THE FIELD GUIDE TO ELECTRONIC NEWS GATHERING

Real World: 101

by

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Contents

About The Author

Tim Cummins grew up in Kenya, East Africa, the son of Baptist Missionaries. He gives credit for his street skills to his years in "the bush."

He has worked in the field shooting ENG for five years, earning four Associated Press awards in the process. He is Chief Photographer for WTOC-TV in Savannah, GA.

Tim has been shot at, punched, had bottles and rocks thrown at him, hung from helicopters, and nearly been burned up covering stories.

Dedication

This field guide is dedicated to my wife, Kathy. When I race out of the house in the middle of the night to cover a crime scene, she's the person who wonders if I've been shot, too. She's the best support person a news man could ever hope for.

This book is for the photographers that cover news for no glory and little money. They risk their necks to keep the public informed.

Ackowledgements

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Part One

ELECTRONIC NEWS GATHERING EQUIPMENT

Jump Start

"A Checklist For Electronic News Gathering"

The newsroom vibrates with intensity as the assignment editor fills out "the board." The assignment editor scribbles "slugs" as the news director peers over his shoulder. I scan the different stories looking for my initials. A "package" on nuclear reactors, a "VOSOT" concerning an Ethiopian rally, and "Live Shot" with Big Bird---Sesame Street is in town. We have a twelve minute "news hole", and we're down a "shooter." Looks like a busy day. No lunch. . .again. That's the news.

The news has a language all its own. The book you are holding in your hand will help you get a job, and do your job better: more creatively, more efficiently. Real World 101 works. It's as simple as that. This material has been compiled with you in mind. If you absolutely must know something it is in this book! Along the same lines, you should take it upon yourself to memorize much of this material. When the "Desk" asks you to go get a "sound bite" at a certain 10-20, and cut a "VOSOT" for noon your eyes should show a spark of recognition--not glaze over in fear.

A Field Guide to ENG will give you the jump on your competion, especially if you are fresh out of college. Hopefully you will find much of this material familiar, but this may not be the case. Why? Because the real world is not the scholastic world. Rarely do students have true deadlines.

Your job is on the line if you are ten seconds late with your story. Do you know of any other job that thinks in terms of seconds?

There is a complete glossary of terms used in this book at the end of the field guide. Here are a few of the words you just read. Did you know what each meant? A "slug" is a short title for the story. "Abercorn Murder" might be a sample slug. These titles are usually stored so that the story could be used for file video. A "VO" is a voice over, where the anchor (the person reading the news on the set) talks about the video that the audience is seeing. A "VOSOT" is a voice over sound on tape. This is commonly seen where the anchor narrates video and then the person on the tape makes a comment. A "package" is a complete piece usually around a minute and a half long that is narrated by a reporter in the field and includes a stand up (an on camera narration with the reporter in the picture.) The "desk" is another term for the assignment editor, the person who decides which reporter and photographer will cover which stories when.

It is also common for the desk to talk in "10 codes." These codes are used by police and fire departments. Perhaps you've heard of "10-4?" Everything is OK. Each police department usually has their own list of signals. In Savannah, for instance a signal 23 is an armed robbery. You will need to learn these numbers once you start riding the streets. Listening to the scanner will become second nature to you.

"This is unit 52, we're 10-23 at the signal 5 and 30 involving signal 44's with a signal 20 involved in signal 68. . . That's code 4, we're signal 6 until further notice." In other words, unit 52 is at the scene where a car wreck involving juvenile injuries who are suspected to have been high on drugs. More on this cop stuff in a later chapter.

The best way to learn how to do something is to do it. Jump start yourself with this quick guide to ENG. Each of these sections will be covered in more depth in later chapters.

Batteries: These provide the energy for your equipment.

1. Check batteries with voltmeter. A voltmeter is a device for determining the current voltage of a battery. Camera batteries, set meter on "V", use probes (usually there will be a black and a red test probe) into two opposite holes. For deck batteries, put one probe into hole, other probe on shielded metal. Some deck batteries have two exposed metal ends rather than a cable with a hole at the end. On these batteries put a test lead on each metal contact.

2. Camera batteries should be over 14.5 volts, deck batteries over 13.5 volts. The equipment should work on 12.5 volts. The higher voltages will provide longer shooting time.

Camera:

1. Attach camera battery to battery plate on rear of camera. It should click into place, and be held securely.

2. Turn camera on. Power switch on the rear of the camera should be turned to the up position: POWER--BATT 1. Switch should be turned from STANDBY to OPERATE.

3. Correct filter: 1--Inside lighting (3200K) Lighting temperature is rated in Kelvin (K). The higher the number the more blue the light.

2--Outside lighting (5600K) Obviously, sunlight is much more intense than inside lighting. It is also much more blue. If the camera is not white balanced when brought outside the video will look blue.

3--Outside, very bright light (5600K + ND) ND is a neutral density filter. It lets less light into the camera. This is similar to putting sunglasses on the camera.

4. White balance: The camera must be white balanced for the colors to look correct. The camera adjusts the color so the individual will not look blue or orange. Point camera towards white card, with camera in the correct filter setting. Punch white switch, let go. Camera should say "WHITE: OK" when ready.

5. Black balance: Punch black balance switch. Camera will

cap itself and should say "BLACK: OK" when ready. When the camera is "capped" it means the iris (the device that lets light into the lens) is completely closed. You should not be able to see anything through the viewfinder when the camera is capped. This total darkness allows the camera to properly black balance. If the camera is not black balanced correctly the blacks in the picture will be tinged with red, green, or blue.

6. White balance the camera again.

7. Zoom in camera, focus, zoom out. Zooming in means getting the closest shot possible by using the lens. It is an extremely "tight" or close up shot. Zooming out gives the widest possible shot.

8. Leave iris setting on Auto. Auto iris lets the camera adjust how much light is getting into the lens. Switch is located on lens handle.

9. Punch record and play buttons on the deck and hit the pause button to start recording. If you are using an umbilical cord (the cable connecting the camera to the record deck) hit the trigger button on the lens handle.

Deck:

1. Insert battery into deck. The battery slot is usually on the side of the deck.

2. Insert tape into the deck. The tape should be slid to the

bottom of the transport and then pushed gently into the deck until the tape threads in the machine.

3. Punch record and play buttons. Deck should go into pause, until pause is punched or trigger is hit.

4. Set audio level. Keep switch in Manual, not Auto. Meter should be registering near the red. Auto level keeps the audio near the distortion level. This can cause problems in noisy situations.

5. Check the audio with headphones.

Tripod:

Extend legs and use the bubble to level. The bubble is located on the base of the tripod. It usually has a circle in the center. When the bubble is in the center of the circle the tripod head is level. The tripod head is the plate the camera sits on. Make sure the video is level with the horizon, even if the bubble is off. In other words the background should look flat, not slanted to one side.

Interviews:

Cover the basics: Who, What, When, Where, Why and How. Check your audio to be sure you are getting useable sound. If you are not familiar with the story, make sure you ask the

desk or other reporters what you need to know to get the point of the story across.

B-Roll is the cover video that illustrates what the reporter is talking about. Make sure to get wide establishing shots, medium shots of all important aspects of the story, close ups of individuals and reaction shots.

This is just a checklist, the bare essentials the journalist in the field must know in order to get the story. The photographer must know their gear intimately. The Field Guide to ENG should be considered the journalist's "boot camp." It's time to get your gear and "lock and load!"

Load Up

An Overview of ENG Equipment

When I first saw ENG gear I was intimidated by it. There were so many buttons and lights that it seemed I could never comprehend it. Many people are put off by the seemingly impossible job of using this sophisticated equipment. As I lifted the camera to my shoulder, I felt the weight of fear leave me. This gear just looks complicated. Actually, it's quite straight forward, if you take the time to understand it. Therein lies the rub. Many people are unwilling or afraid to understand the gear. They think they are are not "mechanically inclined" or else they "just don't have the time."

Electronic News Gathering depends heavily on equipment. Fortunately, the electronics have become more and more "user friendly." Most equipment even gives the operator clues as to what it going on. For instance, the viewfinder screen might say "color temperature wrong--check filter." Study the material in this book carefully. It will make the difference in your shooting and in your story's look.

Although this section specifically addresses the Hitachi FPC1 camera and Sony BVU 150 deck, cameras and decks are basically the same. Adapt this information to your situation.

CAMERA--Hitachi FPC1---3CCD "Chip Camera"

There are many brands of cameras on the market. Some of the more popular include Sony, Ikegami, Panasonic and Hitachi. In most larger markets the stations use Camcorders--the camera and deck are one unit. When I refer to a "large market" these are cities or areas with a large population which the station reaches with their signal. It is logical that the larger the station the better the gear (and the money) will be. This is usually the case. Most reporters and photographers start out at a small station carrying a separate camera and deck.

There are two types of cameras, a "chip" camera and a "tube" camera. CCD stands for Charged Coupled Device, it is a type of chip. A chip camera uses a microchip which is sensitive to light and converts the light into tiny fluctuations of electricity. These electrical charges are then deposisted onto magnetic tape by a Video Tape Recorder.

A tube camera uses a tube which is sensitive to light and produces electrical charges which are then recorded onto tape. Chip cameras are usually better in low light situations. Tube cameras given enough light are generally considered to give a better picture. Tube cameras are more fragile than chip cameras. It is easy for the tubes to get a little bit out of adjustment. This keeps the picture from looking crisp and sharply focused. Chip cameras tend to be more durable, resist

heat and cold better and are generally lighter than tube cameras.

Smaller stations still depend on separate cameras and decks connected with umbilical cords or BNC cables. An umbilical cord is a sophisticated cable with up to twenty wires. It carries the video signal, return video (so you can see what you shot when you play the tape back), trigger wire (so you can take the record deck out of pause and into the record mode), and a power wire (so you can power the camera by using the deck battery.) The umbilical is very fragile. Any sudden twisting or yanking on the cable will break it. These tiny wires are extremely sensitive to abuse. I reinforce both ends of my umbilical with light cardboard and then wrap it with electrical tape. I also run the deck end of the umbilical through a velcro connection on the deck pouch. This prevents pulls on the delicate end of the connection. Spend an extra five minutes doing this with your equipment. It will save your umbilical cord.

