorted, awful. ALC in video decks are usually of poor quality. Therefore, you should adjust levels properly so it is not used. If you set up our input circuit properly (incoming tone = "0" on meter), then the ALC should become active only on sound levels 4-10 dB hotter than "0". This way you avoid that annoying "pumping" of any background level.

The CVD 500 has better limiters with faster recovery time but the level has to be in the ballpark.

MONITOR VOLUME

If you need more volume out of the monitors, turn up the monitor volume. 12 o'clock to 3 is normal. 4 o'clock is still okay.

ALC - RECOVERY TIME PROBLEMS

Say you are feeding a line level input to main box. You see it on the VU Meter, adjust it to "0" but think you hear too low a level. You make the mistake to switch LINE-MIKE switch to MIKE. The now very hot signal hits the ALC hard. The ALC limits as much as it can (60 dB!). The sound on headphones is "bad" but loud. You hear pumping of audio level! You switch back to line (as you should). NOW IT TAKES THE ALC 90 sec to recover to normal operation.

HEADPHONE VOLUME

You are listening to the deck - audio out on the headphones. The headphone volume is there only to adjust a comfortable level in your headphones. The headphones provided are not great. Use your own Walkmen or any other type. Sony DR6 or 7506 are recommended: \$65 at Fry's or mail order. Wolf might lend you a pair of these or the old Beyers. When you are recording sound, you must wear headphones all the time! You must monitor what you are doing. It's your responsibility when there is no audio.

UNBALANCED AUDIO

This is usually a 2-wire set-up. Usually uses RCA connectors. Usually refers to a -10db level. Audio high is in the center pin. Audio low is the shield or outer shell. Our RCA to XLR adapters connect Pin 1 and 2 in the XLR for unbalanced audio. Now you can use regular audio cable for extensions.

BALANCED AUDIO

Generally refers to a 3-wire set-up.
The audio high is connected to Pin 3
The audio low is connected to Pin 2
Ground or cable shield connected to Pin 1

This is the general set-up for most American and Japanese audio equipment built till 1980's. The English, in their infinite wisdom, reversed Pin 2 and 3; 2 is high. German microphones may have either 2 or 3 as high.

When changing a balanced to unbalanced cable system, you must know where the high audio is. You want to connect low audio to ground. Our main boxes do this by connecting Pin 1 and 2 of the input cable. You have a switch controlling this.

If you suspect you have weird cabling or output pins on the sound mixer's end, use the XLR to banana adapters in the spares kit to find a combination that works.

AUDIO LEVEL DB

The level of an Audio signal is measured in dB (decibel). This refers to an AC voltage; it's just easier to express as dB.

Some typical numbers:

"0" dB The general reference

-65 dB Mic level - The level one expects from a microphone

-10 dB Line level - Usually this is associated with an RCA jack (unbalanced). The level one expects from a consumer type device: ½" VCRs, VHS or Beta, cassette tape, TV, radio, disk player, DAT recorder etc.

+4 dB Line level - Usually this is associated with a 3 Pin XLR-type connector. The level one expects from a professional device: Nagra (banana output) studio type, VCR Sony broadcast Beta equipment, studio audio boards, studio tape recorders.

Example: 65 dB pad takes a +4 line level to a -61 mike level.

VIDEO FEEDS COMTEK

Audio Aux Out 3pin is balanced with transformer.

1=Ground
2=HOT
3=HOT

It is switched with main audio ON/OFF switch.
Level is -10dbv for "O" VU approx.

The main box has a transformer balance 3 wire output. The Comtek transmitter has a 2 wire input. Its ground though is independent; it runs on a battery. To feed Comtek you are unbalancing a balanced input. Set level on Comtek (turn it way down).
Have boom man talk into mike at normal level and listen to Comtek headset.
Comtek receiver level pot should be set at about "3-5". There should be no excessive limiting. If there is, reduce level on transmitter.

Director's TB does not feed to Aux Audio Out or Comtek, only to monitor plugged into director out.

Aux Audio comes from same source as Audio on 7pin Outs and Headphone Out.

COMTEK AUDIO RECEIVER NOTES

Comtek sound wireless receiver (as provided by soundman) needs a special cable. It is often convenient to let the sound mixer feed audio to our video system with his wireless transmitter. Most mixers use the Comtek system. They transmit at about 76 MHz (A-F channels), and you have a small receiver.

The receiver turns on as you plug in the mini connector and a red LED lights up. What really turns the receiver on is a 2.2k ohm load in the cable or unit it is feeding. If you do not provide the receiver with that load, it will not work! We have special cables!

You must ALWAYS wear headsets to monitor wireless audio! It is not that reliable and will make you look foolish if it fails.

VIDEO TAPS TECHNICAL NOTES



ARRI Video Tap Technical Data probably for the Arri supplied 335 and 435 cameras
Color Video Camera CCD 2-FR (NTSC/PAL) (mainly found on 535 cameras)

Pick-Up Device: 1/2" (inch) Inter-Line Transfer CCD Picture elements:
NTSC (525 lines, 60Hz) 768 (H) x 494 (V); 380 000 Pixel
PAL (625 lines, 50 Hz) 752 (H) x 582 (V); 440 000 Pixel
Horizontal resolution: NTSC 470 TV lines PAL 460 TV lines
Video-Signal-to Noise Ratio: 46 dB
Video Output Composite signal 1Vpp75 ohms, sync neg.
Optical Adapter: C-mount
Temperature Range: 0° to 40°C (33° to 104° F)
Power Supply: DC +12 V Consumption: approx. 3 W
Weight: 450 g (0.9 lbs)

Video Optic Module VOM-2 (NTSC/PAL)
Anti Flicker Processor AFP-2 (NTSC/PAL)
Video Input: Composite signal (from CCD 2)
Signal Output: Composite signal, PAL or NTSC (according to input signal) 1 Vss, 75 ohms, (BNC connector)
Horizontal Resolution: 790 pixel/line
Vertical Resolution: PAL 603 lines (FR OFF) 301.5 lines (FR ON) NTSC 513 lines (FR OFF) 256.5 lines (FR ON)
Horizontal Jitter: max. +/- 2 ns
Voltage supply: DC +12 V
Power Consumption: app. 4.2 W VOM- 2 app. 5.6 W AFP-2
Weight: 950 g (2.2 lbs) VOM-2 420 g (5.28 lbs) AFP-2

A note from ARRI USA:

We (Arriflex Corporation in the US; I do not know how my international colleagues will handle this) can now modify the 435 IVS so that the **flicker free function can be turned off**. We will place a new set of buttons on the IVS, where the "MM" (Mini Monitor) button is replaced by a flicker free off button. The camera needs to be sent in to our Burbank or Blauvelt facility for this change. The modification costs \$ 420.

Regards, Marc Shipman-Mueller, Camera & Digital Systems Technical Representative Arriflex Corporation;
1646 N. Oakley Ave, Suite #2, Chicago, IL 60647-5319, USA Tel: 773 252 8003, Fax: 773 252 5210
Email: msmueller@arri.com, Web: <http://www.arri.com>

> > > I heard from a few operators that the video Assist taps on the newest
> > > 435 and 535 overheat easily and shut down? Is this true??
> > > wolf

Marc Shipman-Mueller <msmueller@arri.com>: I have done some more digging and found that some early 435 IVss had problems with overheating when a small LCD monitor was powered directly from the mini monitor connector on the IVS. The internal power supply was too small for the draw those monitors have, but that has been fixed in later models of the IVS. Maybe this is where this rumor originated.

INTEGRATED VIDEO-ASSIST SYSTEM FOR THE ARRIFLEX

from: <http://www.arri.com/product/cam/ivs.htm>



For the IS-color video assist for the ARRIFLEX 535B and 16 SR3. As with the ARRIFLEX 435, the video assist has also become an integral part of the 535B and 16 SR3 cameras.

A color video assist without additional cables, compactly integrated into the film camera, giving high image quality and the possibility of inserting image format frames, camera status display, Time-Code and text. For the first time such a system is now available for the ARRIFLEX 435. Extremely fast optics (aperture 1:1.4) and a highly sensitive CCD chip ensure an excellent color video assist image in editing quality, even in poor lighting conditions.

IVS VIDEO FOR THE ARRIFLEX 535B / 16 SR3



The IVS consists of two components: 1.) a common video electronic module which can be used on both cameras and 2.) a CCD-Module which is specially adapted to the respective camera. The CCD-Module is available in PAL and NTSC versions and is equipped with interchangeable optics for Silent and Academy, respectively for Super and Normal 16 formats.

The number of cables has been reduced to a minimum: just one cable from the camera to the power supply and the usual connector to the recorder or monitor are necessary.

High speed – high resolution – flicker-free
Extremely fast optics and a highly sensitive CCD-chip ensure an excellent colour video assist image in editing

quality, even in difficult lighting conditions. The effective sensitivity corresponds to 4000 ASA. Even with the most sensitive film stocks, sufficient reserves are available.

The high resolution image quality, which surpasses that of any add-on system, was achieved by specifically designed optics, each an integral part of the camera's viewfinder system.

Through the digital image storage, the video camera can be synchronized to the running speed of the film camera. From 5 fps on the system is completely flicker-free. The exact moment of the exposure of the CCD-chip is then chosen to optimally match the mirror shutter position of the camera. As well as the usual composite output, the IVS offers a Y/C interface for better resolution without disturbing composite color artifacts.

Inserting format masks, camera status indicator, Time-Code and text

Additionally the IVS offers a particular user comfort: format markings can be electronically inserted into the video image and therefore remain clearly visible even in low lighting conditions. The area outside the format marking can be darkened electronically to better emphasize the image area. In the same way Time-Code and camera status indicators such as "Standby/Run" can be directly inserted into the video image. This ensures a quick interface to off-line video editing systems.

An explicit correction is assured even for NTSC video assist through a display of the "3:2-Pulldown". The Time-Code information is of course available as text as well as VITC.



In addition a serial interface offers the possibility of inserting text such as scene and take numbers into the video image.

On-Screen User Comfort

A compare function allows an image to be saved and then to be compared with other video images. That considerably simplifies the setting up of stop-motion images for example.

The brightness of the video beam splitter is automatically regulated to the optimal range, however it can also be set manually. For the white balance, two standard values for 3200 K and 5600 K as well as an automatic balance are available. Via an external sync input the video camera can be synchronized to an external video signal, facilitating the parallel and trouble-free use of several cameras.

- For highest image quality, two separate optical configurations are available for each camera: Academy and Silent for the 535B, Super and Normal 16 for the 16 SR3.

Each is optimized to utilize the entire area of the CCD and, unlike zoom lenses, provides the best possible quality and speed for the specific format. The optics are easily interchangeable via a bayonet mount.

IVS 535B Version:

- Video electronics PAL K2.47306.0
- Video electronics NTSC K2.47307.0
- Optic Silent K2.47298.0
- Optic Academy K2.47301.0

IVS 16 SR3:

- Video electronics NTSC or PAL

Technical Data

- Weight: approx. 600 g about 1 pound
- Power consumption: approx. 8 W Power supply: from the camera
- Input: Gen-Lock
- Outputs: 2 x Composite outputs with and without data Y/C optionally with and without data.
-

There is a problem with this kind of flicker free tap (there are similar probs with some PANAVISION Taps [ed.]); processor in the IVS for the 435. But note: Interestingly enough you can switch off the flicker processor in the new IVS for the SR3 & 535.

A Steadicam operator says: Every time I roll it on steadicam and pan the camera the image on the monitor stutter steps and tries to send me into convulsions!

Eric Fletcher S.O.C. Steadicam/"A" Camera operator



CCD 2-FR and VOM-2 / AFP-2 and CCD 2-FR (NTSC/PAL) is more ARRI video equip not seen in the US a lot. <http://www.arri.com/product/cam/vid.htm>

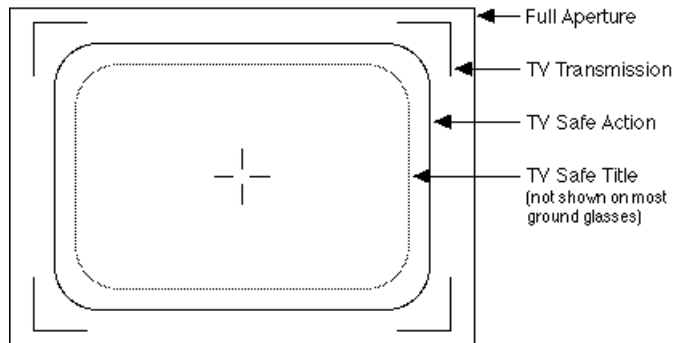
ARRI has very detailed manuals for everything available on the net:
<http://www.arri.com/product/port/index.htm>

USA TV GROUND GLASS MARKINGS

This note describes the frame outlines relevant to shooting film for television in the USA.

THE IMPORTANT FRAME OUTLINES TO KNOW

Both the markings on the ground glass and telecine calibration films are based on international standards that assure that an object framed in a given spot through the viewfinder will appear on that same spot in telecine. When shooting for television, one should be familiar with the following frame lines:



Please note that the frame outlines pictured above are for a Super 35 ground glass, and will be slightly different for other formats. Also note that TV Safe Title is usually not shown on most ground glasses.

Full Aperture Corresponds to the full amount of negative film exposed. Caution: most ground glasses will permit viewing outside of this area, but anything outside of this area will not be recorded on film. This outline is usually found on ground glasses, but not in telecine.

TV Transmission The full video image that is transmitted over the air. Sometimes also called "TV Scanned".

TV Safe Action Since most TV sets crop part of the TV Transmission image, a marking inside of TV Transmission has been defined. Objects that are within the TV Safe Action lines will be visible on most TV sets. This marking is sometimes referred to as "The Pumpkin". Note that the rounded corners depicted have been replaced by straight corners on some ground glasses.

TV Safe Title To assure that critical information will be fully visible on absolutely all TV sets, another marking has been defined further inside of TV Safe Action. Please note that most modern film camera ground glasses do not have a TV Safe Title marking.

EVERYTHING IS RELATIVE

All outlines except the Full Aperture outline are simply used as a reference point, and images are regularly re-sized and re-centered in telecine. Still, it is useful to start a telecine session correctly calibrated so the telecine frame outlines correspond exactly to the ground glass frame outlines. This is common practice.

SAFE ACTION VS, SAFE TITLE

Confusion has often arisen from the fact that most film camera ground glasses do not show TV Safe Title, but TV Safe Title will routinely be displayed in telecine. Often, the Safe Title markings in telecine are assumed to be the same as the Safe Action markings on the ground glass, leading the customer to think that the shot in telecine is all of a sudden tighter than it was when viewed through the camera.

To avoid confusion, it is a good idea to know the precise names of the frame outlines you are working with. Rental houses can provide you with information about the ground glass markings, and telecine facilities should be able to tell you about the telecine markings. Camera manufacturers can also provide information about their ground glasses.

SHOOTING A CALIBRATION TAKE

To ensure that the composition as viewed through the camera will be precisely maintained in post production, it is a good idea to shoot some calibration film. To do so, point the camera at a white wall. Look through the camera and instruct a second person to make markings on the wall corresponding to the frame lines seen on the ground glass. It is a good idea to also label the markings on the wall. Then film these markings. The markings on this film will exactly correspond to the ground glass markings, and can be used to calibrate the telecine.

ABOUT THIS TECHNICAL NOTE

To keep this note simple, we have purposefully kept it very general. More specific information about ground glass frame outlines can be provided by:

- The camera manufacturers
- The Society of Motion Picture and Television Engineers (SMPTE)
- The German Industrial Norm Institute (Deutsche Industry Norm - DIN)
- The International Standards Organization (ISO)

Cross Reference

- ARRI Technical Note P-1008: What is 3/2 Pulldown?
- ARRI Technical Note P-1009: Video Display on Laptops

For more information on this issue, please contact Marc Shipman-Mueller at
Voice: 773-252-8003, FAX: 773-252-5210, email: MSMueller@arri.com
find this at: <http://www.arri.com/product/port/pdf/p-1013.pdf>

TODAY'S REAL TOTAL FLEXIBILITY:

Of course with enough time in today's video post production virtually any area of the film frame can be framed, blown up or reduced in telecine for TV transmission.