A BNC (British Nut Connector--attaches to the camera and deck with a twist) cable carries only video signals to the deck. You have none of the other special functions available to you by using an umbilical. This cable is also fragile at the connecting ends. Our station often repairs four or five of these a week. The damage occurs because they are not properly wound up and attached through a length of velcro at the pouch. The camera should not be stored with the cable

still attached. This puts undue stress on the connection by bending it at a ninety degree angle to the camera.

Here are the major sections and functions of the camera:

1. Power up. This simply means turning the camera on. Care should be taken to power the camera up properly. If done improperly you could harm the delicate electronics by creating a power surge (sudden burst of electricity.)

---The toggle switch at the rear of the camera has three positions:

a. Power/Batt 1--Draws powers from the camera battery. The camera battery is connected to the camera by sliding the three posts of the battery into the slots at the back of the camera. Some cameras have a container that you slide the battery into.

b. Ext/Batt 2-- Converts DC power from wall AC power by using an adaptor. This setting is commonly used when dealing with stories that last a long time. I often use external power (AC voltage coming from the wall) when covering court cases, or City council meetings.

c. Rou/VTR--Draws power from the deck battery. If your camera battery suddenly goes dead, you can change the setting to VTR and draw power from the deck. You must have an umbilical attached to the deck for this function to work. A BNC cable will not draw power from the deck.

----Standby/Operate: When this switch is thrown to operate the lens is powered up. The camera will retain white and black balance when in standby. This setting conserves battery power. When the camera is put into the standby mode the lens caps itself, or closes the iris completely. This is a useful function. Cameras pointed at bright objects can get "burn ins". A burn in is a permanent spot ingrained on the tube or chip. A chip camera is not as prone to getting burn ins, however dead spots may show up on the video as the chip gets older. I am convinced these spots are caused by pointing the camera at bright objects for a long time.

2. Check Switch--The check switch indicates when the video is at 90%. This is important because it shows the operator if the video is going to be lit well. The luminance level (light--referred to as "Y" on cameras that split the color (chroma) and light levels) is the intensity of the light coming from an object. A dark wall will have a much lower luminance level than the sky at noon. When the light level is low, the colors tend to be muted. The darker the shot the worse the color.

Some cameras have the check switch to indicate 70% video by a zebra stripe pattern. This is true with many Sony cameras. Engineering can adjust this function. In the Hitachi camera 90% video is shown by a zebra stripe pattern. The "zebra" should be on the subject's check bones and forehead. For dark skinned people you should be able to see good definition between the eyes and the cheek bones. If they look like two

eyes in a black hole the lighting is too dim. More than likely the zebra pattern will not show up on blacks because the light level is too low coming off of their skin.

When the video level gets too bright or too high the colors look washed out. If the level is over 90% the video is said to "bloom" or be "hot." This usually occurs when covering spot news (events that happen unexpectedly--car wrecks, fires. . .) at night. The photographer would be using a "bat light" (light used at scenes where no AC power is available, it is plugged into a battery belt) and this overexposes their face. This hot video results because the background is dark and the auto iris compensates by opening up allowing more light into the camera. The subject's face is extremely well lit, when the iris opens up their face becomes too hot.

Hot video has a lack of color--it just looks white. To our eyes the sky is blue. If the iris is opened up, letting in more light to the camera, the sky will appear white. It is sometimes necessary for you to do this if the subject has a very bright background. If you want to see him you must open the iris, forcing the background video to be hot. The field guide will cover lighting in a chapter three.

When I shoot I leave the check switch on. This produces a "zebra" or striped pattern over any area that is making a high light level. This function will help you know whether the subject is lit properly. If the subject has no zebra pattern over any of his face they are probably not lit correctly.

They either need more light on their face or the iris should be opened up. When you open the iris you allow more light into the camera.

This function is useful in determining which filter and what type of lighting should be used. The zebra pattern will show when the video is dark or too hot.

3. Iris/F-Stop ring--An understanding of how the iris and F-Stop ring works on the camera is critical. The F-Stop ring is located on the lens.

The F-Stop ring regulates how much light the iris lets into the camera. Our eyes have irises. When it is dark the iris opens up letting more light in. When it is bright the iris closes allowing very little light into the lens. The iris on the camera works the same way.

The F-Stop ring has a series of numbers which usually range from 1.4 to 16. The larger the number (16) the smaller the opening, and the less light is let into the camera. The smaller the iris number (1.4) the larger the opening and the more light is let into the camera. The numbers get smaller from left to right. "C" (capped) and 16 is on the left side of the F-Stop ring, and 1.4 is on the right. Therefore, if you want to close the iris you turn the iris ring clockwise. It is important to visualise this F-Stop ring in your mind so you know how to open and close the iris without looking.

There are many times during live shots where the subject will be backlit forcing me to do the shoot on manual iris.

When I change the framing (how the picture is set up), perhaps to include a two-shot (a picture with two people in it--the reporter and the person being interviewed) I have to know which way to close the iris. If I make a mistake on live TV the shot will suddenly become totally overexposed. Take time to memorize the F-Stop control.

You should try to keep the F-stop around mid-level (4 or 5.4). The mid-range F-Stops give the most reliable video. If the F-Stop is around 5.4 then the lighting conditions for the story are neither too bright nor too dark for the camera. These F-Stop levels give a good depth of field (or in focus area.)

Next to 16 on the iris ring is "C". "C" means capped or closed. If the iris is closed there is no light coming into the camera. The camera will cap itself when it is black balancing (making sure the blacks are not tinged with color.) F 16 is next to C, it is the smallest opening available to the lens. It lets the least amount of light into the camera. When the photographer turns the iris towards F 16 they are said to be "stopping down" the camera. "Stop down" the lens in bright situations to let less light into the camera.

Most ENG cameras have both a manual and an auto iris. Auto iris automatically controls the amount of light coming into the camera. Auto iris works well under most situations, however the photographer must be aware that some shots require manual iris.

At my station we do many stories at the beach. This can cause lighting difficulties. White sand and bright sky causes the camera on auto iris to stop all the way down. It is difficult to shoot stand ups (a section of the story where the reporter speaks on location) without being backlit. A backlit subject means that the background is brighter than the subject being shot. Therefore, in these situations the photographer must go to manual iris and allow more light into the camera in order for the reporter's face to be seen properly. This causes the sky to be hot or washed out.

If on Auto iris the F-stop ring is at C/16, the photographer should check the filter setting. There are usually two separate filters for outside photography. These are commonly labeled 5600K and 5600K + ND. 5600K is the color temperature for outside lighting. If it is very bright outside the ND (Neutral Density) filter should be used. The ND filter lets less light into the camera. It is similar to people putting on sunglasses. It is more comfortable for your eyes and is also more "comfortable" for the camera. It is easier for the camera to handle the intensity of the light. The resulting pictures will not be overexposed or too hot. If the camera is at C/16 the photographer should change to the ND filter. At C/16 the camera is trying to let the least amount of light into the camera. On some tube cameras letting in too much light damages the tubes. Therefore, the neutral density feature is a necessity on many bright daytime shoots.

If on Auto iris the F-stop ring is at 1.4, (the widest possible setting--allowing the most light into the camera) the photographer should consider "gaining up" the camera. Gaining the camera up makes the chip or tube more sensitive to light. Unfortunately, gaining the camera up also makes the picture grainy. A grainy picture appears rough, like its been shot through a fine wire mesh. This is because the pixels (the individual light receptors on the chip in the camera) become visible. The photographer should check to make sure they are not on the ND filter before attempting to gain the camera up.

Failure to check the iris is a common problem and often results in video that is either too dark (sometimes called "in the mud") or too hot.

The Depth Of Field (what is in focus) is greatly affected by the F-Stop (How open is the iris?) and the focal length (How zoomed in is the camera?)----When the camera is zoomed in, the focus becomes much more critical. The video is more forgiving of focus on wide shots.

When I cover fires the area is often roped off for fifty feet or more. If I zoom all the way in to get tight (close up) shots of the firemen, I have to be extremely careful about focus. The slightest move on the focus ring will render the firefighter's face out of focus.

----The darker the situation the wider the iris is opened up and the smaller the depth of field. A small depth of field means that the person may be in focus and lean an inch back in

his chair and be out of focus. You must constantly monitor and "rack" or adjust the focus as the subject moves.

----The hardest situations to deal with focus are when the subject is a long way off and it is getting dark. Try and avoid these situations.

Therefore, light the subject properly and get close. You will be able to tell how critical your lighting situation is by closely examining the F-Stop ring.

4. Gain switch---0Db, 9Db, 18Db

The gain switch increases the sensitivity of the chip. It brightens the video, but makes the video look more "grainy." Db means decibels. It is commonly used in audio recording to tell how loud something is. A decibel or Db level indicates the distortion or clarity of a signal. A camera on 0Db is giving the clearest possible picture it can. As you increase the Db levels the picture gets more grainy, however it also increases the light level. Therefore, in darker situations, although the picture may look grainy at least you can see what is going on. It is an even trade off under the circumstance.

Most chip cameras shoot well at 9Db and are acceptable at 18Db. Tube cameras also shoot at a higher gain setting, but tend to look even more grainy than chip cameras.

5. Auto/Manual Iris

The auto iris switch is on the lens handle next to the zoom. It spells A-M on the Canon lens. In auto iris the lens will adjust the iris so that the brightest video is 90%. In many

instances this may be the background.

As you gain experience, you can be more particular with the manual setting for F-Stops. You may need to open the iris up (making the video brighter) so you can see the subject's face.

Video cameras do not do well with high contrast ratios--the difference between the brightest and the darkest objects in the picture. A high contrast ratio is seen in stark lighting conditions: when the shoot is either very dark or very bright.

Shooting night video with battery lights causes high contrast between the well light subject and the dark background. This makes the subject too hot and the video blooms or looks overexposed.

Dark skinned people often have to deal with lighting problems. Many times the background is lighter than they are. This causes the iris to stop down resulting in them looking like a shadow with eyes and teeth. High contrast ratios can be improved by putting the subject in the sun with a dark background. Black people should avoid light colored clothing and light backgrounds; it creates too much of a contrast.

When in the manual mode, depressing the pad in front of the A-M switch will put the camera in the auto mode for as long as the button is depressed. This can be helpful if the background is constantly changing. This is common when you set the camera in front of a highway. Every car that goes by reflects different amounts of light into the lens. This

causes the auto iris to be constantly adjusting. If you need the auto iris function momentarily you can push the pad in front of the auto iris switch.

6. White Balance--The white balance function is one of the most critical items to understand and learn on the camera. When you white balance the camera it adjusts for different lighting conditions.