GROUNDGLASS MARKINGS TRICK:

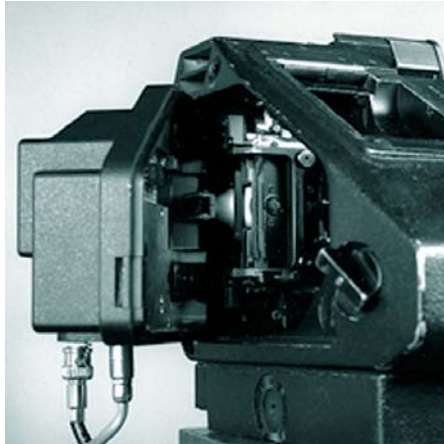
There are many different kinds of groundglass outlines and it is always safest to let the Director of Photography answer questions as to what lines means what.

Here an ingenious approach that you may want to suggest in private to some cinematographers:

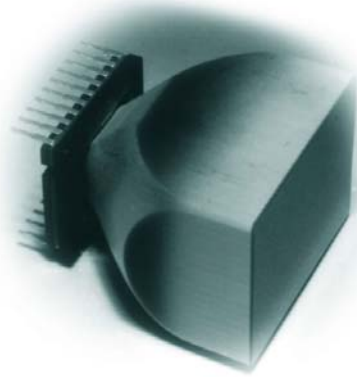
<< we know that Telecine will cause the original image on film to be re-framed, we just need to let them know as clearly as possible what we (the cinematographer) intended. >>

"I have created my own system for communication as to what I shoot and what I transfer. I have created a card for each potential ground glass I use. It is a white card that has all of the markings of the particular ground glass I am looking through. I made the cards by firing a light through the lens and projecting the markings on a card mounted to the wall. Prior to shooting, I shoot the card for ten seconds. It gives the transfer house (telecine) a reference for what I was seeing and what I intended to be where. It has helped in matters of safety immensely."
copyright 1997 WalterNY@aol.com cinematography-1

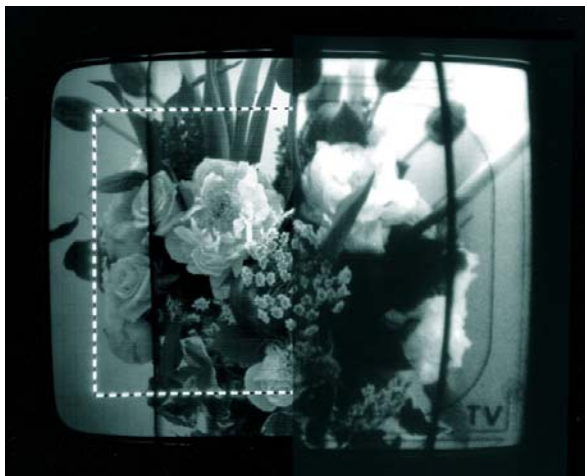
STEADICAMS NEW TAP IS A VIDIFLEX.



Vidiflex videotap



tapered fiber optic bundle



old

vs Vidiflex

Cinema Products' new Vidiflex offers a cleaner, sharper, clearer image than any conventional high-end videotap. Unlike the traditional videotap's "relay optic" system which reduces the amount of light available to a video camera, the Vidiflex videotap utilizes a tapered fiber optic bundle to capture the viewfinder image and reduce it by a 4:1 ratio.

A light sensitive CCD image sensor optically bonded directly to the fiber optic taper results in a crisp, detail-rich image, even in the lowest light conditions. High resolution eliminates costly, time consuming video transfer. Record and edit directly from video footage. Focus film cameras directly from the Vidiflex image.

- 10 electronic shutter settings

- 7 selectable framelines

- Available in Arri 35-3, Moviecam Compact and OEM versions in color or flicker-free black & white

- Greatly reduced motion artifacts and crystal clear image without loss of resolution

Visit Related Products in the Steadicam Store for pricing and purchasing information.

Vidiflex Specifications

- Color Version

- ASA rating over 30,000

768 x 493 lines of resolution
10 position electronic shutter
Automatic white balance
Automatic or manual gain control

Black and White Version
ASA rating over 30,000
648 x 484 lines of resolution
10 position electronic shutter
Flicker free up to 150 fps
Six pre-stored and one user defined framelines
Switch to 50 or 60 Hz video output

TIME LAPSE VIDEO TAP:

Mark Doering-Powell wrote: Stop motion animation, using a shutter speed of 1/4 sec. (or even 1/2 sec, necessary for 'go motion' - anything faster often negates the motion blur you may be trying to achieve) is a special problem for normal video taps. So use the "COHU" tap, used on some mo-co rigs. **It builds-up the video image over the time-lapse duration of a stop-motion shot.**

The Cohu camera combined with an Colorado Video **frame buffer integration system** and PVR is quite a cool set up. To me it defies what I normally think of the way video works. You can have camera filters on the lens and be stopped down to 22 with a set lit by an Inky and with enough time (up to 17sec) the video picture becomes a bright clear color image! Be forewarned though, while an unmounted Sony 999 camera will run in the 1K range the Cohu with all the "boxes" to make it "build" exposures puts you into the 10K+ range. Especially if you gotta have a Media 100 to do on set comps. To be honest, very few opt to spend the required (tremendous \$) amount for the setup. My favorite aspect is that when using motion control this "time-lapse" video gives you motion blur at 12th speed range framerates. (kinda like film does)

Eric Swenson

Try: <http://www.cohu.com/cctv/traf.htm> and <http://www.optics.org/colorado-video/colorado-video.html> *

VIDEO BASICS - EDUCATE YOURSELF

A FEW TERMS YOU MUST UNDERSTAND

Ground, AC, DC, dB, volts, Ampere, Video, Audio, Video-RF, sync, sync reference, Ampere hour.

Signal distribution: daisy chain, star system, danger & death by electrocution.

You don't need to know: a lot of other good stuff. But you really need to know the basics of electronics.

It's all the same: electricity; you manipulate it all day long. It pays your food bill. Find out about it. It's just electrons changing energy levels while hanging around a nucleus. Simple - Read the Heathkit Book. It is not like water going through a garden hose, though.

FURTHER EDUCATION

Wolf Seeberg has for loan some excellent books:

VIDEO TAPE OPERATIONS

200 easy pages. The course book of the Weynand weekend course. \$35.

Finally a book that takes the mystery out of a television signal. Designed for anyone from the lay person to an engineer.

Chapters include: the composite television signal; good section on scanning and excellent explanation of synchronization; reading waveform monitors and vectorscopes; setting up 1-inch VTRs for playback and record; machine to machine editing; the use and function of time code; plus a silly chapter on career opportunities in videotape operations.

The book has many helpful illustrations and photographs. This book is for anyone who wants to move their career forward into the world of videotape operations. It is oriented towards major broadcast operations.

WEYNAND & ASSOCIATES VIDEO COURSES

(818) 992-4481 Call them; they'll send you a complete catalogue of courses. Bill Weiss (213) 201-0174 took the Video Tape Operation course and learned a lot in a weekend for \$300.

ELECTRONIC FUNDAMENTALS

(EB-200, 595-4146-1, or ISBN 0-87119-188-1, published by Heath Company)

600 pages - Highly recommended!! A very thorough book written by Heathkit, St. Joseph, MI 1-800-253-0570.

Recommended for all. Buy your own book for \$40 and order the study and quiz material.

This is an introduction to basic electronics - you must know this stuff. This is written at a community college level. Probably like the first year of a 2-credit course. You make your living manipulating all the elements discussed here. You really owe it to yourself to gain some theoretical understanding of your day-to-day activities.

This book starts at the beginning, is clearly written, but takes some discipline to get through. Give WSV your finished study book; receive \$100.

THE RADIO AMATEUR'S VHF MANUAL

Principles and Practice for the World Above 50MHz

by Edward P. Tieton, W1 HDQ published by the American Radio Relay League, Inc., Newington, CT 06111, Lib. of Congress # 65-22343. \$2.50 (in 1972). 352 Pages. This is excellent, easy-to-understand book describes transmission and reception of radio signals such as the Video Transmitter. Bored on the set...educate yourself.

TIME CODE HANDBOOK

128 pages \$12.95

Cipher Digital, Inc., 5734 Industry Lane, Frederick, MD, 21701, (301) 695-0200.

Time Code labels each video frame with a unique identifying Address that cannot slip. Each frame always retains its original identity, making production functions such as editing and logging more efficient and frame accurate. All technical aspects are discussed here. You need to know this for working with motion control. You record a timecode on the background video tape that triggers a computer that controls the next camera pass.

NATIONAL ELECTRICAL CODE

Published by National Fire Protection Association

Available from OP AMP books (the leading technical book shop in the country): 1033 N. Sycamore Avenue Los Angeles, CA 90038 (213) 464-4322; New updates every 3 years.

A note: We live in an ever changing technological, commercial society. You make your living by providing a technical service. You better stay on top of this world by learning more about the technical end.

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CONTRACT SERVICES ADMINISTRATION TRUST FUND

Sandy Johnson is administrator of "Hollywood Hands On", 15503 Ventura Blvd. Encino, CA 91436. This useful service is now dead (1998)!!! The IA kills another progressive service to its members

HOW DOES TV WORK?

This page gives a good basic understanding of how TV works:

<http://www.howstuffworks.com/tv.htm>

If you snoop around a bit, you will learn all sorts of interesting technical tidbits on most any topic you can think of.

This second site is from the makers of the most common scope you will see in nearly every TV station or production house in the country:

<http://www.tek.com/Measurement/index.html>

It explains in fairly complete detail what you need to know when using either an oscilloscope or a digital display to set your record or playback parameters properly. I'm sure you will find MORE than you ever wanted to know or even need to know about a composite TV signal but a few basics will help in understanding why things happen the way they do.

VISUAL MEMORY VS. VERBAL-CONCEPTUAL

I realize there are a lot of video folks whose memory is more visual than verbal conceptual. I suggest to read this manual aloud to yourself as if someone was telling you an old story. By the way, it really is hard to

permanently hurt your brain with too much knowledge. Just think, if you know only a little bit more than the next guy maybe you can do a better job and maybe someone in charge will notice. What I am trying to say is this: knowing and learning your craft is not an old-fashioned idea. It may help you improve your chances of survival make your work better and make more work for you.

It's the difference between experience and education. With education you have a basis of knowledge to go back to in new situations and territory and can progress, with experience you will only be able to do what you have done already. So go out and learn computers, RF, Microwave and all the sophisticated stuff.

THE NTSC VIDEO SIGNAL

By Steven Bradford ©1995

This page describes the basics of the television signal, how to analyze it on a Waveform Monitor or Vectorscope and how to set up a monitor to color bars.

In North America the video signal is a standard, called NTSC, and is not the same as computer or RGB video. To maintain consistent image quality, it is important to use only properly calibrated monitors to evaluate and test the video picture.

Video is a linear medium like audio, unlike photography or film. A film camera captures the entire frame of a picture in a single instant. But video was originally designed to be transmitted over the air. Images must be broken up and transmitted or recorded as a series of lines, one after the other. At any given millisecond, the video image is actually just a dot speeding across the face of the monitor glass. In the early days of television (1920's) some cameras actually created the image by scanning the subject in front of the lens with a dot of light!

Television is also primarily an analog medium. The system we use today was established in the 1930's. Color was grafted onto it in the early '50s. This is when American television picked up its name, NTSC. The initials stand for National Television Standards Committee. This is the committee that established the standards for our television system. The problem is that NTSC is an analog system. In computer video, colors and brightness are represented by numbers. But with analog television, everything is just voltages, and voltages are affected by wire length, connectors, heat, cold, video tape, and on and on. This is why most engineers today claim that NTSC stands for Never Twice the Same Color!

There is a way to maintain consistency of the television signal. Because everyone sees the world a little differently, we can't just adjust the monitor or the tape player until the picture looks right. Over the years a test signal has been developed, called "COLOR BARS", that functions as a standard unvarying image that can be used to make sure pictures are displayed consistently. This signal is generated by professional video cameras, and by color bar generators. It is laid down at the beginning of tapes so that those tapes can be played back later with accurate color.

Color bars are also used to align cameras in multiple camera studios so so all the cameras match. When displayed on a monitor color bars enable us to set up the monitor so that it matches all other monitors. The first step in establishing a reliable picture reference is to align picture monitors.

The term SMPTE Color Bars refers to a specific type of color bars, the most common you will see. They are arranged to make it easy to align a monitor that has a blue gun only switch. An older type of bars is called full field bars, and is now generally only found on the cheapest pro cameras. SMPTE stands for the Society of Motion Picture and Television Engineers. They are responsible for setting most of the video signal and tape standards, in addition to film standards.

PICTURE MONITORS:

Picture monitors are essentially the same as a home television receiver, except they lack a tuner for pulling in over the air broadcasts. A picture monitor also differs from a computer display. A computer display cannot decode the composite video signal that comes out of the single wire from a TV camera. It needs at least three separate wire inputs for each of the three primary colors. That is the primary difference between computer and television monitors. The television monitor has a video decoder that can take the single composite color signal, turn it into the three separate color signals and feed those to the color tube.

The adjustments on a monitor-- hue, brightness, saturation, and contrast, only affect the picture on the monitor. They have no effect on the image that is recorded. Hue actually rotates the phase of the color wheel. Saturation dials color into and out of the black and white picture that is the foundation of a color picture. Brightness (or picture) actually raises and lowers the black level of the image. Contrast varies the video level.

BLUE SCREEN or BLUE GUN SWITCH

Professional monitors have a special switch, that, when depressed, turns off the red and green guns of the tube. This causes only blue to show on the tube. The effect on color bars is to create alternating bright and dark vertical columns. All the dark columns should be equally dark and all the bright columns should be equally bright. If the two outer bright columns don't match, then the chroma/saturation control on the monitor is turned until they do. For the inner bright columns, the hue/tint or phase control is turned until they match.

THE WAVEFORM MONITOR:

The Waveform monitor is an oscilloscope that has been custom configured for television monitoring. It is used to measure the voltage of the signal and to check that all the pulses and scans of the signal are occurring at the proper times.

Our primary use for it in studio production is to monitor the signal levels of the picture. These levels must not exceed 100% level on the waveform monitor, nor may they drop below 7.5%. Signals that are too high will clip and look like white blobs. Signals that are too low will be completely black. Generally, face tones fall in the 70% range. White with some detail in it will be around 90-100% and shadowed areas will be under 30% on the scale.

THE VECTORSCOPE:

The Vectorscope is another specialized oscilloscope. Its task is to measure color information. In a television signal, color is encoded into the main signal with a subcarrier. It is the color information on this subcarrier that is measured by the vectorscope. It is displayed in a way similar to the color wheels you may remember from art class. Instead of measuring brightness of color, it indicates saturation and hue. The center of the wheel is neutral, the closer a color is to the wheel's center, the less saturated (or closer to white) it is. The farther out a color is, the more saturated (less neutral) it is. A color can be dark and very saturated or light and unsaturated. And a black image will make a dot right in the center, as will a white image.

But brightness levels will not show on the vectorscope. Brightness can only be measured on the waveform monitor. Today it is quite common for the waveform monitor and vectorscope to be combined into single unit that can switch between the two functions. Some units even allow for the two functions to be superimposed.

TIME BASE CORRECTORS.

Video Cassette Recorders are unable, on their own, to play back a signal that is stable enough to transmit, or cut into another video signal without break up. A TBC is used to synchronize the tape machine with the other signals in the studio. All the cameras in the studio, the character generator and the special effects generator are all synchronized or genlocked to a master sync generator. If they aren't, the picture will break up and roll every time a cut is performed, and dissolves and fades would be impossible.

TBC's have an additional function. They are used to adjust the color and video levels of the tape playback. The four controls used are basically the same as those found on a monitor. Chroma/Saturation, Hue/Phase, Brightness/Black level and Contrast/Video level. Color bars are used here also but the adjustments are made by observing the scopes, not the monitor. Most professional tapes are recorded with at least 30 seconds of color bars at the head of the tape. These reference bars are viewed first on the waveform monitor. Video level is adjusted so that the tallest bar just touches 100%. Black level is adjusted so that the black bars hit at 7.5%, which is a dashed line just below the 10% line. Next, adjust Chroma level until the large solid rectangular column on the left just touches the 100% line. Then the scope is switched to the Vector mode. On the vector display 6 small boxes are illuminated. These are labeled R,G,B, Y,C,M, the primary colors, and their complements. When color bars are displayed, the usual mushy blob is replaced by six sharp dots. These dots are supposed to fall into the boxes. Accomplish this by rotating the phase on the TBC until the dots line up with the boxes. (A hint: You'll also see two dimmer dots much closer to the center. These make a perfect 90 degree angle to each other. Orient them like this sideways vee < and you'll be in the ballpark.)