Have you noticed how flourescent lights and incandescent lights do not look the same? Tube lights generally look more blue than incandescent. Have you ever purchased a piece of clothing in the store and noticed that the color looks different when you go outside into the sunlight? Outside light (5600K) is much more blue than inside light (3200K). Therefore your clothes will look more blue outside than under incandescent lights.

White balancing assures that the colors will look like they should whether you are shooting inside, outside or in the shade. The color of the picture is critical if you want to be a good photographer. The public is sensitive to pictures that do not look right. The viewer should pay attention to the story instead of noticing color problems.

Filter 1--Inside--3200K light. If you have trouble remembering which filter is which, remember it is brighter outside, therefore the number (5600K) is larger. On many cameras there is a pre-set swich which is set at the factory for 3200K light. This only works for filter one, inside

lighting. To white balance manually flip the switch to "white" and release it while pointing the camera at something white. The camera will then go through the color correcting procedures for that particular lighting condition.

Some cameras have a memory selection for separate white balances. This is useful when shooting where half the location is in the shade, the other in full sun. If you do not white balance when you go to the shade your video will look slightly blue. Using the memory positions you can white balance in full sun with memory one and in the shade with memory two. Instead of white balancing every time you switch positions, you merely change the switch from memory one to two.

You cannot white balance the camera manually if the switch is in the factory "preset" selection. This preset is set for inside lighting under pure 3200K light. This is an incandescent color of light. Flourescent bulbs have a blue tint. If you use pre-set under flourescent lighting the video will look slightly blue. The camera must be in filter one for the pre-set to work. Although some cameras have different filter numbers for the 5600K and the 5600K + ND, inside lighting is always filter one.

There is a battery which stores the white balance in its memory even when it is turned off. This is what should happen. Remember: this is the real world, do not assume it will work. White balance and black balance before every shoot

and whenever your lighting conditions change, such as from full sun to shade.

Filter 2--5600K--The chip camera is a "low light" camera. Therefore, on most bright days filter 2 will render video that is too hot. If the video is too hot the colors will look washed out.

You can tell whether this is the situation by:

1. Checking the iris--Where is the F-Stop? If on auto iris the camera is on C/16 go to filter 3 (the neutral density filter ND.)

2. Checking the Zebra pattern--if most of the video is at 90% go to filter 3 (the neutral density filter.) If the zebra pattern covers almost the entire screen you would have to use a neutral density filter to cut down the amount of light coming into the camera.

Filter 3--5600K + ND (Neutral Density)

This filter is a light blue, nearly clear piece of glass. It cuts down on the amount of light entering the camera.

White balance when working in sun then going into the shade, if you do not the video will look slightly blue. You can white balance in the shade with filter 3. Watch your F-Stop. If the lens is opened all the way up (f1.4), go to filter 2. If you are doing a shoot in the shade and the camera needs more light, by going to the filter without neutral density you allow more light into the camera.

The proper procedure for color correcting your video is to

white balance, black balance, then white balance again. It is similar to a sandwich with white on either side of a piece of dark. It is always better to white balance whenever you think the lighting may have changed rather than get back to the station and discover that you have spent time shooting blue video.

7. Black balance--On the chip camera the black balance goes through a series of registration procedures as well as making sure that blacks are black---not tinged with red, green or blue.

8. Set Up--The sliding door on the camera should be left closed, or taped shut. This prevents dirt entering the camera. Generally, these functions should be left in the auto position unless changed by engineering. If the video you shoot does not look well, even though the lighting and white balance were fine engineering should check the set up on the camera.9. RET--Return video. When depressed (and with an umbilical) the operator can play back what was shot and view it through the viewfinder. This can be very helpful if you want to check what you shot, or if you want to cue up the tape to listen to a sound bite.

10. Zoom--The zoom is controlled by a see saw toggle on the lens. This determines whether the shot will be tight or wide. A zoomed in shot will bring an object closer. The lens goes through a series of focal lengths. Observe how the depth of field changes--the more zoomed in the tighter the range of in

focused objects. The more zoomed in the more "on top of each other" objects in the foreground and background appear. In other words, if the camera is zoomed in the distance between objects seems to shrink.

The front side of the see saw toggle is for zooming in. Press the back side of the see saw toggle for wide shots.

This is how I have found it is best to handle the mechanics of zooming and focusing:

** When on the tripod--use the left hand under the camera lens to adjust zoom. Focus with left thumb resting on lens hood. Right hand then pans the camera with tripod arm.

** When on the shoulder, zoom with right hand, focus with left hand.

11. Focus ring. This ring is on the front part of the lens and controls which objects in the shot will be in focus. It is the largest of the controls on the lens. Focus and color are the two most critical factors for determining whether the video is acceptable. Therefore it is very important that you throughly understand how to focus and white balance the camera.

There are numbers on the focus ring giving the distance in feet and meters. Usually the smallest number is around four feet. Four is on the left side of the ring. Fifty feet to infinity (this symbol looks like a reclining figure eight) is on the right hand side of the lens. Therefore, if something is moving away from you the lens will need to be racked

(turned) counter-clockwise. If they are moving towards you rack the lens clockwise.

Look at the numbers on the focus ring. Notice that changing the focus from four to six feet takes a larger turn than from twenty to fifty feet. It is critical to understand how to rack focus in live situations. On a long shot (where the subject is a long way from the camera) you only have to adjust the focus a fraction of an inch to change the object in focus.

I have found it useful to practice guessing how far I am from objects and then focusing by the distance guide on the lens. I can then zoom the camera in to see how close I actually was. It is very important to work on racking focus as objects come closer to you and move farther away.

Shooting "walk downs" (bringing out prisoners from the police station) is a common shoot. It is important for you to be able to keep the subject in focus as they walk towards or away from you. Every second is valuable when the photo opportunity is limited. If most of the video you shot is out of focus the shoot was a bust.

Memorize the controls on the lens with either hand without looking--Especially:

1. Manual and auto iris switch.
2. White/black balance
3. Iris ring (Which direction caps and opens the iris?)
4. Racking focus (Which direction for close up and for far away?)

When you are in the middle of shooting spot news you do not have the time to wonder where your white balance switch is, or which way to turn the focus or iris ring.

The equipment described in this chapter is not an end in itself. The story, the end product, is dependent on your knowledge and expertise with the equipment. The old adage "practice makes perfect" rings true. To become skilled with the tools of the trade requires time and practice. The controls on the camera should become second nature to you.

At first it will take time to memorize which direction you should rack focus when an object is coming towards you. Practice focusing with moving cars, pedestrians, and birds. Realize that the more time you spend getting focus and iris control down pat the more certain you will be about your abilities when the big shoot comes along.

It seems to be part of the "real world" that the harder the shoot, and the more pressure that it involves, the more confidence you must have in your talent. The ability to perform under pressure is a daily requirement in the news business. You must understand and be able to use your equipment not only faultlessly, but fast.

The camera is only half of the news gathering gear. It is also critical to learn how to operate the record deck. Without a way to record what the camera has seen and what the microphone (mic--pronounced mike) has heard the reporter is merely an observer.

DECK---Sony BVU 150 3/4" SP U-matic design

The record deck converts the electronic signals coming from the camera into magnetic pulses. These magnetic charges are stored on a tape.

Imagine a pile of iron filings. A magnet can position these filings into different designs. The record head in a video tape recorder is an electro-magnet. This record head positions the extremely minute particles on the tape into patterns. These patterns are the stored impressions from the video and audio sources. When the player head passes over these patterns the identical electrical current is produced. This current is then turned into video and audio sources for a television monitor.

There are several tape sources for field work. One of the most common is 3/4" tape. It is called 3/4" because the tape is 3/4" wide. The SP stands for Standard Play. It is the fastest speed the tape is recorded at. The faster the tape goes through the machine the more information can be stored on the tape. The quality is therefore much better.

Beta tape is 1/2" wide. This format is commonly used with the BetaCam camcorder. It is considered to be the highest grade of recorder for a video source in the field. This is true for analog recorders. Some tape decks record in digital formats such as D2 and M2. Although digital formats may be the wave of the future, it is not widely used now. Most large stations shoot all their field work on Beta tapes.

Some stations are using the SVHS format, which is also 1/2" tape. SVHS does not have the clarity of Beta SP. Hi8 is yet another format stations are trying. It is eight millimeters wide, about double the width of an audio cassette tape. It has not gained the popularity of the other formats, although it does provide advantages of digital sound and light weight camcorders.

Here are the features and functions of the record deck:

1. Power: Electricity is provided to the deck by NiCad (Nickle-Cadmium--a type of rechargeable battery) batteries or by use of an AC power adaptor. Most of the time the photographer depends on deck batteries. Know how to take care of your batteries. A thorough knowledge of batteries greatly enhances your chances of a succesful shoot.

2. Batteries: When I am in the field I know exactly where I stand on battery power. The best photo opportunity will be for naught if the deck runs out of power. Get in the habit of treating the batteries with care. Being careless with the equipment results in lost time and stories.

A. Most deck batteries contains around eight replacement cells. This is not true for every deck battery, however. Each of these cells cost between $8-10 a piece. They should be able to be charged and discharged around 1,000 times. Rarely are do they last that long.

B. The wires which connect the deck to the battery are extremely fragile. They are not to be used for handles.

I have seen reporters carry batteries by the connecting wires only to come back from the story complaining, "the battery didn't work. It was fine when I left." It does not take a genius to realize that abuse equals short use.

C. The battery should be run down until the deck stops the tape. This prevents a "memory" from developing in the cells. For example: If the top voltage the battery reaches is 14.5 Volts, and the battery is recharged before being drained all the way down (around 12.5 Volts) the battery will die more rapidly than it should the next time it is used. Say for instance that I take the battery out of the deck and put it on charge before the deck stops the tape. The battery might be at around 13.5 Volts. If this battery, which is not drained down is recharged several times at this higher voltage, it will "remember" that it needs charging and will quit at 13.5 Volts. This goes against logic, since the deck is designed to work at 12.5 Volts, however the real world does not always make sence. That's just the way it is.

D. If the deck is left on overnight, the battery is drained down past the designed 12.5 Volts minimum. This kills the chemical reaction in the cell. Turn the deck off.

E. The batteries are killed by extreme cold and heat. Take as few spares with you as possible. Park the truck in the shade or take the spares with you. Do not put a hot battery on charge. The batteries tend to heat up when they are charging. If a dead battery which is hot from being in the

car is put on charge, it further kills or drastically reduces the life of the battery cells. Let it cool off before charging it up.

F. Let the battery reach its peak potential before taking it off charge. This also creates a memory in the battery. If the battery is constantly taken off charge before fully ready, the cells will no longer charge up past that point.

G. Some batteries are designed with their own chargers in mind. Anton Bauer batteries should be used with Anton Bauer chargers. Frezzolini batteries prefer Frezzolini chargers. This is especially true for camera batteries. Here are the voltages the batteries should read to last for a reasonable length of time.

Camera battery: over 14.5 Volts

Deck battery: over 13.5 Volts

Battery belt: over 30 Volts

Note: Some battery belt lights are designed with a 12 Volt system in mind. Make sure and check that the light is rated for the voltage.

Here is how to use a voltmeter. Most voltmeters are actually multimeters, designed with several functions in mind. These usually include continuity (checking for a break in a circuit), resistance (measured in ohms) and voltage (measured in volts--both AC and DC currents). In order to check a battery used for ENG purposes, set the multimeter for "V", Volts. Make sure it is reading Direct Current--DC. Put the

red lead (testing end) on the "+" or positive terminal and the black lead on the "-" or negative terminal. The voltmeter should then give you a measurement in volts.

Never go out into the field without knowing where you stand with batteries and how charged up they are. It is a good idea to put masking tape on the batteries that have not been used. This wil help you know which batteries are good and which need charging up.

I have found it true that the farther I go from the news truck and the station the faster the batteries run out. So make sure that if you are going a long way out of town double check the voltages of each of the batteries.

Some people are of the mistaken idea that if objects are heavy they are unbreakable. Camera and deck batteries usually weigh around three or four pounds. They look like they are indestructable. This is absolutely not true. There are a series of cells joined with tiny wires which are extremely fragile. They can be easily broken. Our engineers spend a lot of time repairing batteries.

NiCad batteries can be damaged by heat, cold, any type of sudden impact (such as dropping), improper charging or discharging and water. They are the "lifeblood" of the ENG system. They run the 2-Way radios, the battery lights, the cameras, the decks, the scanners and the pagers. Without them News would be very difficult to cover.

Treat batteries with the care they deserve.

3. Tape--The tape is where the "rubber meets the road" in ENG. Without a tape the story cannot be captured for TV. I keep my tapes in the truck with my gear. The best gear in the world is worthless without a tape to record the story. The tapes should be stored in a cool, dry place. Keep them out of direct sun and in their plastic storage cases as much as possible.

Insert the tape all the way down into the carriage. The carriage is the door that opens up from the record deck providing a slot for the tape. Close the carriage firmly, but do not slam it shut. There are mechanical parts that bend easily in this mechanism. Mechanical arms pull the tape from the case and wrap or thread it around the record heads. If they are abused, the tape does not thread properly and the slack light comes on.

The slack light indicates that the tape is not running against the record head with the correct amount of tension. If you have a slack problem, eject the tape, tighten the tape with your hands (by turning one of the tape wheels), reinsert the tape and try again. Slack problems generally cause the deck to stop rolling. Occasionally a slack problem may be caused by a low battery. If tightening the tape does not work, try another battery. Slack and threading problems are usually the result of poor insertion of the tape into the deck.

Roll fifteen seconds of color bars at the beginning of every

tape. Color bars are generated by the camera, they are the test pattern for making sure the color is correct. Put the camera in the bars position. This is done by throwing a switch, usually on the side of the camera, into the "bars" position. Putting bars at the first of the tape gives the deck a chance to get off the head of the tape as well as giving engineering a chance to set up the monitors. The head of the tape is the first of the tape. The start of the tape usually has more drop outs or problems with the video. A drop out is a loss of video on the tape.

If the tape developes severe drop outs it should be taken out of circulation. It is a well known observation that the more critical the story the faster the batteries run out and the more bad spots on the tape are discovered. Do not take chances with the tape. Use a tape that is not worn out. The more times the tape is recorded on the better the chance that pieces of the mylar (the recording material) will come off. This clogs up the recording head. A clogged head will not record any video.

Damaged tapes cause problems. Not only for the story, which may have to be scrubbed, but also for the equipment. If the tape gets wet, throw it away. If it gets dirty, throw it away. Moisture and filth destroy the heads on the deck. The only way to get around this drastic action is to not get the tape wet or dirty in the first place.

4. Audio: Television is visual medium. Audio, however, is

extremely important. Getting quality audio is often more difficult than shooting good video. The camera can be a long way from the subject. The microphone should be within a few feet of the subject.

Most decks have Auto and Manual settings for the audio. "Auto" is a misnomer. It does not automatically take care of the audio. This switch acts as an Automatic Gain Control (AGC). An AGC strives for 100% audio. It gains the sensitivity of the microphone so the levels stay around 100%. This level indicates distortion free recording. A level over 100% puts the needle on the audio meter into the red and distortion of the audio occurs.

An auto setting does not differentiate between voice and wind noise. Therefore, in noisy situations the deck picks up as much ambient (wind, air conditioning, car noise) sound as voice. If the situation is very noisy turn the level down on the deck to one or two and put the mic very close (one or two inches) to the subject's mouth. By putting the level down low the mic picks up only what is near, and disregards the rest. Leave the switch in the manual setting and monitor this audio with a set of headphones or ear bug. Checking the audio is important. Do not wait to get back to the station to see if the mic picked up what you wanted to hear. If the audio is missing your job may be on the line. The difference between an average and exceptional photographer is their

attention to detail. Audio is critical. There is no one perfect setting for all situations. Each location is different and the audio level should be adjusted accordingly.

Audio problems that might be encountered include:

** RF--Radio Frequency---RF can sometimes be heard in the audio. This appears to be a radio station coming over the audio. It sounds like a radio station because it is a radio station. This is caused by a grounding problem. When an XLR is missing the ground wire the cable acts like a long antenna picking up random RF. This may be radio or it could be a buzz from flourescent lights.

The problem could originate in the room's mixer (a piece of equipment that takes several sources of audio and combines them into one output) or in your XLR cord (an XLR is a type of grounded cable commonly used in professional audio recording). Usually this is a problem with the cord not with the deck.

** Shorts--A "short" is a short circuit. The wire does not make a complete circuit from the microphone to the deck. This results in intermittant audio if the lead wire is broken, to RF reception if the ground wire is broken. This is an XLR cord problem. If the cord seems to be fine, plug the microphone directly into the deck without a cable. If there is still no audio the microphone is dead.

** Popping--Plosives sounds ("p"s and "b"s) can cause popping. Put the microphone in front of the mouth--but not aimed at the mouth. The sound should go over the microphone

not directly into the microphone.

There are many types of microphones. Each has a particular specific use. The right tool should be used for the job. A knowledge of the equipment makes the shoot easier and sound better.

Microphones pick up vibrations in the air. The quieter the room the less the air is vibrating. If the room is noisy it becomes more difficult to pick up subtle vibrations such as a voice. Therefore, in order to pick up these small vibrations the microphone must be put closer to the sound source.

Types of Microphones/Specific Uses:

A. Electro Voice 635A--"Stick" microphone--Cardioid

Cardioid--means heart shaped. The pick up pattern, or the area that the microphone is sensitive, looks like a heart. This microphone picks up sound on the side as well as in front. The 635A is a good, all around microphone. It is very tough, however, it should not be dropped or gotten wet. It needs a windscreen as do most microphones used for ENG purposes. The windscreen stops much of the noise of the wind.

B. Sennheiser--"Shotgun" microphone--Directional

The shotgun is an excellent microphone, ideal for picking up "nat" (natural or ambient) sound. It is also good for interviewing shy subjects within three or four feet. A directional microphone means the microphone is sensitive in primarily one direction. This is useful because it disregards much of the ambient noise and picks up what is in front of the

microphone, namely the subject. The Sennheiser is powered with a battery. The microphone should be turned off when not in use.

C. Shure SM 11--"Lavalier" microphone---Omnidirectional.

A lavalier microphone clips on to a tie or jacket. This is a good microphone for sit down interviews and standups. It is far better to clip a "lav" microphone on your subject than to lay the stick microphone down in front of them. The stick microphone tends to be too ambient when laid down.

The lavalier microphone should be put around the second button on a shirt or six or eight inches from their mouth. If the subject is turned towards the talent, put the lavalier on the talent side. The talent almost always looks better with a lavalier: especially when a prop is used or if the talent is walking in the standup.

5. Inputs: Two channels of audio.

An input is the sound coming into the record deck. An output is the signal going out of the deck. Generally, one channel will be devoted to natural sound (the sound of the environment--not necessarily speech), the other to the stick microphone (primarily interviews). Each station sets their guidelines and asks all teams to use the same.

The inputs must be at a "mic" level unless you are using a special "line level" microphone. Line level microphones are generally more expensive, bigger and almost always have a battery to power them.

A line level output is significantly stronger than a microphonelevel output. A line level usually comes from some type of amplifier or mixer. If the audio is extremely distorted and the VU (volume unit) meter needle is constantly in the red, check to see if there is a line level output going into a mic level input on the deck. Each input has a switch above it which indicates microphone or line level. This switch must be adjusted according to the input. If no audio can be heard, the output may be at mic level coming into a line level input on the deck.

I cover City council and the County commission on a regular basis. These situations deal with a "mult box." A mult box is a multiple output device. It takes the signals coming from the microphones and converts them into one signal. The mult is set for either line or mic outputs. It is critical to check what type of output is coming from the mult box. If the operator says it is a "line out" you must then switch the input on the deck to line. If the switch is not changed, the audio will be extremely distorted because of the much more powerful signal coming into the deck. The difference between line and mic level is similar to a person speaking with a megaphone or with his regular voice.

6. Meters: Most decks come equipped with a way to monitor the audio, video, and battery levels. There is usually a switch over the meter which indicates which level is being monitored.

The audio should be right at 100% occasionally peaking into the red. The best way to hear how the audio is being recorded is by monitoring it. There is no way around this fact. There are times when the volume meter may barely be moving. It would appear that no, or very little, sound is being recorded. However, if it sounds well when the audio is monitored it will sound fine when it goes over the air. It is often better to turn the volume down and move the mic closer to the subject.

The video meter needle should read exactly in the center of the video scale. If the deck is in the record mode, yet does not roll the tape, check if there is any video coming across the cable from the camera to the deck. Without a video signal the deck will not record and roll the tape.