{insert***** needs drawing here}

Signals from outside the studio also need to be aligned with the master sync generator. This is usually done when a remote camera or satellite feed is being used. The process is the same as for the VCR, and all adjustments are done to the TBC, not the camera. For this a synchronizer is used. This unit used to be separate from the TBC but now they are most often combined into one.

BLUE SCREEN

By Steven Bradford ©1995

Welcome to the world of Blue Screen! Once the exclusive domain of Hollywood special effects artists, blue screen imaging has expanded to include video and computers. There are many mysteries to the successful execution of a blue screen composite and considerable confusion as to what a blue screen composite is.

What is Blue Screen Imaging?

Creating a blue screen composite image starts with a subject that has been photographed in front of an evenly lit, bright, pure blue background. The compositing process, whether photographic or electronic, replaces all the blue in the picture with another image, known as the background plate.

Blue screen composites can be made optically for still photos or movies, electronically for live video, and digitally to computer images. Until very recently, all blue screen compositing for films was done optically and all television composites were done using analog real time circuits.

Another term for Blue Screen is Chroma-Key. Chroma-Key is a television process only. A more sophisticated television process is Ultimatte, also the name of the company that manufactures Ultimatte equipment. Ultimatte has been the ultimate in video compositing for many years. With an Ultimatte unit, it is possible to create composites that include smoke, transparent objects, different shades of blue, and shadows. Ultimatte now makes software that works with other programs to create digital mattes, called Cinefusion.

How does Chroma Key work?

The Chroma Key process is based on the Luminance key. In a luminance key, everything in the image over (or under) a set brightness level is "keyed" out and replaced by either another image, or a color from a color generator. (Think of a keyhole or a cookie-cutter.) Primarily this is used in the creation of titles. A title card with white on black titles is prepared and placed in front of a camera. The camera signal is fed into the keyer's foreground input. The background video is fed into the keyer. The level control knob on the keyer is adjusted to cause all the black on the title card to be replaced by the background video. The white letters now appear over the background image.

Luminance keying works great with titles, but not so great for making live action composites. When we want to key people over a background image, problems arise because people and their clothing have a wide range of tones. Hair, shoes and shadow areas may be very dark, while eyes, skin highlights and shirt collars can approach 100% white. Those areas might key through along with the background.

Chroma Key creates keys on just one color channel. Broadcast cameras use three independent sensors, one for each color, Red, Green and Blue. Most cameras can output these RGB signals separately from the Composite video signal. So the original chroma key was probably created by feeding the blue channel of a camera into a keyer. This works, sort of, but soon manufacturers created dedicated chromakeyers that could accept all three colors, plus the background composite signal and the foreground composite signal. This made it possible to select any color for the key and fine tune the selection of the color. As keyers became more sophisticated, with finer control of the transition between background and foreground, the effect became less obvious and jarring. Today's high-end keyers can make a soft key that is basically invisible.

Why Blue? Can't other colors be used?

Red, green and blue channels have all been used, but blue has been favored for several reasons. Blue is the complementary color to flesh tone--since the most common color in most scenes is flesh tone, the opposite color is the logical choice to avoid conflicts. Historically, cameras and film have been most sensitive to blue light, although this is less true today. Sometimes (usually) the background color reflects onto the foreground talent creating a slight blue tinge around the edges. This is known as blue spill. It doesn't look nearly as bad as green spill, which one would get from green.

Usually only one camera is used as the Chroma Key camera. This creates a problem on three camera sets; the other cameras can see the blue screen. The screen must be integrated into the set design, and it is easier to design around a bright sky blue than an intense green or red.

Lighting for Blue Screen

A considerable amount of mystery is usually attached to blue screen lighting design. Also, a number of myths have been nurtured through the years, most of which are only half true. Myth #1 is the flat lighting myth. While it is true that the blue screen must be lit evenly, this is not true for the talent or other foreground subjects. They may be lit as dramatically as you desire. The trick is in lighting the foreground without screwing up the background.

A great deal depends on what matting process will be used. If you are using Ultimatte, then a great deal of freedom is available. On the other hand, Chroma Key is not nearly so flexible and has more restrictions. I am assuming that most of the readers are most interested in video or computer uses, so I will not cover lighting for film mattes (perhaps someone with greater experience in that area can create a page for film matting?)

Ultimatte units have controls that allow for "cleanup" of an uneven background and other adjustments to fine tune the matte. Ultimatte mattes can also maintain the background through shadows, veils, smoke, water, hair and other semi-transparent objects. Most Chroma Key units cannot even approach this level of subtlety.

One popular technique to minimize "the matte line" around the subject is backlighting. A straw, yellow, or CTO gel on the light helps to wash out blue spilling on the talent's shoulders and hair. (This technique is inappropriate for Ultimatte, as Ultimatte has a circuit that removes blue spill.)

If you are lighting a scene in which the subject does not need to be near the blue backing, then lighting is simpler because you can put distance between the subject and background. Generally you want the level of light on the backing to be the same as the level on the subject from the key light. In video terms, this would be between 60-75 IRE on a waveform

monitor, although slightly lower levels will usually work. It is most important for the screen to be evenly lit. If the talent is standing or sitting on blue, then it is more difficult, almost impossible, to have separate lighting. With primitive chromakey systems, shadows can create a lot of difficulty, and so you must use a flat lighting scheme on the talent to minimize the shadows.

Many different lights work well for lighting the blue. Cyc lights are the old standard. A newer light rig called a "Space Light" also works well. This is a set of lights pointing up and down into a cylinder of white diffusing fabric. The new fluorescent fixtures are ideal also. Some people use HMI's, on the theory that they will punch up the blue by using a blue light on the backing and warm tungsten light on the subject. Some special effects companies use translucent blue screens that are back lit by dozens, even hundreds, of special blue fluorescents.

An old favorite of pros and amateurs alike is a single thermonuclear fusion source, placed 93 million miles away. This light source gives perfect corner to corner illumination and makes a perfect match between the key level and backing level. Shadows are easy as it makes only one set of shadows. If you place a water vapor diffusion screen several thousand feet up, you get a great shadowless light. A thinner water vapor diffusion softens the shadows nicely. Those who are inexperienced at controlling these types of diffusion may want to use a large silk or other diffusion instead. I'm serious-- I've done some great mattes this way. If you're shooting spacecraft models, this is probably the best way. Plus the rental charge can't be beat. The Death Star trench scene in Star Wars used this very same light source.

A waveform monitor is an essential accessory on a video blue screen shoot. Since it displays a graphic representation of the video level in the scene, small variations in brightness are very obvious. A screen that looks good to the eye may have considerable gradual falloff from top to bottom. I would recommend using one on film shoots, in combination with a cheap video camera. The graphic display is so much more useful in this case than a spotmeter.

Paints and Backings

The standard paints which almost everyone uses are from Rosco, the light gel manufacturer. They make ChromaKey Blue and Green, as well as Ultimatte Blue and Green. One of the reasons I dislike using green as a backing is that the green paint is difficult to apply and just looks hideous. There is nothing more unsettling than having to work on a stage that is completely covered in Ultimatte Green! You can also get blue and green fabrics and drapes, as well as backlit screens. Stewart Filmscreen of Torrance CA makes a backlit screen. For location work, Wescott makes a folding background that is very handy. The fabric is sewn into a flexible ring, similar to a Flex Fill. This is great for when you need to get a talking head shot in an office, for compositing later. Elite Video also sells these, They have a Web Site.

What is ULTIMATTE?

Ultimatte is a trademark of the Ultimatte Corporation, of Chatsworth CA. It is an outgrowth of work the company's founder, Petro Vlahos, did in the 1960s for the Motion Picture Research Council. The goal was to invent a better matting system for motion pictures. Electronic technology was not ready yet then for a film resolution system, but video could be achieved, and so the first Ultimatte units were created in the 70's.

It is useful to think of the Ultimatte process as a mixing process, not a keying process. This is why it is possible to matte with shadows, hair, water etc. An Ultimatte uses the intensity and purity of the blue signal as a function to determine how much blending to perform between the foreground and background images. Another useful feature of the Ultimatte is the previously mentioned blue spill removal. Other circuits deal with glare, uneven or dirty blue backings, etc. Modern units from the Model V and up can independently adjust the color of the background and foreground plates. An Ultimatte used to have many knobs on its front panel, but the new digital units use a display screen and multifunction controls. A very useful feature is Screen Correction, which allows the operator to create perfect mattes from really bad blue backings.

Lighting for Ultimatte

Ultimatte Lighting is not so much difficult as it is misunderstood. Ultimattes can retain shadows onto the background plate. Yet camera-people often run into trouble trying to create a shadow! This happens because they first light the blue and the subject with an overall flat light and then add a light on the subject to "cast" a shadow. They see a "shadow" on the background, but it doesn't show on the matte. The shadow is still lit by the overall key. The new light is pointlessly creating brighter area around the shadow.

The Backing should be lit to the same intensity as the key light. So to retain shadows, in which the shadow is actually darker than the rest of the backing, the same light should be used to light both. Also the light must be even. If there are darker corners, then the composited background will be darkened in the corners also! Blue gels can't be used on the backing, as they will also light the talent. Another big problem (with all blue screen work actually) is blue floors. They invariably have a slightly different shade of blue. This is because the light is glancing off them at a different angle from the wall. This glare effect can be removed with a polarizing filter. The downside is the two stop loss through the filter. This means the camera will need to open up two stops or that the set will need 4 times more light. Try to position lights so they are pointing in the same direction as the lens, and not straight down into the floor. This will reduce most glare to a

minimum. Where this becomes a bigger problem is set pieces such as blue desks and props that pick up glare from side lights and back lights.

Another difficulty that makes the beginning Ultimatte artist tear her hair out is a lack of sidelighting. To the naked eye on the set there may appear to be sufficient illumination on the sides of the subject. But the subject is in what amounts to a brightly lit blue bowl, and is bathed in blue bounce light. When the Ultimatte removes this blue spill, the subject suddenly has no side light, and very dark shadows. If the background plate is bright, say a beach scene, the subject looks very out of place. In fact the effect will almost look as if there is a brown matte line around the subject. So you need to provide the same fill lighting that the scene you are matting into would provide. Fortunately, this effect is easy to see if you are doing on set matting. If the matte is to be done in post, try to turn off as many lights as possible that only light the backing, while setting the subject's lighting. Generally, it is best to start lighting the subject first, then adding fill light to the backing to even it out.

DIGITAL VIDEO BASICS

Getting video into your computer starts with a capture card. The popular video sources are detailed in Table Two. A full resolution NTSC component capture is 720 x 480 pixels (lesser cards yield 640 x 480 pixels) and requires about a megabyte per frame. Multiplying that by 30 FPS will quickly generate a traffic jam (dropped frames) as the system attempts to cram 30 MB/sec on a typical hard drive capable of only 5MB/sec or 10 MB/sec.

Look for this table: <http://www.tangible-technology.com/video/video1.html>

Table Two: The five video formats and their cabling requirements. Luminance is the monochrome or Black & White signal which contains all of the image detail. Separating the color information (Chroma) into one or more parts increases resolution and decreases artifacts.

SLIGHT DETOUR

In cyberland, I have the luxury of including additional information, borrowed from <http://www.quantel.com/> Here it is...

Composite (video)

Luminance and chrominance are combined using one of the coding standards - PAL, NTSC and SECAM - to make composite video. The process, which is an analogue form of video compression, restricts the bandwidths (image detail) of components. Chrominance is added to the luminance using a visually acceptable technique but it becomes difficult, if not impossible, to accurately reverse the process (decode) into pure luminance and chrominance. This can cause problems, especially in post production.

Luminance

A component, the black and white or brightness element, of an image. It is written as Y, so the Y in YUV, YIQ, (Y, R-Y, B-Y) and Y, Cr, Cb is the luminance information of the signal. In a colour TV system the luminance signal is usually derived from the RGB signals, originating from a camera or telecine, by a matrix or summation of approximately: $Y = 0.3R + 0.6G + 0.1B$

Chrominance

The colour part of a signal, relating to the hue and saturation but not to the brightness or luminance of the signal. Thus black, grey and white have no chrominance, but any coloured signal has both chrominance and luminance. Cr and Cb, (R-Y) and (B-Y) represent the chrominance information of a signal.

Component Video

The normal interpretation of a component video signal is one in which the luminance and chrominance remain as separate components, eg analogue components in MII and Betacam VTRs (Beta is YRB with Setup aka 7.5 IRE), digital components Y, Cr, Cb in CCIR 601. RGB is also a component signal. Component video signals retain maximum luminance and chrominance bandwidth.

Y, (R-Y), (B-Y)

These are the analogue luminance, Y, and colour difference signals (R-Y) and (B-Y) of component video. Y is pure luminance information whilst the two colour difference signals together provide the colour information. The latter are the difference between a colour and luminance: red - luminance and blue - luminance. The signals are derived from the original RGB source (eg a camera or telecine).

The Y, (R-Y), (B-Y) signals are fundamental to much of television. For example in CCIR 601 it is these signals that are digitised to make 4:2:2 component digital video and in the PAL and NTSC TV systems they are used to generate the final composite coded signal.

Y, Cr, Cb

The digital luminance and colour difference signals in CCIR 601 coding. The Y luminance signal is sampled at 13.5 MHz and the two colour difference signals are sampled at 6.75 MHz co-sited with one of the luminance samples. Cr is the digitized version of the analogue component (R-Y), likewise Cb is the digitized version of (B-Y).

WHAT IS SVHS?

"The introduction of Super VHS brought with it a new type of multipin video connector, called S-video or Y/C. The connector itself was a good idea and has since spread to Hi8 decks and camcorders. Its debut in tandem with S-VHS has led to some misconceptions though. Most important among these is the notion that VCRs equipped with S connectors cannot be used except with similarly equipped monitors. In fact, all VCRs with S connectors also have the usual complement of composite-video inputs and outputs and may perform very nearly as well with those as they will with the S-video inputs and outputs. The RF connector "F" out though puts out virtually always an inferior signal.

The other important misunderstanding is in the idea that the performance improvements associated with S-VHS are somehow tied to the S-video connectors. In truth, S-VHS's single benefit-higher resolution-has to do only with the bandwidth of the signal recorded on the tape, which the S connector doesn't affect at all. The single benefit of the S connector, on the other hand, is equally applicable to all consumer VCR formats, "super" or otherwise.

To understand what this is all about, we have to know a little about how a VCR works. When color was added to television, it was done by putting the necessary information on a subcarrier plopped into the high-frequency end of the luminance (black-and-white) signal. Black-and-white receivers ignore this color (C) subchannel, but color sets extract the information it carries and use it together with the luminance (Y) information in the baseband signal to control the intensities of the beams from the three electron guns (for the red, green, and blue primary colors) in the picture tube. Performing this separation is not easy, however, and it almost inevitably results in either a loss of resolution or the creation of small, distracting artifacts, such as the "hanging dots" that you may notice from time to time crawling along sharp horizontal transitions between areas of color.

S-VHS decks can record on metal tape and put the high frequency information higher up on the tape and get better results because of this. They are better (and newer than regular VHS, which tends to be older, cheaper and poorer in design).

Good S-VHS and Hi-8 videotape recorders record the composite video signal (Y+C, or luminance plus color) directly, but when home VCRs were developed, bandwidth and other limitations forced a different approach, known as "color-under" recording. The color information is separated from the luminance signal and transposed down to a range of frequencies below those used for recording the luminance. This degrades the resolution somewhat, but it's better than going without color.

When a videocassette is played back, the VCR normally recombines the color and luminance information into a composite-video signal that then goes to the monitor via a direct-video connection. Audio has a different cable. Either way, the monitor has to re-separate the color and luminance portions of the video signal. What an S-video connector does is to shortcut this process, keeping the luminance (Y) and color (C) portions of the signal separate so that they don't have to be combined and pulled apart again. This will yield a slightly cleaner picture, but the benefit is likely to be marginal, at best, unless the recorded color and luminance signals have always been separate, never tangled together in a composite-video signal. Camcorder recordings fall into this category, but that's about all.

So why do some laserdisc players, which start with a composite-video signal, have S-video outputs? To prevent consumers from thinking that they lack a performance feature available on S-VHS and Hi8 VCRs. The only way a S-video output can do any good on a laserdisc player is if its color-separation circuitry happens to be better than that in your monitor, which is possible but not likely."

Cheers, Bill (from the internet)

SHOOTING VIDEO WITH FILM

CRT DISPLAYS

The "rolling bar" sync phenomenon when shooting video screens with a film camera is a problem associated only with CRTs. You should never have this problem when shooting non-CRT display devices such as gas plasma displays, LCD displays, jumbotrons, and most projected images.

A CRT image comes from an electron beam exciting phosphors when it strikes the back of the glass. The luminance of the phosphor at the instant it is hit by the electron beam is dramatically greater than at any other time. It very quickly decays to zero, usually well before the electron beam excites it again. The fact that we see a constant image on a CRT is largely a function of our eyes and brains integrating this scanning bright light to form a complete image. With a CRT, there is no way to "turn off" a pixel, so it is essential the phosphor decays quickly. Otherwise, it would be impossible to make bright to dark transitions without a tremendous amount of image smearing and blurring.

When filming a CRT, it's the electron beam illuminating the phosphors that provides the image. The phosphor decay immediately after the electron beam passes is multiple stops below the luminance level at the time it is excited. (Set your shutter speed to something like 1/100th) and look through the viewfinder and you'll very quickly see the luminance difference I'm talking about. So, the trick is to have the shutter open exactly during the time the electron beam scans the entire display, and closed during the time the beam is retracing to the top to start over. This requires a specific **shutter speed and angle**, and the need to stay in **phase** with the video signal **refresh rate**. It doesn't matter if it's NTSC video or a computer generated display; it's a function of CRTs and the way they work.

NTSC CRTs refresh at 60hz. Most computer displays refresh at some frequency between 60-100hz. It is also possible that a computer display will change refresh rates if the video display mode is changed during operation. (The most common occurrence of this is when a full screen DOS application is launched from Windows. Many DOS computer games change display mode when transitioning between different modes of operation.)

There is no easy solution when shooting a scene with multiple CRTs operating at different scan rates. In the past, I've been forced to replace some CRTs with Ultimatte-blue cards covering the display area and keying in the desired display in post.

OTHER DISPLAYS

In the past year or so, a number of reasonably priced active matrix LCD displays designed to replace monitors have come on the market. The next time I find myself in a similar mixed-monitor situation, I'm going to push very hard to use LCD displays in place of CRTs wherever possible.

Other types of displays don't work like CRTs. With LCDs, plasma displays, jumbotrons, etc., you can electrically turn each pixel on and OFF. While the image may still be updated in a scanline fashion, each pixel is set to its desired level, and it maintains that exact level until the next time it is scanned, and set to a new level. Therefore, the image maintains a **constant luminance** for all pixels during **each refresh**. It does NOT have the characteristics of the CRT, where each pixel is very bright when excited, and then very quickly decays to zero. It is still desirable to maintain a shutter speed and angle that will capture an entire refresh of the screen while the shutter is open (otherwise major movement in the image on the display will cause a **banding effect**), but there is no need to maintain synchronization with the display because there is always a complete image present.

As for the problem of **smearing with projected images**, this is a function of passive matrix LCD displays. The (more expensive) active matrix LCD displays (also known as "TFT") provide a transistor driving each pixel, allowing the value for that pixel to be latched and remain constant. Pixels are instantly updated as the image changes. Passive matrix LCDs (also known as "dual scan" or "DSTN") refresh pixels in a much slower sequential scanning process. This slower scanning process allows the image to change before all the pixels are updated, creating a smearing effect. Active matrix displays are also typically much brighter (thanks to all those individual transistors driving each pixel.) When choosing a video projector (or a laptop computer, or

pocket TV for that matter) you should always opt for an active matrix display. It's more expensive, but definitely worth it.

Most **video projectors** shine a constant light source through an LCD shutter. (Actually, separate RGB light sources through three corresponding LCD shutters.) Therefore, it behaves like an LCD display, not like a CRT. (I don't think an electron beam zapping across a room would excite a projection screen in the same way it does the phosphor inside a CRT tube!)

A jumbotron is basically a very big active matrix display, with lightbulbs in place of LCD pixels.

Hope this isn't too far off topic, and helps the next time you need to film various types of displays.

Bill "going back to my geek cage" CrowAmerican Interactive Pictures<http://www.aipictures.com>

SPECIAL EQUIPMENT

Other Equipment available from WSV shop that may come in handy

Panasonic MX-10 with still disk recorder

Panasonic MX-50 with still disk recorder

Maxxon RF Mic cheap 49 Mhz (local communication) good to keep track of the set while you are not plugged into the Main box with your headset.

Cheap home type Video Xmitter (20 ft range)

2x9" monitor "T" bracket on large stand

Panavision camera extension cable 10 Pin

Character Generator with timer display

CB Xmitter 2x (long range communication outside the cities) 5W handheld. AA battery. Talk to the farmers.

You can get linears that extend this to hundreds of miles.

DC powered 50W playback (loud, good sounding) amp w/ Mic + 2x line inputs (Liberator). OK for small music playback.

Public Address Horn (nasty but loud) attached to Walkie Talkie w/ RS battery Amp. 3 inputs.

Table, black, 2'x 3' w/ adjustable extension legs. Holds 200 pounds.

Small accessory shelf for front or back of cart w/ AC strip

Large aluminum shelf for 2nd cart for slo-mo

Huge Boom Box, (Sony) w/Cassette player, radio, removable speakers, rechargeable batteries

Large 4-wheel cart for two 17" monitors with Hoodman attached. Cart also holds two pieces of 2x 20A battery or 4x 13" color monitors or 2x 19" color monitors.

Battery to battery charger box. Plug this box into a full battery and an empty battery. Now the full battery will charge the empty one at 1 Amp rate.

COMTEK TRANSMITTER: We have a very special Comtek transmitter that is set to 87.5 Mhz for overseas use (for US use 72-76 is usual). This frequency can, of course, be received by any FM radio, Headset, Watchman, Tuner, car radio etc. It can be equipped with a microphone so that the director's every word can be heard by everybody. Of course you can give this to the soundman to transmit audio to you. Or put it at your output to transmit live and Playback audio to anyone.

Microwave video transmitters, if licensed (overseas) , 2 mile range some are legal in USA Part 15

Modulus UHF transmitters for overseas use (PAL and NTSC)

Small speaker to use instead of headphones for operators

Horita signal generator: Bars, tone etc

Horita Timecode burner: burn timecode into any area of screen. Get TC from mixer.

Tc reader-burner-GPI trigger

***Insert more pictures of selected toys:



Videonics MX-1 switcher



Sony PVM 8041 Color 9"Monitor



Sony UPP880 B/W Printer



3/4 INCH DECK Sony 7020



Modulus on the Mexican Beach of Accumal



DIVERSITY UHF RECEIVER

Selects the best of 4 antennae instantly. 12V in/out loop, mounted in steel case, adjusted with remote. Electronics now discontinued by Sony. NTSC only.

Packaged with 2 Yagis and preamps for long cable runs.



DX-400 "TRUE" DIVERSITY UHF/VHF RECEIVER

4 Antennae input - selects best antenna, new 1998. 12V DC on 4pin XLR, remembers preset channel.

SHIPPING

SHIPPING & PACKING CASES ROUTINE

Check for WS security label with phone number on outside of case.

Check for second WS label with address.

No VIDEO to be mentioned anywhere on outside of cases.

Check for handwritten (someday stenciled) paint pen name & phone number on bottom; not visible because ugly.

Secure case locks:

Tape fiberglass case locks with gaffer's tape.

Tie Pelican cases shut with nylon cable ties. IMPORTANT FOR AIRLINE TRANSPORT!

Hooks on batteries and mainbox:

Insert wood (cut from 2x4) under hook to keep them from being crushed by airline handlers.

Cover hooks with cardboard or tape so they don't get snagged on airport luggage movers.

Ship shades and small stands in tripod case.

Inventory cases:

Numbers on written inventory must match camera tape on case like this:

1 of 31, 2 of 31, etc.

SHIPPING OF EQUIPMENT

Fed Ex and all other shipping companies use deadly glue to keep their labels stuck to cases. It takes three hours to remove a Fed Ex label from a case. Be a good lad/lass and prepare the label glue surface with a layer of gaffers tape. It's easy and quick to do and easy to remove. If you are not there to place labels yourself, it helps to write the following on the gaffers taped label prep area of cases in the local language:

PLACE LABEL HERE
(GERMAN: HIER AUF KLEBEN)
French: Poussez ici (maybe)

If you are shipping Pelican cases, Fed Ex now provides plastic label holders for wrapping around the handles of cases, which are secured with cable ties. These are very easy to use and great time savers.

Batteries by Wolf Seeberg Video (Panasonic and other sealed Lead acid types) all are safe to ship on airlines according to the manufacturer. Letters from the DOT are attached at the end of this manual to show to airline clerks who recognize the batteries as batteries. Remember each airline clerk or manager can and will make up his/her own mind in regard to safety of shipments. Put a large piece of gaffers tape on connectors so they stay clean!

Some of the newer, more fragile equipment should have extra cushioning for shipping. Please call the office.

EQUIPMENT WEIGHT, DIMENSIONS & VALUE FOR SHIPMENT

Insurance of courier (Fed Ex, UPS) may cover only companies' deductible if companies are underinsured. Our insurance should not be used for equipment being shipped out. We have a high deductible and do not want to make claims of our insurance company. Always make sure we have production company's insurance certificate naming us as Loss Payee - Additional Insured.

Unit	Case Type	Approx . Case Size W x L x H "	Approx . Shipping Weight	Replacement Value incl. Case
Battery: 3x 6A	Pelican 1500	19 x 15 x 7	25	600.00
Battery: 20A	Pelican 1400	13 x 12 x 6	23	600.00
Battery: 2x25A	Fiberglass	24 x 11 x 9	68	650.00
Battery: 40A	Pelican 1520	19 x 16 x 8	42	800.00
Battery: 40A	Fiberglass	11 x 10 x 10	42	800.00
Battery: 50A	Pelican 1520	19 x 16 x 8	56	800.00
Battery: 60A	Fiberglass	20 x 11 x 9	65	900.00
Battery: 80A	Fiberglass	26 x 11 x 9	95	1200.00
Cables	Fiberglass	23 x 16 x 13	60	4000.00
Cables White Case	Plastic	20 x 18 x 15	98	4000.00
Cart	Aluminum	55 x 24 x 20	28	300.00
Charger, 10A	Pelican 1520	19 x 16 x 8	25	300.00
Chargers 3x 10A	Pelican 1520	19 x 16 x 8	40	800.00
Chargers 3x 4A	Pelican 1500	19 x 15 x 7	25	1500.00
Chargers 3x 4A + 10A	Pelican 1500	19 x 15 x 7	30	1500.00
Combo	Fiberglass	26 x 16 x 15	60	4000.00
Combo Wolf B/W	Fiberglass	25 x 23 x 17	83	5600.00
Deck 3/4 Color large	Fiberglass	24 x 14 x 22	50	3000.00
Deck CVD-500	Pelican 1500	19 x 15 x 7	16	2000.00
Deck Slow-Mo Panasonic	Fiberglass	12 x 21 x 23	70	4500.00
Disk Freeze Frame	Pelican 1500	19 x 15 x 7	14	2000.00
Inverter	Soft Bag	6 x 6 x 3	1	500.00
Main Video	Aluminum	22 x 15 x 12	30	12,000.00
I Box	Alum	21 x 15 x 15	58	14,300.00
I Box Accessories	Pelican 1520	19 x 16 x 8	21	1800.00
Monitor 9" Color	Fiberglass	24 x 20 x 17	60	3000.00
Monitor 13" Color	Fiberglass	25 x 23 x 17	102	2500.00
Monitor 19" Color 1910	Fiberglass	25 x 24 x 30	115	1600.00
Monitor 20" Color 2030	Fiberglass	32 x 25 x 25	100	1600.00
Monitor 20" Color Proton	Fiberglass	31 x 25 x 24	145	3000.00
Stand Monitor (2)	Aluminum	32 x 10 x 5	6	400.00
Monitor, 17"	Fiberglass	29 x 17 x 22	50+	3500.00
Monitors, 9" (2) B/W	Fiberglass	16 x 13 x 20	25	4000.00
Pelican 1600 in box	Pelican 1600	23 x 21 x 9		225.00
Power Supply 16A	Pelican	19 x 13 x 9	32	500
Printer Hi Res	Pelican 1500	19 x 15 x 7	20	1800.00
Printer Hi Res	Haliburton	20 x 17 x 7	20	1800.00
Shelf, black	Aluminum	22 x 25 x 8	15	300.00
Spares	Pelican 1600	23 x 21 x 9	40	6000.00
Speaker AR	White Fiber	18 x 18 x 11	24	2000.00
Special Effects I large	Fiberglass	20 x 21 x 22	45	3000.00
Special Effects I small	Fiberglass	21 x 16 x 16	40	3000.00
Transmitter FM	Pelican 1600	23 x 21 x 9	47	9000.00
Transmitter Modulus	Pelican 1600	23 x 21 x 9	37	7000.00
Transmitter Antenna UHF Tx	Pelican 1600	23 x 21 x 9	30	1000.00
Transmitter Antenna FM Tx	Pelican 1600	23 x 21 x 9	30	1000.00
Tripod Case w/ 2 mon. stands	Plastic	45 x 14 x 14	47	800.00

Tuner Diversity UHF	Pelican 1520	17 x 19 x 8	18	3400.00
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5/28/98

OPERATOR PHONE NUMBERS

We will give out operators home and mobile pager numbers to clients, producers, business associates, production companies and their employees, as they identify themselves on the phone to us. This is to facilitate communication. If you want to keep a number confidential, do not give it to us WSV. We encourage operators to carry a beeper or mobile phone. Check your answering machine or beeper at least at lunch and at 5 p.m. everyday! You should also have a beeper for your car alarm.

OPERATOR TELEPHONE BOOKING SHEET

Company: _____ Phone # _____

Product: _____ Date: _____

Dates are: definite hold

Producer: _____

Coordinator: _____ Work #: _____

Home #: _____

Director: _____

Camera Rental House that provides tap: _____ Phone #: _____

Nature of job, require any extras?:

- B&W
- color
- slow motion
- 3/4" + 20" color dailies package
- special effects
- wireless - short or long range?
- extra monitors
- Hi-Res printer

RATE

\$ _____/for 10 hr guarantee. Union: IA, NON. Payroll Company

INSURANCE

Before job starts, give Production Company name and number of Wolf Seeberg Video. We need to do paperwork. Equipment rental invoice will be faxed and mailed by Wolf Seeberg Video the day after the job.

BOOK EQUIPMENT WITH WSV

If you are unable to do this job:

- 1.) Give the client a recommendation of another operator. I suggest this person uses our gear!
- 2.) Tell the client Wolf Seeberg Video will call with another great operator.
- 3.) Tell Wolf about this mess right away.

PRICES

Quote only from pricelist. Offer no deals. Give producers a price list. If they want a deal, have them call the office.

WHO'S WHO IN CAMERA RENTAL HOUSES

Video	Steve Clenetski	Clairmont	818-761-4440
Rental Mgr.	Alex	Otto Nemenz	213-469-2774
Video	Terry West	Otto Nemenz	213-469-2774
Super 16, TC	Dave Kenny	Panavision Hllywd.	213-464-3800
Commercials, 16mm & low budget	Wes Prince	Panavision Hllywd.	213-464-3800
	Steve Martin	Panavision Hllywd.	213-464-3800 ext. 159
Service (call first)	Paul Baxter	Panavision Hllywd.	213-464-3800
	Andrew Young	Panavision Hllywd.	213-464-3800
	Hector Marino	Panavision Woodland Hills	818-881-1702 ext. 136
	Armando Arroyo	Panavision Woodland Hills	818-881-1702

SECURITY STORIES

STANLEY PETITE, 1970s student film

His producer left the Nagra and mikes in the trunk of a car in front of a Griffith Park mansion guarded by dogs. They went to dinner. They came back and the trunk was open and very empty.

SOUTH AFRICAN LOSS

Ian Kelly had a large video package stolen out of a Wolf's parked in Soweto, SA in February '96.

VEGAS CLEANUP

A New York production company had all their equipment locked in a motel room in Vegas. They went to dinner. When they came back nothing was in the room. The insurance company refused to pay because there was no sign of forcible entry.

7/25/90: Jerry Rightmer's van was parked in front of his house in Pacific Palisades. His large side window was smashed and two 9" monitors were stolen. Jerry did not have an alarm in his car.

Doug Jackson (a video operator) had his car with his gear stolen from in front of his house. The empty cases were found in Topanga Creek. The thieves used a special ignition "lock jack" to hot wire his Toyota truck in a good Sherman Oaks neighborhood (April 1990). Doug did not have his alarm turned on. He had no insurance.

1990: All of David Ronne's video gear was stolen out of his truck on the street.