The battery meter should be totally in the green when a fresh battery is inserted. As you become more familiar with the equipment and the batteries, you will be able to determine almost to the minute how much tape time you can get from the battery. Tape time is determined by how much tape can be recorded on with the battery.

Knowledge of the equipment is the start of good ENG skills. With a thorough understand and familiarity of the gear your self-confidence and abilities grow. It is not enough to know the gear, however. Electronic news gathering is work in the field. For the story to look its best the photographer must constantly relate to the lighting situations that occur. It's time to "lighten up" with chapter three.

Lighten Up

Lighting Situations in ENG

It takes light to make good video. A knowledge of lighting makes the difference between good and great shooting. A huge amount of advertising dollars are spent each year on the "low light" ability of their cameras. According to some companies their product, can "shoot by candlelight." These same manufacturers also sell "color enhancement" lights. These two facts should tell the discriminating photographer something: good video needs light. It is possible to shoot video by a candle, it just won't look very well.

A light source is not enough. The light must be of the correct type and the proper direction to make the video turn out. Light contains many different colors. A rainbow is proof of this. Some lights are more red (incandescent), others more on the blue side (flourescent.) Colors look different depending on the type of light they are under.

These different lighting conditions make white balancing absolutely necessary for correct color reproduction. A white shirt will look blue if a blue light is shining on it. If the camera is white balanced to indoor lighting, and is then taken outside, all the video will look blue. There may be plenty of light in both locations it is just the wrong color.

The direction of the lighting is also critical. Backlighting is one of the biggest problems a field photographer must overcome. A subject is backlit when the background is brighter than what you are shooting. The

photographer must take great care where the camera is placed in relation to the subject.

Television is a two dimensional medium. The TV screen is flat, it is not three dimensional. How the scene is lit determines the apparent separation of objects and gives the illusion of depth in the picture.

Flat lighting is a general illumination of the whole scene. Objects appear to be equally lit. This is achieved by putting a stand light in the corner, pointed at the ceiling. The bounced light is not as directional and appears more even. It is also not nearly as intense as direct lighting.

Direct lighting places the light source near the camera. The light might be on a stand beside the camera (which casts a slight shadow on the subject's face) or mounted on top of the camera. A camera mounted light produces no shadows on the subject's face.

There are basically three lighting conditions faced in the field. These are: inside lighting (3200 K), outside lighting (5600 K), and a combination of both. A knowledge of how to deal with lighting conditions makes the difference in poor or well shot video.

INSIDE: 3200 K lighting.

Generally, lighting indoors is of the 3200 K type. This includes most incandescent and flourescent lighting. "K" stands for "Kelvin" a rating scale of very high temperatures. 5600 K is hotter than 3200 K. Indoor lighting tends more

towards the red scale of the color spectrum. Outdoor lighting tends to be more in the blue range.

1. The first thing the photographer must do in the field is to check the white balance setting. Many cameras come with a preset for 3200K light. A preset is a white balance setting completed at the factory and stored in the camera's memory. In a bind, the photographer can depend on the preset level, if the light is purely 3200 K.

In order for the camera to white balance the scene properly the filter wheel must be in the correct position. The filter wheel is located in front or on the side of the camera. The filter wheel turns a series of color filters inside the camera. It usually has at least three numbers on it. These numbers range from one to five. There is a key for what the numbers represent on the camera.

Each filter has a particular color temperature. Filter one is always indoor 3200 K light. Two and three may be either 5600 K or 5600 K + ND (neutral density). Some cameras also feature filter wheels with 4600 K light (a combination of the colors). Most tube cameras also have a number specifically for a capped position, wherein no light is let into the camera. The light goes into the lens, through the color filter wheel, is split by a prism into red, green or blue, and into the chip or tube.

2. The fastest way to light the scene is by mounting the light on top of the camera. Many professionals light the scene from

a forty five degree angle to cast a slight shadow. This gives the illusion of depth. A very hard shadow on the face does not look attractive, however.

A 600 Watt bulb pointed directly into someone's face is not a pleasant experience. I advise the photographers on my staff to put themselves in the reporter's shoes. Get in front of the light and see how they like it. I use a diffusion scrim by Rosco (Tough Spun #3006) which I fold and attach to barn doors over my light. Barn Doors are a devise that focus the light by a means of folding metal doors. The scrim cuts the intensity of the light as well as making the light softer. A diffused light source makes the video not look as harsh or hard edged. A softer light helps the talent or subject because it is easier on their eyes.

Some photographers carry a stand light (a light mounted on a stand) and position it at an angle to the subject. This causes shadows on the subject's face which gives the illusion of depth. Most photographers who shoot for production (the department which creates commercials for the station) will light the subject in this way. If fact, production generally uses a "three point" lighting scheme.

Three point lighting includes a key light (a very bright light) at a 45 degree angle from the subject, a fill light (not as bright as the key) fills in the harsh shadows. The third light in this system is a back light, which lights up the back of the subject's head. When video is shot with a

three point lighting scheme the video has a three dimensional quality.

News is not production. We do not have the time to set up a three point lighting scheme. In the news business time is of the essence. Weight is also a concern. I carry the camera, the deck and the tripod in most of the stories I cover. Extra gear means extra weight. This is the reason I use a camera mounted light with a scrim. The light is diffused and the video looks well lit. However, if the time and the help are available, side lighting can help the illusion of depth in the video.

3. For a more diffused light without a scrim, bounce the light off of the ceiling or use only the fringe of the light. Most lights have a focus knob--for spotting or flooding the light. A spot light is more intense, as well as hotter than a flood light. A light in the flood position illuminates a much broader area. It "floods" the area with light. The fringes of the light are the edges that are illuminated when the light is put into the spot position. This light is bright but nowhere near as "hot" as the focused or spot of the light.

It is important to use the "zebra" or check pattern to see how hot the video is. This is especially true for white people with dark backgrounds. The auto iris tends to overcompensate because of the dark background leaving the subject very "hot." Backlighting is also a problem.

There are several ways to solve the problem.

a. The problem of over exposed or backlit video can be solved by going to a lighter backdrop for the night scenes, or darker backdrop for the backlit scenes. If you put the night time subject in front of a light background the iris will not open as wide. This will prevent the subject's face from being over exposed.

Backlighting causes many problems. One simple way to prevent backlighting is by closing the window blinds or shades that the person may being standing in front of. The photographer is in control of the look of the video. If you ask the subject to move so they "will look better on TV", I guarantee they will be cooperative. No one wants to look bad on television. Simply ask the subject to move in front of a dark backdrop instead of the window.

b. If it is impossible to change the environment or get the subject to move, then the photographer must adjust the iris. This is another time when the professional relies on the zebra pattern in the viewfinder. The check pattern indicates whether the video is too "hot" or "in the mud." Hot video looks white. It glows and lacks any recognizable color. Hot video can usually be seen on the forehead of the subject which is standing to close to the camera's light. Video that is "in the mud" is dark. It too lacks good color. The colors are muted and difficult to recognize.

If the video looks hot or too dark a manual adjustment of the iris may be required. Use manual iris and stop the lens

down or open it up an F-Stop or two. Manually opening the iris up (going towards the smaller F-Stop numbers) compensates for the backlight situation by letting more light into the lens and exposing the face to more light. Closing the iris down solves the hot video problem.

c. Distance from the light source can also help the backlit or overexposed video problem. Crime scenes are often shot at night. Instead of getting the subject right up to the camera, back them up a few feet and ask them to hold the microphone. This casts more light on the background and not as much on the subject. Backing the subject up helps with the contrast and reduces the extremely hot video on the subject's face.

If the subject is backlit, focus more light directly into their face. Unfortunately this is uncomfortable for them. Explain to the person the situation. The public wants to know what is going on. Tell them why you are focusing 600 Watts of light into their face. If you tell them it is because they are standing in front of a window they may be inclined to move to a less backlit position.

4. Be aware of "nat light" or "5600 K" outside light leaking into the 3200 K inside environment. Close all mini blinds or curtains. Roll all mini blinds so the light is reflected back outside. If this natural light is not eliminated, your background will look blue.

If it is impossible to shield the 5600 K light use a

dichroic filter or blue gel on your 3200 K light. The blue gel is sold by Rosco at most stage lighting stores. The gel is referred to as "Tough Blue 50". The filter gel turns 3200 K (inside) light into the more blue 5600 K (outside) light. Therefore, your subject will be well lit and your background will be the proper color. When using the dichroic filters white balance on the filter for the outside light position without the neutral density filter. The light with the blue gel is not as intense as full sun so the neutral density filter is not needed.

Dichroic filters are also helpful when reflectors won't work. At high noon the angle of the sun is difficult to reflect. Use the AC or battery light with a gel to fill in the shadow areas.

5. When shooting people with glasses, the light is sometimes reflected back towards the camera. This is seen as a white glow coming from their glasses. It looks bad. The audience wants to see the subject's eyes, not a reflection from the light. Solve this by moving more to one side. The light from the glasses is then angled away from the lens. Move a few inches over and check the reflection. The aim is to only move as far as it takes to angle the light away from the camera. Too far over and the camera gets a hard profile shot. A profile shows only one side of the subject's face. The goal is to show both of the subject's eyes. If the camera cannot see both eyes, move more towards the center of the scene.

A mastery of indoor lighting is essential to covering news. Many of the stories I cover center around meetings and conferences. These are almost always inside. It pays to get to these gatherings early. Find out where the plugs are for the lights, and how it is best to light the situation.

Lighting a scene require thought. Pre-production, or thinking through the shoot before you actually do it is extremely important. I set up the lighting for Vice President Quayle when he was in Savannah. The advance men wanted to put the table where he was to sit in front of a bank of windows. I told them why this would not work. They listened to my reasons (extreme backlighting) and changed the whole set up.

The media has a great deal of power. People want to look their best. If you are in position early you can make strong suggestions as to placement of the individuals in the shoot. Pre-production can turn lighting nightmares into well-lit stories. Do not be afraid to tell people what to do when it comes to placement of podiums.

OUTSIDE--5600 K Light "Natural or Nat Light"

Shooting outside has its advantages. There is plenty of light. The photographer does not have to look for a place to plug in or worry about whether the battery light is about to die.

Outside shoots have their share of lighting problems, however. The biggest dilemma for photographers outdoors is

shadows. We cannot control the angle of the lighting. The sun follows its own course. It would be nice if I could tell the assignment desk, "schedule the shoot for 4:30 PM so the lighting will correct for my cover video." In my years of experience I have never seen the desk be that cooperative.