In 1989, all of Sam Cherroff's video gear was stolen out of his large van in his driveway in a "good" Valley neighborhood. The thieves removed one of the rear door windows with a special suction cup device. They left the window.

Buff Bullen was working daytime on a street in Hollywood. The two set cops were at breakfast. The thieves cut a padlock on a cubevan, rifled through all the cases and stole 2 decks out of the cases. While the cops were having lunch together, the thieves returned, cut the new padlock, rifled through the cases again and stole the remaining 2 monitors. Then the cops went home and no one stole anything.

Leland Hammerschmidt left his gear in his locked car 30 yards from an all night security guard in his gated apartment building garage. In the morning, he noticed that someone had opened his car and taken the large B+W monitor. He suspects his junkie neighbors.

June 1991: John Coldiron had picked up the gear the afternoon before the shoot. He unloaded it into his Los Feliz house. He went for a 2 hour bike ride. When he returned, the vent window of his van was smashed. His van was empty, of course.

July 1990: Rob Newell had his van parked in front of his house in Santa Monica in a quiet neighborhood. He says it looks like a Mexican plumber's van. In the middle of the night someone forced the side vent window open and rolled down the passenger side window. They unloaded all his sound equipment through that window except for the stereo Nagra. Rob came out to the truck in the morning and saw what happened. He got so mad that he kicked the tire. This finally set off the alarm. He did not have a shaker or glass-break sensor. It took his good insurance company 6 months to reimburse him. They paid only replacement value for equipment with serial numbers. They paid for rental equipment while he was waiting for their money. The cops took fingerprints only after he insisted. They showed him a lot of HIS prints and some excellent glove prints. The cops did nothing else!

Wolf Seeberg Story, June 1991.

Overnight, all 4 hubcaps were stolen off of Wolf's personal car on Yale Ave. Damn!

Richard Northcutt (1994) parked his fancy cross country bike outside the 7-11 on the corner of Washington and Lincoln, went inside to buy a coke, came out and found – nothing. Gone in 12 seconds.

Richard Northcutt (1994) parks Wolf's Volvo in front of the local Del Taco next to a police cruiser, goes inside, orders, says hello to the cops, comes out two minutes later – Wolf's window is smashed and his fancy slide in radio carefully removed from the slide.

August 1995, Jerry Rightmer parks his car in front of his house overnight. Someone smashes the window with a beer bottle, drives the van with a very large equipment package into the sunrise. Jerry takes the beer bottle carefully to the local cop shop: Sunland. They were still looking for Rodney King so they weren't interested in taking fingerprints of the bottle. The car came back two weeks later stripped, none of the equipment has shown up, despite our \$5000 reward. It took the insurance company 4 years to pay partially.

LOSE STUFF, YOU PAY

If you lose equipment, you pay. If the production company loses equipment, they pay.

LIABILITY

If you damage equipment, you pay. If the production company damages equipment, they pay.

If there is a legitimate accident, and you took all precautions in this manual, the production company usually pays.

If there is a serious accident: loss of life or limb, expect to be in court for years.

Yes, the lawyers will charge you. They are just lawyers.

SAFETY FIRST

ALWAYS! If you see something unsafe you have a responsibility to stop the shoot. This is towards the individual concerned as well as legally. If you knowingly let an unsafe condition (of any kind) exist, you can be held liable for the accident if it happens. Think about this! Its big – the lawyers will take your house and your kids college fund if you gloss over the usual stuff.

OTHER BUSINESS NOTES

USE BATTERIES ALWAYS

I want to re-emphasize: Please use batteries always. Batteries are safer than the AC you find on most movie sets. Take as many as you like; we have plenty.

BATTERY RENTAL CHARGE WAIVED

ONLY if you are forced to use batteries, i.e., there is no alternative power (AC or generator), will we charge the production company. If it is your choice to use batteries, there is no charge to the company, of course. So use batteries.

75 OHM TERMINATOR

(THIS IS WHERE THE MEAT IS)

© Paul McGoldrich

Note from the editor: This is an article that appeared in the magazine TV TECHNOLOGY. The concept seems complex and confusing at first but reread these pages in a month from now and again three months from now. You will notice that as you apply your new understanding, the rules of “terminate the last monitor” start making sense. You might even get a real job in real video where occasional real thought is appreciated (financially too)!

One of the simplest but seemingly least understood aspects of interconnecting equipment is that of terminating – or not terminating – cables at the connecting point with the equipment. The rules are, in fact, very easy to understand once the basic principles of impedance are wrapped up and understood. This month’s glossary looks again at the video side of things, but it should always be remembered that with any single circuit, analog or digital, termination should be thought of for correct performance. This is true for whatever frequencies are involved in the signal path. Most of the references here are for video but they equally apply to audio and radio frequencies (RF).

RESISTANCE is a term related to the restriction of an electrical path to Direct Current (DC). In its simplest terms, a battery of V Volts (V) connected across a circuit will produce a current of I Amperes (A). the resistance of the circuit will be R Ohms (Ω), where the variables are related by Ohm’s Law, $V=I \times R$.

DC POWER (P) is related to the heating effect of current through a resistance. Measured in watts (W) it can be shown to be an extension of Ohm’s law and can be expressed from any two of the variables, i.e. $P = I^2 R$, or $= V^2 \div R$, or, $= V I$.

DECIBEL (dB) is the ratio between two powers, originally for audio, used on a logarithmic basis to match the characteristics of our senses. In the simplest of terms, the Bel is the logarithm to the base 10 of the ratio of two powers. One-tenth of a Bel (the dB) is a more realistic unit and the statement is, power ratio (in dB) = $10 \log_{10}(P1 \div P2)$. If there is a doubling in power, for example, the ratio is (near enough) +3 dB. A voltage relationship can similarly be derived to show that when voltage is doubled there is a power change of -6 dB. An airplane passing overhead might measure 80 dBA (dB Absolute, as a measure of noise power); another might measure 100 dBA. Of the two, the latter is creating 100 times more noise.

IMPEDANCE (Z) is the Alternating Current (AC) version of resistance. Any load presented to a signal will be an impedance. It differs from resistance in that there is an added factor that may look inductive or capacitive to the signal.

CABLE IMPEDANCE (Z) is the Characteristic Impedance of a cable. It will depend on its construction – whether the cable is coaxial or has parallel or twisted conductors, etc. The impedance will vary with the spacing of the conductors, the size of the conductors, the insulating material (dielectric or air), etc.

CONNECTOR IMPEDANCE (Z) is the Characteristic Impedance of the connector itself. This can be, but is not always relevant.

MATCHING IMPEDANCE (Z) is the most aspect of the process. For energy to be transferred perfectly (i.e., 100 percent) from one place to another, the signal must see its matching impedance. Energy can be removed at any point in the path, in a high impedance manner, but at some point there must be a matching impedance to terminate the energy.

MATCHING TRANSFORMERS are devices used to convert one impedance level to another while correctly terminating the signal. Such transformers are mostly encountered on microphone circuits and in the conversion of impedances between balanced and unbalanced circuits (when they often are called baluns). Balanced circuits are where the conductors carrying the signal are identical – a cable pair, for example – while unbalanced circuits have the conductors in different environments, as in coaxial cable, for example.

REFLECTIONS are energy that is not passed into a termination. If an impedance is not matching (because of mis-termination or mixing of cable impedances), then some energy will be reflected back down the cable. This will cause a problem in the signal level delivered to the termination and may cause other side effects. For perfect termination, the energy at all frequencies in the signal must see a matching impedance. If only some frequencies are reflected, in a video signal, for example, there may be effective Y/C delays, color smearing, ringing on luminance but not color, etc. The effects are unpredictable and depend on the exact length of the cable and whether the reflected signal is totally absorbed at some point or is re-reflected back to the load.

TERMINATING a signal is the last point in the chain of an interconnection. Failure to terminate at the appropriate place will result in a doubling of the signal voltage applied to the equipment as well as possible reflections.

TERMINATOR OR TERMINATION denotes a physical impedance, usually a close-tolerance resistor, often mounted in its own connector, that will be applied to the final connection point. These little devils can get very expensive. The terminator may also be internal to the equipment.

AUTO-TERMINATION at the input of a piece of equipment is often provided to take some of the perceived confusion out of terminators. When the equipment, such as a monitor, is provided with Loop-thru inputs, the signal is applied to one input and another cable may be applied to the second connector to Loop-thru to another destination. If that second cable is not there, an auto-termination equipped monitor will apply a termination to the incoming signal. [This is a common area of trouble: the mechanical switch doing the termination is so small it often gets stuck in one position or another.]

DOUBLE TERMINATION is putting two terminations on the same signal path. The signal voltage will be halved and reflections may again take place.

HIGH IMPEDANCE is the state where the signal is not terminated at that point and is going on to another destination, where it will be terminated.

LOW IMPEDANCE is the state where the source or load is at a lower impedance than the characteristic impedance than the characteristic impedance of the cable. Low source impedances are common, for a number of reasons. Low load impedances are usually fault conditions.

MATCHING STUBS are a complicated higher frequency technique that can be used to match impedances under difficult situations or deliberately create reflections that are of a controlled nature. Normally this is only encountered with RF.

CONCLUSION:

So, if we have a cable in hand and are about to put its connector into a mating one, we should positively think, "Does this need to be terminated?"

If it does, then do it immediately. Chasing termination problems can be a lengthy process in a complicated setup. The results can be obvious in the form of too high a level or a ridiculously low level, but they can also be masked by a gain control being adjusted "to suit," leaving only strange smearing of colors or ringing as clues that there is a problem.

That's all for now. As with all Terminators: "I'll be back!"

Left: WSV system showing computer controller for VHS deck circa 1990. Probably the first system with computer on location.

Right: WSV controller circa 1990 still one box for everything and note the whole system: deck monitor accessories power converter all in one lightweight box ready to work quickly after opening. This kind of convenience and protection for shipping has not been equaled by any other systems out there. It's unique and I should protect it with a patent.



WSV 1990 system angle view



Closeup of WSV video assist system showing a Intercom (Talkback switch) installed in a system dating to the early 1990's.

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The Early Days

Copyright ©1996, Society of Operating Cameramen



Jerry Lewis' video assist system. (Photo by Bob Furmanek)

By Michael Frediani, SOC

Video assist and playback devices on the set are about as common as cops in donut shops. Yet what is one person's tool might well be another person's millstone. Most directors today wouldn't consider rolling a foot of film without first watching the scene played out on a monitor. Cries of "Can we get a hook-up?" are about as common as the words "Quiet for rehearsal!" And "they" want to see a picture even before the dolly track is laid out or the assistant has gotten his/her focus marks. What was once a novelty is now a necessity, though most people would be surprised at just how long video has been a part of the film set.

One need only look back to one of America's best known comedians, Jerry Lewis, to discover the first major use of this device. As described in the book *The Jerry Lewis Films* by James L Neibar and Ted Okuda,

Lewis explains the reason for and the path toward developing video assist.

The Beginning

What was originally called "Closed Circuit Television Applied to Motion Pictures" was created and devised by Jerry Lewis in September 1956. It was engineered and perfected by the Paramount Technical Departments under the supervision of Bruce Denny. Although others may have preceded Lewis, (Linwood Dunn, ASC recalls a visit to the ASC clubhouse by Al Simon from Great Britain demonstrating a video assist device prior to 1960) Lewis holds the patent on it.

It was 1960 when Lewis first used his video assist system while making his directorial debut on *The Bellboy* in Miami Beach, Florida. His device was described like this: A closed-circuit industrial type RCA Vidicon Camera mounted on the BNC film camera used as the production "A" camera. The television camera was equipped with a variable focal-length "zoom" lens that permitted it to match the scene content of all the BNC lenses except the 18mm wide-angle lens. The television camera shared the horizontal parallax of the finder and was compensated to the point of focus. The television camera also had a vertical parallax that must be adjusted to the average point of focus of each scene. However, as the camera was used in close-up position, it was necessary to use some judgment to protect headroom, rather than adjust only to the cross-hairs.

The television monitor, together with control equipment, weighed in at 200 pounds and was mounted on a small dolly. The equipment was of assistance not only to the director-actor but also to various members of the staff. It was used in many more ways than anticipated. Some unexpected problems were encountered and either solved or endured.

Considerable maintenance was required on the television equipment because it had been used beyond specifications and had some inherent faults or limitations relative to motion picture standards. Spare equipment, borrowed from RCA, was regularly used.

Production Use

The novelty of the television equipment prevented an evaluation for the first days of shooting until a pattern of use developed. The television equipment operator found it necessary to determine if Jerry Lewis was to be an actor, director or both in the scene and to place the monitor where it could most easily be seen.

Jerry Lewis the director, used the monitor to see the scene as photographed. The action content within the film frame was reproduced fairly accurately. The director knew what the film camera was seeing and explanations by the camera operator were "unnecessary." During the rehearsal portion of the scene the director used the monitor to smooth action cues, entrances, crosses, etc., and also to see the effect of panning and dolly movements. Timing and movement of the scene in black and white were observed, and distracting background objects were shaded or moved.

Several times during tightly framed or critical scenes the director had the monitor turned in to the set so the actors could see mistakes of movement or position. This helped the actors understand the director and resulted in a correction of the fault. The monitor was similarly used to show the actor how to improve timing, avoid shadow and see the effects of anticipating cues.

Jerry Lewis the actor, frequently used the monitor to help compose and time a scene. Positions and movements relative to sidelines, headroom, shadow, etc, could be observed during rehearsal. Often in ad lib scenes he could see the monitor either directly or with his peripheral vision and move within set limits. Although small, the television monitor showed the potential impressiveness of the Fountainebleau Hotel lobby, hotel entrance, airport and similar scenes.

Jerry Lewis as director-actor, used the monitor in several interesting ways. He would observe the action within a set prior to making a well-timed entrance. For example, in one scene in which the room was filled with ad-libbing girls, he was able from outside the room to see on the monitor the exact instant when the camera had a clear view of the door and hence to make a perfect entrance. At other times, after making an exit into awkward areas, he was able to see and direct the remaining scene from the monitor's position. Combinations of entrances and exits were made in this manner, and the scene was viewed from usually blind spots.

Several times, particularly during lineups of the bellboys that included Jerry, he would observe the action from his position. If such a lineup were panned through close-ups, Jerry could direct the action until the camera was ready to move in on him.

It might be interesting to note that few actors had enough self-discipline to avoid looking at the monitor and that it was usually necessary to turn the monitor away from the actors during takes. When Lewis was not in a scene he would watch the action unfold on the monitor. When asked by The Operating Cameraman why some actors resent not having the director beside the camera during a take Lewis said pointedly, "If they had real talent they wouldn't resent anything."

Yet there were times when the monitor was not used exclusively by Lewis during filming of The Bellboy. After being used for lineups, rehearsals, etc, it was in a position to be seen by others. At such times it was used or shared by members of the staff and crew in various ways. Associate Producer Ernest Glucksman used the monitor many times to view rehearsals and takes and sometimes after discussions with Lewis, changes were made. Cinematographer Haskell Boggs, ASC used the monitor to evaluate set-ups. Arthur Schmidt the editorial supervisor and Claire Behnke the script supervisor used the monitor when access to the set was restricted by equipment. The set painter Gene Acker sometimes used the monitor to locate highlights to be dulled down. The assistant directors viewed the monitor occasionally to observe empty areas to be filled or crossed with extras.

"Toward the end of the picture," Lewis continues, "there were two instances in which the monitor was used to hold back noisy audiences. During a long dolly shot in the Fountainebleau gallery, an audience of about 35 people were kept quiet while observing the 'Stanley being dragged by man with suitcase' sequence. Again, while in the restricted Barcelona lobby during the telephone booth and other sequences, the monitor helped hold down an interested and quieter audience of about 50 people. It is belatedly obvious that the monitor, or an extension monitor, could have assisted us on more occasions."

The general problems encountered were due to equipment limitations, last-minute planning, inexperience and under-anticipation of the number of uses the television equipment would find. Lights were the most severe problem. It was necessary not only to gobo (shield) or move the monitor to avoid direct light but also to place the monitor in areas where it could be most easily seen without the director or actor being blinded by nearby lights. Ambient light reflected from floors, walls and ceilings faded the picture, and it was often necessary to

increase the monitor's brightness and contrast beyond recommended limits to obtain a good picture. It was also necessary to adjust the television camera control system continuously to maintain a good picture during rehearsals and light changes.

Outdoor scenes imposed a limit on the monitor that could be met only by using a contrived shadow-box on the monitor. Daylighted objects are ten or more times brighter than the maximum brightness of the monitor and it was necessary to view the monitor within the shadow-box for several seconds while awaiting eye accommodation.