The most basic advice when shooting outside is "aim down your shadow." As soon as you step outside the car, see which direction you cast a shadow. Shoot in that direction as much as possible.

When shooting towards the sun the colors are not as bright. There tend to be objects that are silhouetted. These objects, whether they are trees, buildings or people look dark. For the best video with good color keep the sun to your back andshoot down your shadow.

Trees can cause lighting problems. Avoid dappled sunlight. Some photographers get under trees because it is cooler. Partial lighting looks bad. Shadows across the subject's face are not appealing. Uniform lighting across the person's face looks much better than dappled sunlight.

Do not shoot under trees unless you have complete (uniform) shade and a dark background. If the subject under the tree is backlit (has a bright background--sky, white buildings, windows) their face will look dark. The solution to this problem is to get out into the sun. If that is not possible, then go to manual iris and open the iris up. This makes the

background "hot" or "bloom" but the faces are visible.

White balance the camera every time you go from sun to shade. This includes when the sun goes behind a cloud bank. The partly cloudy day can be a problem for photographers. It poses a good opportunity for using the the memory settings on the camera. Set the first memory for shade, memory two for full sun.

The sun and the angle to the subject do not always cooperate. That is when the photographer uses a reflector. A reflector is a white or silver piece of material which reflects the sunlight into the subject's face. Take into consideration that reflected sunlight is extremely bright. Many reporters cannot tolerate the level of lighting. If they are squinting it may not be worth the lack of shadow.

If the lighting situation is questionable (especially if backlit) shoot the first standup using auto iris. Tell the talent, "I think the lighting is bad. Let's try a couple more standups and I'll try different iris settings." Then, and this is important, go back to the station and see difference. Memorize what you saw in the viewfinder and match with what the video looked like back at the station. It may be surprising as to what turned out looking the best.

It is important to have the viewfinder set up properly. If the viewfinder is too dark or has poor contrast it is not set up well. It is difficult to determine if the video is lit properly if the viewfinder is dark. The discerning

photographer must have complete confidence that what they are seeing in the viewfinder will look good on the television screen.

Late afternoon is my favorite time to shoot outdoors. The light is not as intense as high noon and the colors look "warmer" more golden. The angle of the sun is around forty five degrees which serves as a perfect light for the talent.

News is shot in every environment. Rarely are two places lit exactly the same. The discerning photographer must use the available light to their advantage.

Be Careful Out There

Protecting The Equipment

The News environment is a picture of contrasts: hot, freezing, wet, dusty. This is hardly a perfect environment for delicate electronic equipment. The real world does not offer studio perfect conditions. Engineers have a difficult time understanding why the news department is so hard on gear. It's simple. The real world is hard on the news department.

Electronic equipment is not designed to shoot hurricanes. I covered Hurricane Hugo in fifty mile an hour wind with rain so torrential you could barely see. I was wet for so long my hands looked like prunes. My gear stayed dry, for the most part, because of preventive measures. The story is where the action is. Protecting the equipment from such abusing conditions is the responsibility of the photographer.

I remember freezing nights standing in drizzle waiting for the FBI to release information on a city councilman who had been assasinated by a mail bomb. It was just me and the cops. And my gear. The equipment was protected. We got the story.

Here's a secret. Do you want to know the fastest way to get fired at a TV station? Lose or abuse equipment. The reporter may get the facts wrong, but there is always the retraction or clarification. If you trash a $15,000 piece of equipment you are history. A station actually fired their Chief Photographer because his gear was stolen out of the news car, which was locked. Equipment is valuable. Take its care

seriously.

Gear abuse can be prevented. Simple precautions can make a world of difference. Management keeps careful tabs on how much money is being spent on equipment repair. Do your best to keep the equipment you use in excellent condition.

News is gathered in rough environments. For a shooter to be successful, the gear must be kept on line. The best photographer in the world is not worth much if the gear does not work. Television is a visual medium. If the camera is out of commission we are reduced to radio status: sound only. If the deck does not work we are left with an on-camera (a piece without supporting video or audio reported by the anchor) story.

ENG gear is heavy. There is no way around it. Being a news photographer is hard work. Weight does not mean the equipment is indestructable, however. Each piece of gear has weak points. Know these areas and protect them. If you understand that the lens is fragile and should not be bumped you take extra care when you're running with it. Once you realize how valuable the umbilical cord is you keep it coiled up and carry it properly. It's all a matter of common sence. It strikes me, however, how uncommon common sence is.

I shake my head when I see a photographer dragging twelve feet of cable behind him, yet this is a fairly common sight. The horrible thing is I used to be like that. What separates the winners from the losers is the ability to adapt and

overcome. I realized there was direct relationship between how the gear is carried and how often the umbilicals are broken. So I changed. I devised ways to protect the connections. I no longer drag cables.

Learn from my mistakes. Take these suggestions on preventing gear problems and make them commandments in your heart. It saves time and stories.

The Camera:

All gear should be kept covered during inclement weather. Many companies (such as Portabrace) design protective equiment especially for the camera and deck you are using. The protection fits the camera like a glove, preventing rain and dust from entering the delicate electronics. Many stations require the photographer to keep these covers on at all time. This is a good idea.

1. The Lens--If something flies towards your eyes what do you do? Blink. The same thing is true for the camera. The lens is the eyes of the ENG system. Be careful with the eyes. Store the camera with the lens cap on. The cap prevents anything from touching the lens. It allows no light into the camera. The lens cap prevents burn ins.

Keep the lens hood on the camera at all times. The lens hood is the protective cover that attaches to the lens. It lets light in yet prevents objects from bumping against the lens. The lens hood is similar to the bumper on a car. The lens hood shades the lens preventing streaks of light in the

video. If sunlight goes directly into the lens the video picks up light reflections from the glass.

Take special care in keeping the lens clean. Smudges and dirt on the lens cause the video to look out of focus. It is easy to scratch the glass. Before cleaning the lens, brush or blow any grit away. Wipe the glass with a soft cloth or lens tissue. Do not use paper products, such as napkins, to clean lenses. The paper fibers can scratch the lens.

2. The Viewfinder--In the Hitachi FPC1 camera the viewfinder is attached by one connection. It is extremely fragile. Set the camera down gently. If a light is attached to the camera, it becomes top heavy and can fall over easily. If it lands towards the viewfinder the connection may break. Lay the camera on its side.

Keep the viewfinder turned away from the sun when you are not looking in it. Direct sunlight can burn in a viewfinder, damaging the electronics. Water can also wreck a viewfinder. Keep it covered. If you cannot see what you are shooting I guarantee it won't look very well.

Our crew covered a major drug bust in Georgia called, "Crack Down." The weather was terrible, rainy and cold. One of our photographers "forgot" to put the covers on his camera. The viewfinder got water in the connection and shorted out. He had to shoot "blind", without a viewfinder. What did he do? He kept on a wide shot and aimed as best as he could. It was hardly award winning video. Protect the viewfinder.

3. The Tubes--Many news cameras have tubes. The tube camera is prone to burn ins. Never point a tube camera towards the sun or bright lights. If a tube camera is pointed at a bright object the image will be ingrained or burned into the tube forever. The tube camera is very fragile. Avoid dropping this or any camera. It is easy to knock the tubes out of registration. If the tubes are not in registration the video appears slightly out of focus.

It should go without saying that jarring the camera is bad for it. That last inch is critical. Feel the camera coming into contact with the ground. Make it a gentle settling.

Keep the camera stored in a secure place. If you do not have a case to keep it in, fasten it to the seat with the seat belt. Jostling tube cameras shortens their lives. Ask any engineer.

4. The Electronics--ENG is done in adverse situations. Rain and salt water kill electronic gear. If you do not have proper rain gear for your equipment, use plastic garbage bags. They work in a pinch.

Extreme heat and cold damage equipment, therefore keep it protected as much as possible. If it is a choice between keeping my gear dry or keeping me dry I always opt for my equipment. Sound crazy? My work depends on my gear. I can shoot with wet hair and soaked feet, but if my camera won't power up because it is soaked the story is in trouble.

It comes down to desire. If you want to take care of your

gear, you will. If you want the story bad enough you will get it.

The Deck:

The video tape recorder captures the images that the camera "sees". Here is how to care for the deck.

1. The Loading Door--It is extremely important to load tapes in the proper way. Push the tape all the way down into the carriage. Do not slam the tape into the machine. Close the door from the middle top edge. Squeeze the door into the deck. Feel the mechanism "click" into place. This prevents excessive wear on the mechanical parts in this machine. Abuse in this area often causes slack and tape threading problems. If the deck has a slack tape problem the story will not be recorded.

2. XLR/BNC cords--The connectors on this deck are often abused by pulling on them. Always run any cable through a loop of velcro. This will keep the majority of the tension away from the connections on the deck.

Shorts in the XLR cords results in a lack of audio. A broken BNC cable eliminates any video. Avoid tugging or yanking on these cables. Always coil them up the same way every time. The wires are "trained" in that manner. This training protects the wires.

3. The Umbilical--This critical connection between the camera and deck is very fragile. There are fourteen (some have, more others less) wires inside this cable. It is

difficult and time consuming for engineers to repair these cables. Many stations force operators to "straight line"--use only XLR and BNC. Send the deck end of the umbilical through a loop of velcro to take tension off the cord.

4. The Electronics--Keep the deck covered and in its protective case. This is especially true in rainy environments or whenever the deck is exposed to salt water.

Sand and dust are also hazardous to the deck. Be careful about the environment when you open the deck to remove a tape. The recorder has seals around the door to protect it from dust. When the door is open, filth goes straight in.

5. The Tape--Every piece of gear in the Electronic News Gathering arsenal is fragile. The tape is no exception. It is particularly sensitive to humidity and dirt. Do not under any circumstances insert a wet tape into the deck. Decks are severely damaged because of moisture. If there is dirt on the tape a record head can be ruined.

Be careful with the tapes. Store them in a cool, dry place. Never put a tape in full sun, the plastic case may warp and then not load properly. You should also have a system of circulating old tapes out of use. The more tapes are used, the higher the chance of clogged heads and severe drop outs.

6. The Batteries--NiCad rechargeable batteries are fragile. Take care to keep them out of full sun. Keep them in a warm place in the winter. Follow a regular schedule of charging them up completely (this usually takes around eight hours) and

discharging them.

The Tripod:

1. Fold the legs properly. If stored in a semi-folded position the metal can be bent.

2. Be aware that the rubber feet on the tripod may come off. If these are missing, the operator loses all traction on a tile floor. This can cause the camera to fall over.

3. Notice how the tilt and the tilt friction knobs work. The tilt knob controls the ability of the camera to point up or down. The friction knob adjusts how easily the camera will tilt. Do not crank these down too hard as the gears can be stripped out. These knobs occasionaly leak lubricant, which stains clothes permanently. Watch for this and have the seals repaired.

The Photographer:

Yes, you.

In my station I know of four people who are not allowed to shoot anymore. Their doctor has stated, "you have severe disc problems in your back. If you continue this abuse, we will have to operate."

Back surgery is not fun. Learn to lift the gear properly. Bend your knees when you lift the deck off of the ground. Use straps on your camera and deck so the weight is on your shoulders, not at the end of your arms. This reduces your chance of disc injury.

Hot weather takes its toll on equipment and people. Drink

plenty of water. In the summer I keep a water bottle in my truck next to my seat. I consume an average of five quarts a day. With a heat index of over 100 degrees this is a must.

Stay in the shade as much as possible, and wear a hat. This reduces your body's absorbtion of heat. If you start to feel dizzy, take a deep breath, sit down and call for help. I've been in swamps where it was so hot I got goosebumps. This is not a good sign. Be sensitive to your body.

Cold weather is no better. News happens even in the most horrible conditions. Keep all exposed skin covered. I have seen photographers work without gloves in freezing weather. It does not make sence. I prefer Isotoner gloves. They are tight and I can adjust tiny knobs with them on. Other companies make these same type of spandex gloves that stretch with your fingers. Use them. Take care of your fingers and they will take care of you.

If at all possible keep dry. Especially watch for your feet getting both cold and wet. A sick photographer does your station no good. Keep a dose of vitamin C going regularly. It helps to fight colds.

Even with the most careful of use equipment goes down. It is the nature of the beast that electronic gear is sensitive. Take a look at the insides of the deck or camera when the engineers are working on it. There are a lot of things which can go wrong.

The good photo-journalist must be adept at troubleshooting.

Trouble Shooting
Dealing With Problems In The Field

Troubleshooting is an art worth learning. Recognizing and fixing trouble in the field saves stories. A good troubleshooter understands the problems that occur in the field. Unfortunately, the ability to solve these problems usually comes with experience. This section of the book can mean the difference between coming back to the station with a story in hand or not.

Many problems that occur in the field can be fixed in the field. Others must be referred to the engineering department to fix. It should be noted that many problems happen because the operator was careless or abusive with the gear. The best way to troubleshoot is not to have to have problems in the first place.

This chapter is designed with you in mind. Find the main problem (no picture in the viefinder) and go down the list trying every solution. It is best to memorize this information. The book will not always be within easy reach. In fact, gear problems usually occur when the station is far away. You should be able to see the problem and go down the checklist of solutions rapidly. The faster the problem is solved the more quickly the story will be captured.

VIDEO PROBLEMS:

1. No picture in the viewfinder. The viewfinder is dark.

   1) Is the camera on? Has it been powered up? Check the:

      --Power switch: Should be on Power/Batt 1 (up position) for camera battery.

      Ext/Batt 2 (straight position) for external AC power.

      ROU/VTR (down position) for power from deck using the umbilical. Will not work with BNC.

      --Operate switch out of standby and in operate.

      --Battery switch on. (For Z 31) Some cameras have a third power switch. This is under the battery where it connects to the battery plate.

   2) Is the battery good?

      --Check the voltage with the voltmeter. Is it above recommended levels? (Around 14 Volts for the camera battery.)

      --Does the green light (usually found on the side of the camera) come on indicating power to the camera? (See iris problem: #4)

      --Does the camera turn on when the battery is jiggled?

         a. Bad battery plate.

         b. Bad connection. Try jamming a wedge of paper between the battery and the battery plate.

Sometimes this makes for a better contact.

3) Is the viewfinder plugged in securely to the camera?

a. Remove viewfinder with lock screw and tighten. The lock screw pushes down to release. In severe cases the viewfinder can be held on with duct tape in order to make a connection.

4) Is the camera iris on Manual or Auto?

When the camera is in manual iris it will not uncap itself after black balancing. Therefore, even though you are looking through the viewfinder you will not see anything. Therefore, put the camera in auto, or open the iris up manually.

5) Is the contrast and brightness control on the viewfinder turned all the way down?

Turn the brightness control up to see a picture in the viefinder.

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2. Video looks hot.

1) Is the camera on correct filter?

If the camera is on filter one (for inside) and is taken outside to shoot the video will look extremely "hot" or overexposed.

a. 1--3200K (Inside)

b. 2--5600K (Outside, shady)

c. 3--5600K + Neutral Density. (Outside, bright)

2) Gain switch on? The video will look hot if the gain is used unnecessarily.

a. Switch will be in the 9Db or 18Db position.

b. "H" light will come on in the viewfinder if the gain is used.

3) Manual Iris on? The camera will not adjust for the lighting conditions if the iris is in the manual position.

a. The F-Stop is set to let in too much light. Close the iris towards the larger numbers--F-16)

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3. Trigger on the camera to start recording will not work.

1) Is a video signal present? Without a video signal the deck will not roll the tape.

a. Check video level on meter. (Same meter as for checking battery levels and Channel one audio.) Needle should be in the middle of the blue stripe.

b. Is record button in the tape? If the record button (red button on the back of the tape) is not in the tape, the deck will not go into the record mode.

2) Does "T" (tape) light go on in the viewfinder when trigger is depressed?

a. If "T" light goes on may be an electronic problem with the camera.

b. If "T" light does not go on, trigger button has problem.

c. Check umbilical cord. The cable may not be securely attached to the deck.

--- Run BNC and see if the deck will go into record. If the deck goes into record, the umbilical is broken, probably a short circuit in the trigger wire.

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4. Video looks grainy or bad in the viewfinder.

1) Clean lens. A dirty lens obstruct clarity in the video.

2) Check gain setting. When the camera is gained up the camera has a tendency to show the pixels in the chip or sensors in the tube. This causes a poor picture quality.

3) Check filter. Being on the wrong filter results in bad video.

4) Check set up on the viewfinder. Adjust bright or contrast knobs in the viewfinder.

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5. Video looks dark in viewfinder.

1) Check gain. It may be too dark for the camera setting. The camera sensitivity to light might need to be raised to 9Db.

2) Check viewfinder for bright adjustment.

3) Correct filter setting. (Are you using filter 3 inside?)

4) Manual iris stopped down too much. Either go to auto

or manually open the iris (towards the smaller numbers letting in more light)

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6. Camera will not white balance. The viewfinder does not read "White balance: OK" (or similar statement). Some cameras show a green light when the white balance is properly adjusted.

   1) Try black balancing the camera and then white balancing the camera.

   2) Power camera down and try again.

   3) Camera will not white balance in the record mode.

   4) Camera will not white balance if in the preset mode. The preset mode is only for 3200 K lighting.

   5) Check the auto set up. There is usually a switch in the camera which says "set up." Point the camera towards a white board and punch set up. The camera will then go through a series of registration procedures. This often corrects the white balance problem.

   6) If inside, go to filter one, and use the preset mode. The video should look OK even though the camera says it is not properly white balanced.

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7. Camera will not black balance. If the camera is not black balanced the blacks in the picture will be tinged with red, green or blue.

1) Go to manual iris and cap camera, try black balance operation again.

2) If camera will not cap itself, cover the lens and try again.

3) Try the auto set up switch. Point the camera towards a white board and let the camera go through the registration procedure. This often corrects a black balance problem.

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8. Zoom will not work.

1) Check switch under lens handle for setting. Is it in servo or manual mode?
Switch must be in "servo" mode for the zoom to work.

2) Electronic problem in servo.

3) Refer problem to engineering department.

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9. No signal from the camera. The camera is not putting out a video signal.

1) Is BNC connected to the video out, or Gen lock connection? The BNC cable must be connected to video out on the camera.

2) Is camera on and in operate?

3) BNC cable may have a short. Try another cable, check it for continuity. If the cable has proper continuity the wire is not broken from one end to the other. It will therefore transmit a signal from the camera to

the deck.

10. Camera will not focus.

1) Check back focus. Zoom in (Object must be at least 10 ft. away from camera), focus, zoom out--adjust back focus (screw next to where the lens mounts to the camera) until the image looks sharp. The back focus mark should be near the "F.B." mark. (F.B. stands for flange back.) If the camera's back focus is properly set up the picture will be in focus when zoomed in and still be sharp when zoomed out.

2) Is the macro button pulled out? If it is in macro, when camera zooms out the focus will go soft. The macro function enables the camera to focus within less than the least distance marked on the lens. This is usually within four feet.

3) Is the lens dirty? Clean it with a soft dry cloth. Be sure there is no grit or sand on the lens before rubbing on the glass.

4) Is the camera battery charged up properly? The Z-31 camera focus goes soft when the battery starts to go bad.

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DECK

There are many ways that the deck can have problems. Many of these problems can be fixed in the field without an engineer.

1. Tape will not engage into the record mode.

   1) Is there a record button in the tape? This red button enables the tape to be recorded on.

   2) The tape will not thread.

      a. Load tape.

      b. Power deck on and turn it off. Power it up again. Occasionally this will reset the deck and make it perform properly. See if the tape will go into the play mode. If the operator is using a BNC cable, and the deck will go into play, the record button on the deck may be malfunctioning.

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2. Slack light is on. The slack light indicates that the tape is not threaded properly. The deck will usually not roll tape at all if there is a slack problem.

   1) Is the battery good? On lower voltages the deck may give a slack indication.

   2) Tighten the tape manually, crank take up reel with your fingers. This may remove the slack.

   3) Reload the tape, power the deck off and on several times.

   4) Fast forward the tape two minutes. Try record button again and see if the slack light comes on.

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3. Humid light is on.

   1) Open tape loading mechanism. Allow it to dry out. Try

and power it up again.

2) Dry it with a hair dryer on the cool setting. CAUTION: Do not heat it up. Just blow cool air towards the record head.

3) If the deck has gotten wet, take the deck out of the pouch to speed the drying process. Take the battery out and dry it as well.

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4. No audio levels in the record mode.