Power to operate the equipment was obtained from 115 volt AC convenience outlets. During the airport jet scenes it was necessary to use 300 feet of AC cable. The drop in voltage caused a delay in equipment warmup time, and the first shot was "missed" by the television equipment. At the golf course, the nearest AC was 800 feet away and although an effort to locate a portable AC generator was made, it was not practical to follow through.

"As a personal note," Lewis stated "it is my carefully considered opinion that the use of the television equipment resulted in saving shooting time, that it was an aid to the director and other members of the staff and that after its novelty passed, it became part of the company equipment."

Yet more than three decades after its introduction Lewis remains embittered by the fact that he is not duly recognized for his achievement. He stated recently to *The Operating Cameraman*, "We work in a strange industry when an innovation of this kind has been kicked under the rug for almost 40 years. They (the film community) haven't appreciated the work of an innovator because he's a pratfall comic so I won't dignify them with any further comment about my device! It's not worth it to me anymore."

But Steven Spielberg is compelled to add, "Ever since Jerry Lewis inaugurated video playback in the 1960s, it has continuously proven to be a benefit to directors, with some notable exceptions. Using playback is not unlike "sneaking" your movie in front of your entire cast and crew and although when things are going swimmingly this is a valuable morale-booster, it could also turn your leading actors into Siskel and Ebert, thereby inviting a day-one collaboration between director, actor, producer and most certainly the camera operator. Some film makers welcome this collaboration as I have in the past; other film makers I know decry it."

No matter what the circumstances that take place on the set, what counts is that the shot designed is the shot delivered. How often as camera operators have we heard "cut-print" at the conclusion of a shot only to have to jump from the dolly and explain to the director that there were certain elements of the scene that were unsatisfactory composition-wise or for other problematical reasons? When a director views the scene he or she is looking and listening to a myriad of things and it stands to chance that something may occasionally be overlooked. That is why the camera operator must be ever-vigilant to the smallest details and not leave anything to chance. Believing that the director or script supervisor will catch an oversight on the part of the operator, actor, boom operator or others only creates a false sense of security to the detriment of the operator. Cinematographer George La Fountaine, ASC (Hope & Gloria) states, "Just because a shot is on a monitor doesn't mean it's good or right. The director who's looking at it may be hearing the words but not seeing the move or wondering if his agent has made that certain deal. I never hesitate to make something better. Never. Even if it's the director's favorite shot."

As fast as we are asked to shoot each scene we must remember that the next day's dailies are viewed under more subdued conditions by the director and producers with more critical eyes. La Fountaine recalls first seeing video assist in 1960 at Paramount Studios which was Lewis' second effort with his video assist device on a picture entitled *The Ladies Man*. "I visited a huge four- or five-storied set. Jerry was directing himself and W Wallace Kelley, ASC was the cameraman. The set (described by noted film critic Leonard Maltin as "the real star of the movie") was a Hollywood hotel for aspiring actresses and built all the way to the perms. The face of the building had been removed to provide the camera with an open view of what seemed like thirty rooms. Each apartment was occupied by a pretty starlet and fully dressed with furniture. Lewis watched his stand-in's rehearsal on a floor monitor as an immense crane followed the stand-in from the topmost floor, down halls and stairs to the lobby in one continuous shot. A small video camera mounted above the Mitchell BNC swing-out finder provided Lewis with a black and white approximation of Kelley's lens.

Granted, the video image was crude. But it gave frame lines and a reasonable perspective of what the camera was seeing. I worked in live television at the time so I was more impressed with the set than the electronics. At KTLA-TV we had just succeeded in placing a live camera aboard a helicopter so seeing the film guys using our tool was a kick.

Coming out of live television I was never intimidated by video assist. I've heard many of the arguments: 'It slows things down,' 'Everyone's a cameraman,' etc. My feeling is the more we agree with the placement of the product, performance or action the better. Before video assist I remember once soothing a commercial client with the words, 'Wait 'til you see it, you'll like it.'" La Fontaine adds, "He didn't."

George Turner, former editor of American Cinematographer magazine, remembers when he first saw video assist on a set years ago. "Many people didn't want to use it because they were afraid that by watching a monitor they would become hypnotized by it... turns out they were right!" Turner notes that as a production illustrator in 1982 on the set of One From the Heart, "director Francis Coppola has probably been the staunchest supporter of it to date."

The Crew

Often not mentioned in this mix of getting the shot is the dolly grip. With more and more TV dramas trying to emulate feature style shots with TV budget constraints the operator and dolly grip are thrust into situations that at first seem unattainable with the time allotted. Steadicams, cranes and remote controlled cameras are now part of what is normal practice on most sets. Tight lenses during over-the-shoulder shots while the camera slides across the floor are commonplace. A good dolly grip has an innate sense of what the operator sees, sort of his own "parallax view." With experience and quick reflexes the dolly grip can make an instantaneous adjustment with the nuance of an actor's head tilt in order to maintain the designed shot. With video assist as a tool that job becomes easier. More often than not the dolly grip is asked to do a great deal of thinking on his/her feet in order to help the operator maintain the desired composition. This in effect makes the dolly grip another component of the camera team, a virtual co-operator.

With the advent of the small onboard monitor first-assistants now have the ability to see what the operator sees, enabling them to become better operators when the opportunity arises. They can see what is actually in frame thereby giving a hint as to where the focus should be placed in some cases. Also it is a silent way of cueing "focus racks" where necessary. Those assistants who work on the sets without video assist gain the same type of parallax vision that dolly grips learn when, for example, the operator has to cut the camera because an over-the-shoulder didn't work out. With time they can tell what isn't working for the operator. Adding the onboard monitor takes that ability away from the assistant yet if they have time to look away from the actor and up at the monitor it is a newer form of education in composition.

Producer/director Robert Singer (Cujo, Lois & Clark) was a long time holdout, not wanting to rely on the monitor until he discovered while watching dailies on a show some years back that he wasn't getting the kind of exacting over-the-shoulder compositions that he had designed. With video he found that once the operator was able to watch a rehearsal on the monitor he could emulate the set up and then Singer could spend more time watching the scene directly. He adds, "When I work with an operator that I can trust it makes my job a lot easier."

Director W Richard Lang, Jr (James Michener's Texas) states that "at first it was unusual not looking directly at the performance but after the initial newness wore off I found it to be very advantageous. I have yet to see a video screen hurt a great performance or sadly, to hide a poor one. Since I work mostly in TV the close-up coverage gives me an image size that makes performances easy to evaluate. Although sometimes, for whatever reasons, I slip back into the old dinosaurian habit of actually looking directly at the actor."

Lang continues, "It is truly a great tool. For instance it means not having to weigh on and off the Chapman or climb up a twenty foot parallel. Being able to "see" how much of the actor was covered or blocked. Did the arm move pan/tilt/swish/stop and flow from one element into the other with the right tempos? Was it Kubric, Capra or crap? So much of this art/craft is opinion. Each of us is unique. Long live la différence... But the video assist is still just a tool. Like a hammer or a saw it can help make beautiful things or butcher them. It depends entirely on the carpenter."

The Sound Mixer

Just as the monitor is a tool for directors, dolly grips and assistants, it is also utilized by the production sound mixer. Joseph Geisinger, CAS (The Jungle Book, Showgirls) states, "I received my training prior to the advent of video assist, so my point of reference was solely aural. With the video tap I now have a visual reference as well. This added dimension is valuable to me. In order to prevent overall diminished audio quality due to phase problems or "boominess" only one mic can be used at a time. So in multiple mic situations a visual aid helps me to decide which mic to use and when.

Video assist also helps me to anticipate the unpredictability of actors. The energy level (volume) and physical direction that a line reading will be given is important information. This information allows me to make instantaneous adjustments with greater accuracy.

A through the lens visual reference puts me in a position to assist the camera operator by keeping the boom operator informed of the frame lines. I have the ability to communicate with the boom operator (via a private line that doesn't go onto the recorded track) when the mic is getting too close to the frame lines." Geisinger adds, "It is always a concern of mine to get the mic as close to the actor as possible in order to alleviate background noise yet at the same time I never want the mic so close that it becomes a distraction to the camera operator. I feel that it is unfair for the operator to be watching the mic rather than the scene. Often in the past when I really needed a direct eyeline to the actors I found that my sound cart was in the way of camera, grip or electric so with video assist I can remove myself and my equipment from the set."
One Hundred Dollars a Day

The small monitor is for video assist.

Owen Marsh, SOC the renowned and now retired camera operator recounts his first experiences with video for The Operating Cameraman: "I first encountered video assist around 1961 during the filming of the MGM/Cinerama feature How The West Was Won. I had the opportunity to help Peter Gibbons the Cinerama machinist/technician/inventor, develop a video assist unit. The video cameras were mounted on top of a wild Cinerama camera which was in turn slung beneath a helicopter. The TV monitors were in the 'copter cabin and by viewing the pictures we were able to direct the pilot where to fly.

My impression at the time was that we had a wonderful tool which could have many applications in the filming of pictures. This proved to be true but also false.

It takes a cinematographer or director who is extremely well-educated in the art of camera operating to have any beneficial input to offer an experienced camera operator. They as the boss can tell you what they want but should leave the method of getting there to their operator. If you were to ask for a number I would say possibly about 10% of the above are so qualified.

"One Hundred Dollars a Day"

Over the years the video assist, like many other cinema tools, has been over used. The use by a director who is also the actor in the scene is invaluable and well-founded, but more and more you find the video assist being used by directors who are not secure in their decisions and need the assurance of a committee's vote before they can accept a shot. The use as a "toy" to shoot multiple takes, run them back and forth, have everyone who is in the "booth" put in their opinions then choose the maybe three or four that you want to see on film is, in my opinion a waste of time and money and an insult to the camera operator who after every take has the opportunity and obligation to say "Good" or "Let's do it again." Marsh recounts the time when he worked on the Gene Wilder feature, The World's Greatest Lover, at Fox in 1977. The star was the director, producer, writer, and even wrote the music. "The star/director and the cinematographer became such slaves to the video assist that the little green canvas "TV room" would cost us hours a day. On one occasion we were to shoot a process shot with the principals in front of a train window with the process screen outside the train. To make the shot I had to use a Mitchell Mark II which was synched-up to the process projector but would not accept the video assist that we were using on the Panaflex. So we set up the Panaflex next to my camera and ran it locked-off without an operator just for the video while I made the actual shot with the Mark II. After we had done about eight takes the "group" retired to the canvas booth to watch the videos. For about

ten minutes all was silent, then the voices began to get louder and louder. You could finally hear the director yelling "If you don't fire him, I will." With that the cinematographer came out of the booth, walked over to me and told me that I was through. When I asked the reason he explained that the director couldn't believe that I had made eight takes without once tilting up with him, the actor, when he stood up to get his suitcase from the overhead rack; that his head had gone out of the frame every time. It was only then that the DP noticed the second camera which he had forgotten, the Panaflex, locked-off with no operator and no film.

Editor's note: If you get fired because others are stupid, maybe you should consider educating them.

The production manager was by this time on the set and the call had gone out for another operator. While they were all apologizing to me and asking me to stay I had only one thing to say: "One hundred dollars a day for the insult of having to use a video assist, for the rest of the picture." Well they paid it and since that day whenever someone said that there would be video assist on a camera that I was going to operate, my stock remark was, "One hundred dollars a day for the insult" and if they didn't want to pay it I didn't work for them.

Marsh concludes, "I guess what I'm trying to say is that if the cameraman and/or the director doesn't trust the operator's word on a shot and feels he needs a video monitor so he can check on or correct him or if he himself is so unsure of his ability to judge a take while it is being shot and has to look at it over and over then he should either get a new operating cameraman or quit because one of them does not belong in the movie industry. It's a tool, not a crutch."

Sol Negrin, ASC (Blood Rush) president of International Photographers Local #644 has had an opinion concerning video on the set since he first encountered it on a commercial in 1982. "In some respects it's annoying because agency people had their varied opinions in regard to the takes and you shot footage more than necessary because of indecisions. At least in theatrical or television narrative material it's the director who makes the decision concerning performance."

Concerning the collaborative effort the DP shares with the operator Negrin states, "If I know the operator well and have worked with him often, I know I can rely on his taste. Communication is essential to make certain that he is following your ideas but I will also give allowance for his aesthetics. I certainly will respect his decision for improvement or correction for a scene made. If one can convince the director after he/she approved the take that it could be done better then the attempt should be made."

As to the use of color video playback on the set Negrin replies, "I do not approve, because it give a false illusion as to what you are photographing of the actual scene. Psychologically disturbing since the video assist color and the film image will be different. In commercials agency people can easily be contaminated by this illusion." Cinematographer George Spiro Dible, ASC (Sister, Sister) president of International Photographers Guild Local #659 adds, "Color video assist is a useful tool if used for staging purposes only. Some new producers tend to judge the quality of our lighting by the video assist-which is wrong and dangerous."

"In narrative films," Negrin states, "video assist is a boon to the director for performance and concept. For the DP he certainly gets a good idea of the framing and how well the scene was executed. In commercials it has drawbacks because several individuals may draw varied opinions of how the framing of the scene should be. If your agency people are new to the field insecurity is noticeable."

Dible who first encountered the quad system on Barney Miller in the 1980's felt compelled to sit next to the director facing the action. "With my left eye I watched the quad monitor and with my right eye I watched the actors. They felt our presence. They didn't look up into thin air to talk to the director or cinematographer." Dible concludes by reflecting, "In the beginning I hated the system but now I love it. It helps me to 'educate' producers/writers who become new directors. The shots are there and what you see is what you get (framing). I give my input to improve composition and to protect coverage of the scene."

The Rental House

Alan Albert, Executive Vice President at Clairmont Camera remembers first sending out black and white tube type video assists on their Arri BL-2 cameras around 1976. "Shortly afterwards video taps for Arri-3 cameras were developed by John Clap, CSC, Arriflex and Jurgens Camera Service," recalls Albert. "The first

practical color video assist was around 1987-88. We now send video assist out on commercials 90-98% of the time, TV movies and episodic 70-80% and theatricals hover at about 50% with video." As to the choice between color vs. black and white Albert estimates that 10% of Clairmont's cameras go out with color taps, the majority being CCD type vs. tube and that virtually all commercials now use color.

Through the Viewfinder

From another operator's viewpoint Paul Babin remembers video as a staple of his existence since becoming a film operator in 1984. "Prior to '84 I had worked for several years as a video camera operator so the experience of someone scrutinizing my work in real time was not new to me.

As I think back it's hard to remember which shows have had video assist and which didn't. I think most of them have. And my vagueness of memory points, I guess, to the fact that video assist hasn't been all that intrusive. In those few instances where directors or DPs have critiqued my framing via the monitor it's usually been justified. In a couple of instances weak directors with nothing better to do needed to establish some authority and offered some patronizing suggestion based on what they saw in the monitor. But again those have been seldom. During Always, between takes or during set-ups, Spielberg would catch me napping and suggest that if I framed the shot the way it was at that moment, 'there would be hell to pay!'

In general I've found video assist to be a helpful tool in communicating to the director, especially in situations where you want to suggest a variation on an agreed upon set-up or offer a new idea altogether. It's imperative for the director of photography to know what he's lighting. It's very easy to place the DP and director in front of the monitor and execute the move so all are agreed-that's the shot!"

As recently as 1992 with director Peter Weir on Fearless, Babin and Director of Photography Allen Daviau, ASC began production without video assist. Babin notes, "It wasn't until we got into cramped practical locations and the script supervisor was losing her mind trying to keep up that we put on the tap. Weir is very committed to his actors and wanted to be near camera when rolling. He's part of a dying breed." Babin adds with some chagrin, "I think a lot of us as operators feel the consequences of the 'director in the next room' syndrome. So often the actors yearn for feedback after a take. The nearest human contact is often the operator. I think this separation of directors from their actors caused by video is the worst consequence brought on by the technology. Though I can appreciate how seductive seeing the camera's view is during the take."

Babin thinks that currently one of the best uses of video technology is Jim Cameron's "VID-Stick," a viewfinder which accepts Zeiss or Primo lenses with an attached video tap and RF transmitter. Cameron holds the VID-Stick in one hand and a Walkman TV/recorder in the other. "He lines up his shot, records the lineup rehearsals which he operates and hands the tape to the operator for a 'guide track.' This works especially well for all the numerous Steadicam shots Cameron employs in his movies."

Whether video assist and playback on the film set is used as a tool or as a crutch or both during any given day, chances are you will encounter it more often than not. With the constant advances in technology that affect everybody's lives every day and in every way we must learn how to make it work for us whether we are camera operators, cinematographers, actors or directors.

"In any case," Spielberg notes, "video playback is not going anywhere and must remain an optional filmmaking tool for the director."

Information from The Jerry Lewis Films courtesy of Ted Okuda.

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<http://www.soc.org/so02012.html>

VIDEOTAPE IS VANISHING FROM HOLLYWOOD SET

L.A. Times, Wednesday, December 29, 1999 Home Edition Section: Business

Movie makers turn to digital technology for their 'video assist.' Three Southland firms struggle to fill the equipment orders.

By: MICHAEL P. LUCAS LA TIMES STAFF WRITER

According to Hollywood lore, comedian-director Jerry Lewis first brought videotape to movie sets in the mid-1960s--so he could watch himself as soon as he finished performing a scene. The idea caught on. Soon nearly every TV, movie and commercial director was using what became known as "video assist" to play back instantly what they shoot on film.

But videotape on movie sets is rapidly going the way of the hand-cranked camera. It's quickly being replaced by new high-tech recording systems that stores digital video streams on hard drives.

The exploding demand for the new method has three Southland firms struggling to fill orders. The original player in video assist, Doremi Labs Inc. of Los Angeles, is competing with two agile upstarts: Cinelogic Co. of Burbank and Rightmer Video Inc. of Sun Valley--the latter launched barely a year ago by a musician working out of his house.

It's yet another example of Hollywood's reliance on a cottage industry of small suppliers--and of how clever entrepreneurs can carve themselves a niche in a market always hungry for new products.

The tale of the tape is simply that it's being replaced by digital hard-drive technology. Two non-tape systems, made by Sunnyvale-based TiVo Inc. and Replay Networks Inc. of Mountain View, hit the home-entertainment market earlier this year. Those two firms hope their products--the TiVo and ReplayTV--will eventually elbow videocassette recorders out of living rooms.

But digital recorders have been on Hollywood sets since 1995, when Doremi (as in the first three tones of the diatonic musical scale) ushered in the post-tape era of video assist. The company's V-1M, as it's now called, is a model of simplicity--if not always performance.

"It has a VCR-type format that's really easy to learn," said Bob Schmidt, owner of On Tap Video of Redondo Beach. "I'll meet you on the set and have you editing in about 10 minutes."

Priced from \$4,000, the Doremi video-assist recorders have enjoyed widespread popularity.

"There are 3,000 in use around the world," says Camille Rizko, Doremi's managing director. "We usually sell about 100 a month, but we've got orders for 300 in December. A lot of buyers want them for Y2K 1/8productions 3/8."

The Doremi sold like hot cakes, but video-assist operators soon began demanding more performance than the Doremi could deliver. For instance, they need such features as a quick, easy and reliable way to keep track of shots--which run into the hundreds in a multi-week project--plus the capability to export edits directly to a post-production program, says Chris Blakely, co-owner of Play It Again Video Assist of Santa Monica.

Some operators customized their Doremis with accessories such as printers that spit out yards of time records on narrow paper upon which the operators scribble production notes.

Enter video-assist operator Samuel Cherroff, who designed a system that, among other things, can keep an exhaustive log of scenes--shown thumb-nailed on a monitor--and a program that makes shots easy to retrieve and replay--even spliced together in a form of rough editing. He enlisted a European computer programmer and, just over 2 1/2 years ago, introduced the Cinecorder. Starting at \$6,500, it quickly drew a loyal following.

"It's the best computerized system out there," says Stephanie Powell, president of Video Assist Systems Inc. of North Hollywood. "It records sequentially, but you can jump to any take at any time, review it for the director, change the speeds, do a lot of manipulation you aren't allowed to do in the analog world."

"We plan to buy five or six more 1/8Cinecorders 3/8 in the next year or so," Powell said.

"It seems nobody wants to use tape anymore," says Cherroff, who was at the elbow of cinematographer Bill Pope ("Matrix," "Clueless") one day this month on location for a golf club commercial in Hancock Park.

A one-time technical and service specialist for the movie camera maker Panavision Inc., Cherroff keeps busy updating the Cinecorder. The latest touch was encasing it in a rugged metal shipping case to match those in which other camera and grip equipment is customarily hauled to sets.

With more than 50 sales of his product, Cherroff seemed to have a clear shot at No. 2 in the market until last May, when former rock musician Jerry Rightmer introduced Digital Lightning.

"Up to now, being on 'American Bandstand' was the highlight of my life," said Rightmer, once a bassist with the Sanford/Townsend Band, whose song "Smoke From a Distant Fire" climbed to No. 9 on the pop charts in 1977.

Rightmer recalls moving from the sound studio to video-assist jobs in the early '80s. He began tinkering with a hard-drive recorder a year or so ago, and enlisted software engineer Kenneth Yeast, president of We Do Windows Inc. of Redwood Valley. They teamed up to create Digital Lightning with its proprietary StormVision software, which they claim is even faster and more user-friendly than Cinelogic's system.

Digital Lightning has its own fan base, led by Hill Production Service Inc. of North Hollywood, the oldest video-assist specialty house in town. Company President Lindsay Hill says he started in the field on the 1974 disaster epic "The Towering Inferno."

"There's a real need for computerized systems," Hill says. "All the directors want to see 1/8their work 3/8 cut together right now."

Buyers have snapped up 30 Digital Lightnings and new orders are rolling in.

"The potential market for this is huge," said Yeast, who is an investor in Rightmer Video and stays busy fielding technical support calls--providing service that even Cherroff admits is a plus for his upstart competitor.

Cherroff and Rightmer said they are hoping that customers who have bought Doremis will want to switch to their product. Rightmer said he has customers in small markets whom he suspects are using his product for final editing--which would position the Digital Lightning as a low-ball competitor against Avid Technology's sophisticated editing system.

For movie makers, the modest cost of video assist pays off in faster production.

"It's beyond a luxury; it's really a necessity to have that video-assist person on board," said Bart Brown, co-producer of Universal's "The Flintstones in Viva Rock Vegas."

Brown said video assist was budgeted for about \$50,000 over about three months of shooting--which he said translates to about \$30 to \$40 per hour.

And though the Digital Age is here, video-assist specialists haven't yet discarded all their old equipment, says Hill at Hill Production Service.

"There are still guys who like to use tape," Hill said. "They don't want to see any edits; they don't want any of that fast stuff. They just want to see the last scene played back."

WHO INVENTED VIDEO ASSIST?

Some major developments of the last 20 years were pioneered by the old Samuelson Film Service Ltd. In London:

We had our first co-axial video viewfinder [video assist tap] in 1960 (the UC-2 viewfinder system) and the first major film we serviced with a battery driven reflex video viewfinder system with recorded playback was OLIVER in 1967 (Joe Dunton, who then worked for us, had a lot to do with the development of the system and was the world's first ever video-assist technician.)

In 1971 two young French cameramen, Jean-Marie Lavalou and Alain Masseron brought to Samuelson Algar Cinema in Paris the first ever modular boom mounted camera system which they had developed while filming in a submarine. It was then brought to SFS in London to be manufactured for use in the industry and during that period we invented and developed the electronic, hand-wheel operated, remote control camera head , developed the first lightweight video assists that could be fitted to virtually any reflex camera, and all the other enhancements that go to make the LOUMA CAMERA CRANE that you know today. (Herve Theys, of Paris, was the technician who made the first ever electronic remote control head.) The first major film was Roman Polanski's THE TENANT, photographed in 1975, Sven Nykvist was the DP. Steven Spielberg used one extensively on the film 1941, released in 1979, Bill Fraker was the DP who received an Academy Award for Cinematography Nomination for the picture.

The Steadicam was invented by cameraman Garrett Brown and developed by Cinema Products Inc. [it would be unworkable without video tap]. It was introduced to the industry in 1976. The first major film was BOUND FOR GLORY (1976) and the DP was Haskell Wexler who went on to win the Academy Award for Cinematography that year.

The rest, as they say, is history.

David Samuelson

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ALAN LEVI INVENTS "VIDEO ASSIST"

Tim Kolb (who wrote this article) explores the career of legendary director, Alan J. Levi. Spanning a career that began in the 1960's and still continues today, Tim discusses the life, work and accomplishments of a talented man whose body of work includes many of the most memorable shows in television history. He is also the inventor of "video assist" and is not only hands-on in the artistic side but in the technical side as well. Alan discusses the way that the new technology has changed the face of broadcast production and his own use of nonlinear editing tools. It's a great story and our thanks to Alan J. Levi for granting the interview and Tim Kolb for a great job in writing it.

Excerpt: from http://www.creativecow.net/cgi-bin/select_forum.cgi?forum=cinewave

TK: What are the most astounding technical changes in this industry as you look back and compare it from when you started to how it is today?

AL: I think there may be three or four major changes and as you say, most of them are technological. In 1963, I patented a process which is now known as "video assist." It was a company I put together with friends. I raised some money because I had this idea of building a camera that had both a motion picture camera and a television camera all in one, viewing through one lens. Jerry Lewis had done it before me but he had just mounted a small television camera on top of a movie camera, so he could see on a TV screen what the camera was shooting on film. I figured that through a single lens the TV picture was going to be much more accurate and much more facile, so I began to put that together and I did.

TK: You mentioned video assist earlier. Now I'm a person with a relatively formal education in the field and I'm a little embarrassed that your name doesn't "ring a bell." Of course, a great many memories from that time aren't the sharpest.

AL: I'll tell you why... The idea was beneficial for what I was doing at that particular time. I was

directing but I was also using Vidifilm as an inroad for myself into making a lot of contacts. I applied for the patent and we had a patent pending. About 3 years later, the patent-pending was sold to the Mitchell Camera Corporation. I sold it to them because I had manufactured a number of systems for a number of different people and what we were doing was kind of exploration. I suddenly found myself so highly into the technical that I wasn't able to direct anymore. I was building cameras for NASA by that time - we were putting cameras into the training Apollo Space Craft, and I was designing equipment to go into spacecraft which facilitated both film and video through our single lens design. And we were also providing medical cameras that were going to be suspended above medical operating tables which exposed high resolution color film but at the same time you could monitor the picture through the lens with the video -- which at that time was still black and white. So I found myself suddenly getting into it so heavily that I went: "Wait a minute, whoa! This is backfiring on me. Someday I might be a very wealthy man because of it -- but I didn't want to stop directing!" The main reason I invented the Vidifilm process was because I was building a system where I could shoot multi-camera like live television and still have a film negative through the same optics. It kind of mushroomed into all this other stuff. So I finally sold the rights off. Besides, it takes a number of years for a patent to come through. I sold it to the Mitchell Camera Corporation which then took it and revised it into a Mitchell camera called System 35 -- which was somewhat of a bastard system. It was Mitchell's first attempt and the blimp was huge, where Vidifilm was a miniature camera.

TK: There's been some improvements made since then, I take it?

AL: Yes, many more improvements were made on it as time went by. No one person, you know, patented that. I mean no one person totally invented what is available today. It was a string of many people. And I dropped out of that portion of the development because I went back into doing what I love to do, which is directing. It doesn't mean I'm not still an electronics cuckoo, but... what the heck.

-----end-----

ANOTHER PERSPECTIVE ON VIDEO ASSIST AND ITS MISUSES

I welcome people looking through the eyepiece, always with the proviso that they may be only seeing a tiny part of a move, or that background talent will block some of the set, or that focus will shift to something in the foreground...But I think it's essential for people from departments like art (especially) get what the picture is we're making, not does that corner of the set look nice.

Video assist is a help in this, of course, but there is something about it which doesn't seem as real as the view through the eyepiece. And as we all know, vid assist can be a complete pain and distraction as well.

Some of my most frustrating jobs were with a director who thought his job required him to sit with the client and agency crowd and manipulate us on the set like we were puppets. I would get minute corrections on my framing: 'Al, tilt up!' and the poor AD would get instructions to relay to the talent. In one memorable situation with kids---kids for gods sake!--this director wouldn't even come up close to talk with them but shouted his notes from 'video village.' Perhaps he thought that this impressed the ad agency people, but I think actually they would have preferred he do some real directing.

I think that's the real problem with video assist. It encourages passivity on the set, 'backseat driving', and takes attention away from where it should be. And the monitor should NEVER be placed where talent can see it during a shot!

Alan

The Videotap is a great tool, but I hate it when that happens. Often times you're adjusting a pola or a grad (or you're not even looking through the camera), and you hear a framing remark.

Might be as much the fault of not having an operator, since I'll often hear these comments when I'm taking a spot meter reading or something like that.

But there are those directors that just sit there and say "show it to me". They're not directing, but just approving what you show them on a monitor. They're watching a type of interactive television. They're usually the same directors that are really impressed with the fact that you can operate wheels!

In recent months, I've been fortunate in not having had this problem with directors who are in a type of symbiotic relationship with a Hoodman attached to their skull (except for a recent 2nd Unit director who needed 3 monitors!). It's very frustrating when you have to keep doing it all for them...and keep telling yourself that it's their film, and that you're *always* learning something. It's worked for me thus far.

Mark

+++++

OK were does Abby Singer come from??

During production, the next-to-the-last shot of the day. According to Mr. Abby Singer, the term was first used during the mid 1950s while he was an assistant director at Universal Studios. In order to keep ahead of things, he would always inform the crew that they would shoot the current shot plus one more shot before moving to a different area of the studio, either a different stage or the back lot. Through the years, the term was used by other assistant directors, until today when it is always used to indicate the next-to-the-last shot of the day.

Anyone know what a "**Mickey Rooney**" is? "A short little creep" -small, slow dolly move.

> why CHARLIE BAR?

Maurice Gillette (sp?), Freddie Francis' gaffer answered this one for me once. Apparently when a leading lady's endowments (Charlies) required enhancing, the lighting cameraman would throw a narrow shadow over her chest thereby creating a sense of more 'depth'. Hence, Charlie Bars.

...I had a Jewish Gaffer receive a "Gary Coleman" or a "GC" from the African-American Key Grip. We also had a "36 inch 3-hole Offset Plate" we all referred to as a Ubangi....

1. Black wrap is sometimes referred to as "Run DMC".
2. A flag set to cut light off at the neck is sometimes referred to as a "Jane Mansfield".

>Maybe you could become a China girl for Kodak (to touch on another ethnicism....)

Kodak used a picture of a doll for a color test pattern

No worries about being politically correct, Wade. The China Girl gets her name from the fact that the first one was actually a photo of a china (porcelain) doll.

Dutch angle- probably comes from Robert Wiene's "The Cabinet of Dr. Caligari"(1919), where set design and camera angle combined to create skewed angle. Dutch is probably derivative of "Deutsch", as in the gangster "Dutch" Schultz. Another theory I heard is that it may have come from Carl-Theodor Dreyer's "The Passion of Joan of Arc", And the Americans got the Danish director confused with being Dutch. That film, of course, had many close-ups that were "dutched".

VIDEO DEFINITION OF TERMS

Aspect Ratio:

The ratio of picture width to picture height. For the NTSC system this is 4:3.

Back Porch:

The section of the composite video signal between the trailing edge of the line (horizontal) sync pulse and the end of the blanking pulse period (when picture information begins). For a monochrome signal the back porch is simply at the blanking level. For a color signal, the color burst is added within this section.

Black Level:

The DC voltage level in the picture signal which corresponds to beam cut-off on the display tube. It can be at the blanking level (given by the back porch) or slightly higher (7.5% to 10% of the peak white signal above the blanking level).

Blacker-than-Black:

The amplitude region in the composite video signal that extends below the reference black level in the direction of the synchronizing pulses.

Blanking:

A portion of the composite video signal whose instantaneous amplitude makes the vertical and horizontal scan retrace not visible on the display tube.

Blanking Level:

The level of the front and back porches of the composite video signal.

Blanking Period:

The period in the composite video signal where the level is reduced to the blanking level, below which the display electron beam is cut-off. This allows non-visible retrace of the beam from the right side of the display to the left side at the end of each scan line (horizontal blanking) and non-visible return of the electron beam from the bottom of the display to the top. Horizontal blanking occurs for approximately 11 μ s between each scan line and vertical blanking for 1.2 ms between each field.

Blooming:

Defocussing of the picture in regions where the brightness is too high.

Breezeway:

The section in the signal blanking period between the end of the sync pulse and the start of the color burst.

C.C.I.R.:

International Radio Consultative Committee - a worldwide standards organization.

Chrominance Signal:

That part of the NTSC signal that contains the color information.

Clamping:

A process that established a fixed DC voltage level for the picture signal. This is important for proper RF modulation and for maintaining the correct picture black level.

Color:

An attribute of an object being scanned that distinguishes it from other objects, apart from shape, texture, and brightness. In television systems the color of an object is further subdivided into hue (tint) and saturation. The hue or tint refers to the dominant wavelength of a spectral color, i.e., light red is the same hue as deep red and dark red. Deep red has more vividness or saturation (less white), whereas dark red has less brightness. Similar terms are used to describe non-spectral colors (a mixture of hues).

Color Burst:

Normally refers to approximately 9 cycles of the 3.58 MHz subcarrier superimposed on the back porch of the composite video signal. The phase of this burst establishes the reference color phase for tint or hue, and the amplitude provides a reference for the color saturation level.

Color Subcarrier:

A subcarrier at 3.579545 MHz (NTSC) whose modulation sidebands are added to a monochrome video signal to convey the color information. Similar subcarriers are used for SECAM and PAL.

Composite Video Signal:

The complete video signal. For monochrome, it consists of blanking and synchronizing signals, with a picture signal representing the scene brightness. For color, an additional subcarrier is added for color synchronization and picture color content.

Compression:

An undesired decrease in amplitude of one portion of the composite video signal relative to another portion.

Contrast:

The range of dark and light values in a picture.

Cross-talk:

An undesired signal interfering with a desired signal.

Definition:

See resolution.

Differential Gain:

The amplitude change in the 3.58 MHz color subcarrier as the picture signal varies from blanking to peak white level. This is the result of system non-linearities and is measured in percent change.

Differential Phase:

The phase change, measured in degrees, of the 3.58MHz color subcarrier as the picture signal varies from blanking to peak white level.

Equalizing Pulses:

Pulses of one half the width of the line (horizontal) sync pulses, transmitted at twice the line rate for the three line periods before and after the field (vertical) sync pulse. They are used to help the vertical sync system of the receiver accommodate the half line difference in the number of scan lines on successive fields.

Field:

One half of a complete picture interval. A field will contain either all the odd numbered scanning lines or all the even numbered scanning lines in the picture.

Field Frequency:

The rate at which a complete field is scanned. For NTSC color signals this is nominally 59.94 Hz.

Fly-back:

See Horizontal Retrace.

Frame:

A complete picture consisting of two interlocking fields.

Frame Frequency:

The rate at which a complete frame is scanned. In the U.S. this is nominally 30 frames or pictures per second. Each frame holds 2 fields.

Front Porch:

The section of the composite video signal between the end of the picture information on a scan line (start of blanking) and the start of the line synchronization pulse.

Horizontal Blanking:

The blanking signal at the end of each scan line that prevents the retrace of the display tube electron beam from being visible.

Horizontal Retrace:

The rapid return of the scanning electron beam from the right side of the raster to the left side.

Horizontal Hum Bars:

Relatively broad horizontal bars drifting slowly up the screen as a result of interference from the 60Hz main frequency.

Hue (Tint):

Describes the color that is being represented on the screen, i.e., red, blue, magenta, green, orange, etc.

Interlace:

A scanning process in which each adjacent line belongs to the alternate field.

I.R.E.:

Institute of Radio Engineers, a professional organization. Now combined with the AIEE to form the IEEE.

I.R.E. Scale:

An oscilloscope scale calibrated for composite video and divided vertically into 140 units. The picture signal occupies the range from 0 to 100 with syncs in the range 0 to -40.

Luminance:

The monochrome or brightness part of the color signal, composed of specific proportions of the three primary colors, red, blue, and green.

NTSC:

National Television System Committee, used in reference to the system adopted for color television broadcasting in the U.S. at the end of 1953.

Noise:

In a television picture, 'noise' refers to random interference producing a salt and pepper pattern over the picture. Heavy noise totally obscuring the picture is called "snow".

Overshoot:

An (excessive) response to a unidirectional signal change. Overshoot is often used deliberately to enhance the luminance portion of a signal.

Pairing:

A partial or complete failure of interlace in which scan lines of alternate fields fall in pairs, one on top of the other.

Pedestal Level: See Blanking Level.

Percentage Sync:

Video: The ratio in percent of the amplitude of the synchronizing pulse to the peak amplitude of the picture signal between blanking and reference white level. For a properly constituted composite video signal this is 40%.

RF: The ratio is a percent of the amplitude of the synchronizing pulse to the peak amplitude of the modulated RF signal. For correct modulation this is 25%.

PAL:

Phase Alternation Line. A variation of the NTSC system involving phase reversal of one of the color difference signals on a line by line basis, introduced into the UK and Germany in 1967.

Picture Signal:

That portion of the composite video signal which is above the blanking level and contains the picture information.

Pre-emphasis:

An increase in the level of a band of frequency components with respect to the remainder of the signal. For U.S. television, the audio signal is increased at a 6db/octave rate above 2.1 kHz.

Raster:

The area on the face of the display tube that is scanned by the electron beam. This is not always entirely visible since commercial receivers employ overscan so that the edges of the raster are hidden by the faceplate.

Resolution (Horizontal):

The amount of resolvable detail in the horizontal direction of the picture. This depends on the high frequency and phase response of the transmission system and the receiver.

Resolution (Vertical):

The amount of resolvable detail in the vertical direction of the picture. This depends primarily on the number of scan lines that are used and secondarily on the size (shape) of the electron scanning beam.

Saturation (Color):

The amplitude of the chrominance signal. Increased saturation means increased chrominance signal level. Visibly, this refers to a color increasing from pale or pastel to deep.

S.E.C.A.M.:

Sequential Couleur Avec Memoire. The color broadcasting system used predominantly in France which utilizes sequential transmission of the color difference signals, which are FM modulated on two separate subcarriers (1967).

Setup:

The difference in level between the blanking level and the reference black level expressed as a percent of the reference white level.

Smear:

Smear describes a picture condition where objects appear extended in the horizontal direction producing an ill-defined, blurry picture. This often occurs when the receiver is tuned slightly above the proper pix carrier frequency.

Sync:

Abbreviation for synchronizing or synchronization.

Sync Level:

The level of the synchronizing pulse tips.

Vertical Blanking:

The blanking signal at the end of each field starting three lines before the vertical sync pulse.

Vertical Retrace:

The return of the electron beam from the bottom of the display to the top after a complete field has been scanned.

Vestigial Sideband Transmission:

The standard broadcast transmission technique wherein only one side band of an amplitude modulated carrier is fully transmitted with the other sideband (usually lower) truncated (suppressed).

Video:

The visible portion of the transmitted signal representing the picture.

V.I.R.S.:

Vertical Interval Reference Signal. A quality control signal added to a horizontal scan line during the vertical blanking period. It is used to provide a chrominance, luminance and black level reference.

V.I.T.S.:

Vertical Interval Test Signals. A series of test signals that are added

to horizontal lines during the vertical blanking for in-service testing of the transmission equipment. They can be deleted or added at various points in the transmission link, unlike the VIRS, which is added at program origination and stays with the program material.

V.I.T.C.:

Vertical Interval Time Code. 80 bit SMPTE time code integrated with the video signal on horizontal line 13 during vertical blanking. This is a sure way to marry original (shooting) timecode with the picture. It takes special equipment for en- and de- coding.

Window dub:-

A scratch working dub of a program that shows timecode in a "window" in picture area

Source: National Semiconductor Corporation.

GLOSSARY OF DESKTOP VIDEO TERMS

4:2:2

A digital standard where the luminance is sampled at 720 times a line, and the two chrominance channels (R-Y and B-Y) are sampled at 360 times a line. The 4 and 2 relate to the multiple frequencies of the color subcarrier signal.

8-Bit

Typical quantizing levels for digital video standards. Eight-bit quantizing results in 256 levels of gray scale video.

10-Bit

Quantizing level that results in 1,024 levels of gray scale video.

Alpha

A computer graphics (or blue screen) term that refers to the degree of opacity of an image when overlaid (keyed).

Aliasing

A jagged, stair-step appearance of angled lines or other image artifacts on a graphics or video display.

Anti-aliasing

The removal of inherent alias artifacts through digital filtering.

Bit

A single unit of digital data.

CCIR 601

A digital video standard using luminance and two color-difference signals. Luminance is sampled at 15.3mhz or 720 times per horizontal line, and chrominance is sampled at one half that rate.

Chrominance

The color portion of the video signal, including hue and saturation information, but not brightness.

Component video

The technique of recording video in which the chrominance (color) and luminance (brightness) parts of the video signal are processed and manipulated as discrete signals (or components).

Composite video

The standard video signal that combines chrominance and luminance information into one combined signal to produce a picture.

Compression

The technique of reducing the amount of data need to represent a video or audio signal. International standards for video and still image compression are set by MPEG and JPEG.

CYMK

Cyan, Yellow, Magenta, and black. Cyan, magenta and yellow are the three master colors of the subtractive color family. They produce the color spectrum of reflective art images printed on paper.

D-1

The original component digital videotape format for recording CCIR 601 video. Newer digital formats include D-5, component digital Betacam and DCT. D-3 also is a new composite format.

D-2

The original composite digital videotape format for recording NTSC or PAL digital video.

Desktop video

The application of personal computer systems to the performance of video editing and post-production tasks.

Dithering

The close intermingling of dots of various colors to produce what appears to be a new color. In digital video terms, it is the process of adding quantizing or spatial noise to reduce contouring or other alias artifacts.

EDL (edit decision list)

The list of instructions that comprise many of the editing decisions for a project.

Frame

In NTSC, a video frame consists of two fields interlaced to produce a video image. NTSC uses 30 frames per second to create the image and simulate motion.

Gray Scale

The range of luminance levels from black to white.

Interpolation

A process used in digital video effects systems that averages a number of pixels to create a new pixel.

JPEG (Joint Photographic Experts Group)

An international standard-setting body for still picture data compression.

Key (keying)

Superimposing one video image over another.

Keyframe

A specific frame to which a set of specific attributes (size, rotation and location) is assigned to a video image.

LTC (longitudinal time code)

Time code that is recorded on one of the two audio tracks or on a dedicated linear time-code track on videotape. Timecode gives each field a name that may be time of day.

Luminance

The monochrome element of a color video signal. In essence, it is the brightness or intensity of the video image.

MJPEG (motion JPEG)

A method of video compression where each frame or field is compressed using the JPEG algorithm.

MPEG (Motion Pictures Experts Group)

An international standard-setting body for video and audio compression. To achieve maximum compression, the MPEG standard algorithm uses information from previous frames (interframe coding), which makes it difficult to edit, frame advance and play backwards.

Opacity

The degree of translucency of a pixel. An opacity setting is used most often with keyed images. Usually, an opacity value of 0 would be a completely transparent image, a value of 100 would be a completely opaque image.

Pixel

A Picture Element. The smallest basic element, or individual data of color, of a video image.

Quantizing

The process of converting the voltage levels of a sampled analog waveform into digital data.

Rotoscope

The frame-by-frame process of retouching images of a live action clip.

RGB

Red, Green, and Blue. The three primary colors in the additive color family used for projected image display.

Sampling

The process of periodically measuring an analog waveform's amplitude. *Sampling rate* is the rate at which the samples are taken.

SC/H phase

The phase relationship of the chrominance subcarrier to the leading edge of horizontal sync.

Spline

An equation computed by the system that defines the acceleration and deceleration aspects of the image as they change from one keyframe to another.

Subcarrier (SC)

A continuous sine wave that constitutes a portion of the color video signal. Used to carry the color information in a video signal.

System H-phase

An adjustment that moves the output horizontal pulse relative to the REF IN horizontal pulse. Used for timing video signals.

System SC-phase

An adjustment that changes the phase of burst on composite output video relative to the burst in the reference input. Used for timing video signals.

TBC (time base corrector)

A synchronizer used to remove time base errors that result from the mechanical process of recording and playing back video on tape.

Time code

A system of identifying frames recorded on videotape by assigning each frame a chronological number based on a 24 hour clock.

VITC (vertical interval time code)

A form of time code in which the time code is converted to data and placed on a line in the vertical interval of the video signal.

From some modern day video magazine

Video Signal Input Configurations

Standard Input - The standard input impedance for all VAC video products is 75 Ω (for Y/C video products, 75 Ω per channel) DC-coupled connection. VAC standard video products are available with BNC, RCA or mini-DIN (Y/C video only) connectors.

Loop-Thru Input - A high-impedance (10k Ω) input with a second, or "looping" connector that is passively coupled to the input. A Loop-thru input is useful to loop or daisy-chain several devices (such as distribution amplifiers), or to provide a "fail-safe" signal path, as the passive loop-thru connection

does not require power to operate. The loop-thru connection must be terminated, either via a connected device, or with a 75 Ω terminator.

Differential Input - Input A 75 Ω DC-coupled input that incorporates differential circuitry to place a high impedance path between the input and output signal grounds. Unlike the standard and loop-thru inputs that look at the input signal with respect to ground, this input looks at the signal difference between the input signal and input ground shield. While a differential input does not provide complete ground isolation (VAC's VL-2 and VL-2A provide complete ground isolation using optoisolator circuitry), it is a compact, reliable and cost-effective solution for most types of ground-loop induced noise.

Loop-Thru Differential Input - As the name implies, combines both a Loop-thru and a differential input, and provides the benefits of both features.

DC Coupled - Refers to an input configuration that provides a direct current (DC) connection. In video products, the DC coupled input ensures a proper DC reference for the video signal.

APPENDICES

All Decks Playback Speeds

Slo-Mo Manual 8950

Battery Lifetime Sheet

Battery Charger Manual

200 W Inverter Manual

Log sheet samples 2x

U.S. Dept. of Transportation (DOT) Xerox of airline safety letter

U.S. Dept. of Transportation (DOT) battery waver labels

General Sales Catalog

VIDEO EQUIPMENT SECURITY

PICK UP AND STORAGE

1. Equipment should be picked up from Yale Avenue the morning of a shoot and returned directly after work. If you do not do this you are liable for loss or damage.
2. If you pick up gear the night before the job begins or return it the morning after the job is finished, thereby having it in your own possession, you do so at YOUR OWN RISK. If it gets stolen, you pay for it.
3. If the shoot is more than one day, the gear should be left with the production company, locked up, under their supervision: on stage or in their truck.
4. If the production company (producer, production manager, production coordinator) asks the operator to take the equipment for the night, then, do so. But, tell someone in charge (producer, production manager production coordinator) that the company is of course liable for the equipment while they are renting it and you as their employee take care of it.
5. Do not quietly volunteer to keep the equipment with you. Let the production company know you are willing to do this as a courtesy to them, but also let them know they are liable for losses of course (as stated in the rental agreement).
6. The main box should be unplugged and closed when you are not in attendance (to discourage eager, helpful amateur "operators").

SUGGESTED STORAGE OF GEAR, WHEN COMPANY REQUESTS YOU TO KEEP IT

1. In your locked house with you.
2. In your vehicle (with alarm) in a one-car, locked garage. (An underground locked or gated garage that serves a whole building is NOT safe.)
3. Car alarms go off all the time -- no one cares. Get an alarm that activates a beeper on your belt. \$250 at Radio Shack.

UNSAFE STORAGE

1. In your car on the street, in your driveway or any other place the public has access to.

IN CASE OF THEFT

If anything is stolen, whether from the set or any vehicle:

1. Notify Wolf Seeberg Video immediately.
2. Make a police report.
3. If there are signs of forced entry, do not destroy evidence.
4. Make a report to the production company.

I have read the above, understand these rules, and agree to abide and be bound by them:

Signed:.....Date.....

Address:.....

Social Security #:.....-.....-.....

RECEIPT FOR MANUAL

I, _____(Name)

of _____(Address)

have received the Video Assist Handbook, printed on: 9 May, 2005

on _____.

ACKNOWLEDGEMENT

I have read all of the Video Assist Handbook, Version July 1991. I have understood all of it. I have had ample opportunities to discuss any aspect that was not clear to me with Wolf Seeberg or a representative of WSV. I promise to work within the confines of the instructions as described in this manual. I will carry this manual with me to all jobs and refer to it in case of any questions. In case of any doubts about AC safety I understand that using batteries is always the safest solution. I will always take enough batteries so I can exercise this option. In case of safety questions, I would rather not provide video service than provide unsafe service.

I, _____(Name)

of _____(Address)

have read the above on _____(date)

RECEIPT

I have read and understood the security section of the Video Operator's Handbook.

Signed: _____

Date: _____

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Date: _____

end of manual

03/08/04