1) Check audio level knobs. Are they at a good level for receiving the audio? The recording sensitivity may need to be increased. Turn the recording level up.

2) Is the audio recording level in the Auto or Manual mode? Leave it in the manual mode and adjust the levels accordingly.

3) Check the XLR cords. If you suspect the cord may be bad plug the microphone directly into the deck. This will remove the possibility of a bad microphone.

4) If you get no level with the microphone plugged straight into the deck, either the microphone is dead or the XLR microphone input is set to the wrong level. Is the audio input of the deck in the Microphone or Line level position? If the input is in the Line position the deck will read very little if any signal. Switch to Mic position. This is necessary because the microphone puts

out a much weaker signal than a line (amplified) signal.

5) Plug microphone into channel 1. Channel 2 may be malfunctioning.

6) Camera must be sending a video signal before audio level shows up. Camera must be in Operate, not stand by.

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5. Tape goes into rewind when inserted.

1) This is probably a sensor problem. Needs to be repaired by engineer.

2) Fast forward three minutes into the tape. Try and enter the record mode again.

3) Try another tape.

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6. Deck will not power up.

1) Check battery. What voltage is it? Needs to be at least 12.5V to work. Try another battery.

2) Check the battery cable. Is it shorted out? Does the deck power up when you jiggle the battery cable?

3) Check the battery plug in. Is it pulled away from the door receptacle? Reinsert plug.

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7. Tape will not roll.

1) Check tape manually. Test the take up reel with your fingers by turning the wheels. Are they extremely hard to turn? There may be a malfunction with the tape.

2) Change tape.

3) Power deck on and off several times. Try again. Sometimes this will reset the deck and the tape will thread around the heads and will roll.

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8) RF (radio frequency or buzzing) in Audio . .

1) Check grounding in XLR cables by doing a continuity test (check for breakages). Try another cable.

2) Try another microphone. Perhaps the lavalier mic might work.

3) If the XLR cable is fine there may be a grounding problem in the deck. Usually, a RF problem is caused by a bad XLR cord.

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9) Audio is distorted.

1) Bad battery in shotgun mic.

2) Deck may be at microphone level while the input is at line level, (such as from a mixer.) This overamplified results in distortion of the audio.

3) The tape may be damaged. Sometimes a crinkle in tape will cause distortion. Check the tape.

4) Is the switch on the audio level on Auto in a loud situation? Go to manual and turn input level down.

5) The switch may be on manual and turned up too loud. Note: Check your audio with headphones frequently. In a loud situation it is best to turn the volume way

down (2 or 3) and put the microphone close to your mouth. Even though the audio meter may read a low level (far to the left side of the scale) the audio should still be fine, if it sounds fine over the headphones. The operative concept is check the audio with headphone as the final test for what the record deck is getting.

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10. Cannot hear audio when monitoring it with headphones.

1) Is there a level reading on the VU meter? There may be nothing to hear. Turn up the signal until a reading can be seen.
2) Output for headphones may be turned down. The volume for the headphones is next to XLR inputs. This is generally on the side of the deck.
3) Is the headphone audio switched to the wrong channel? If the deck has a microphone plugged into channel one and you are monitoring channel two you will not hear anything.

---

11. Push record or pause buttons and nothing happens.

1) Check for record button in tape.
2) Is there a video signal coming through the BNC? If there is a signal the tape should engage. If the signal is intermittent, the tape will go into pause whenever signal is interrupted.

3) If button will not engage the tape, the button may be worn out. This happens with the buttons that are used regularly, such as play and record. They do not make contact very well when they are worn out. This problem usually starts by having to push the button very hard in order to make the tape engage.

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12. Tape will not eject.

1) Is the power on in the deck?

2) Push eject and turn the deck on. Is the tape still threaded? After pushing stop, listen to hear if the tape threads back into the case. If the tape is still threaded, it should not eject.

++

TAPE PROBLEMS

Many problems encountered in the field are due to the tape. Know the quality of the tape you are using before you trust your story to it.

1. The video looks bad--but the tape rolled.

1) Lines in video. This generally means either the umbilical or the BNC was bad.

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2. No control track. The picture is unstable. It is impossible to insert edit without a control track. Insert editing lays either audio and video or a combination of

both.

1) Means a deck problem: threading or electronic sync problem.

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3. Audio sounds bad.

1) Bad XLR cord.

2) Bad microphone.

3) Bad tape.

4) Input switch on wrong level.

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4. Video and audio is bad.

1) Clogged head may have caused the trouble. The heads become clogged because of bad tape. The heads on the record deck can be cleaned by using freon and a clean cloth. I do not recommend cleaning heads in bad environmental conditions. The inside of the deck is exposed to many hazards.

It is best to learn how to clean a deck's heads by asking the engineering department to show you. Clean the heads by holding the cloth with freon next to the heads and rotating the head drum. Use only a side to side, never and up and down motion. You should clean the heads in the same direction that the heads spin.

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As you gain experience in the field you may encounter other problems that this guide does not cover. The main idea is to use your head. Common sence solves many problems. Often

In The Bag

Support Equipment For Electronic News Gathering

A good reporter/photographer must be ready for any situation. Be prepared to "improvise, adapt and overcome," as the marines say. The items mentioned in this section are not extras in the sence that they are not needed. This is support equipment. They can be as valuable as a camera or deck.

Every person who works in the field has their own "bag of tricks." Buy yourself a sports bag (preferably waterproof) and stash these and your own favorites in it. Do yourself a favor and make sure you have the majority of the items listed in this chapter. When you're out on a story is not the time to realize you forgot to buy that extension cord or flashlight mentioned in the Field Guide.

Here are the basics:

1. Spare tape--Always have tape on hand. Know how much tape time you have and replenish your supply when you are low. Never leave the station without tape. Generally, reporters are responsible for providing the tapes for the stories. However, there have been many times when the story turned out to be fantastic and I rolled twice as much tape as usual. Or we ran into a spot news story on the way to our assignment that turned out to be the lead for the 6:00 PM show. If you do not have any tape the best gear in the world does no good. Your competing station won't loan you a tape.

Each day tapes are received at the station that are free.

They include medical tapes and newsreel tapes offered to the station. Many of these tapes are good quality, however they are usually short--five to ten minutes. They still work fine for shooting a short story. Carry plenty of tape.

2. Batteries--Extreme weather takes a heavy toll on NiCads. Make sure you have enough to cover the story. Carry extra batteries for the deck and camera as well as for the Watchman and line level microphones.

3. Extension cords--They break at the worst moment. Buy a light weight white cord and a brown cord. Use the cord that is easiest to see on the floor. Most of these household cords are not grounded. Never run extension cords in a wet environment.

Always roll the cords up the same way. The wires get "trained" and will not short out as rapidly. Be especially careful of the ends. They are the most fragile.

Keep a good supply of three prong adaptors for those times when a grounded outlet is not available. This is common in old houses. Note: Do not rip the third prong of a grounded plug out, it can keep you from being electrocuted.

4. Record Buttons--These are the little red buttons with an "R" on them that fit in a hole in the back of the 3/4" tape. The tape will not go into record without them. If worse comes to worse use scotch tape to cover the hole.

5. Headphones/Ear bugs--A way to monitor audio is a necessity. Buy headphones with cords long enough to reach

your deck on the floor while you run the camera (five feet or so.) This will save you the headache of having to lean over to listen to the audio.

Buy several lengths of ear bugs. One three foot length for listening to the Watchman, another twelve foot length if you are forced to monitor a TV that is on the ground. You will also need a submini ear plug to fit into the Two-Way for use on live shots.

6. Gaffers & Electrical tape--The black tape sold at theatrical shops is best. Tape your cords down. If someone trips on your cord you are a prime target for a lawsuit.

Electrical tape is great for fixing things in the field. Light stand will not stay up? Tape the connection. Need to shoot a photograph? Tape it to the wall. Windscreen come off too easily? Tape it to the microphone.

7. Flashlight--You must have a flashlight readily available. When you start to work at a station you will probably pull night shift work. A flashlight is absolutely essential to putting connections together and reading maps. I often cover court stories where the camera is behind one-way glass. The room we work in must be kept dark or the jury gets distracted because they see the cameras. Therefore, a flashlight is absolutely essential in hooking up the gear.

Mini Mag Flashlights are the best. They are tough, focusable and come with a pouch for attaching to your belt. Critical for night shoots.

8. Extra BNC and XLR cables--Do not be caught short. Make sure your backups work. Check for RF (Radio Frequency coming over the audio) and shorting problems before you need the cords. Make sure you have extras even though you may currently be using an umbilical cord. If the umbilical goes down you must have a back up or the story is lost.

9. A set of screwdrivers--ENG equipment is constantly jostled in the back of vehicles. It pays to tighten the screws on the camera and deck frequently. You should carry both flat head and phillips screwdrivers.

I have had my viewfinder get fogged up because of heavy rain. I simply took it apart, cleaned the mirror and continued the shoot. Without the screwdriver the story would have been lost.

10. Hair Spray--Television is a visual medium. If the reporter's hair looks wild it is the photographer's fault. The shooter is the last check for how the talent looks. Hair spray keeps talent looking good. Use it.

11. Mints--Bad breath turns everyone off. Share them with your reporters. First impressions last a long time. If you are conducting a close up interview bad breath is no joke.

12. Maps--Collect maps. Every shooter should be good with maps. Spot news requires a fast response to the scene. Memorize the main routes in your city.

Fold your maps the same way each time. The side that shows when it is stored should be the most travelled section. Every

time you go to an installation you are not sure about ask for a map.

13. Multimeter--Digital meters work best. They are actually several tools in one: invaluable for checking battery voltage, or continuity in a cable. Continuity refers to whether the cord is broken (shorted) or not.

14. Lock blade pocket knife--Good for small screws as well as removing tape. Swiss Army knives are nice, but they do not lock and you cannot get much torque with them. A lock blade is much safer than an average pocket knife. Do not carry a knife into a secure area, even if you are with the media. Security does not consider a knife a joke.

15. Oil--If you burn up your engine and you will probably lose your job. Treat your truck better than your own car. Bosses abhor gear abusers. Do not get that reputation. Do not forget to check the oil in generators before you use them.

16. Card with Police signals and codes--Memorize the major numbers and get in the habit of listening to the scanner, not radio. A savvy photographer can keep a step ahead of the competition by listening to the scanner and finding spot news as it happens.

17. Pens and paper--Keep a pad in front with you and in your deck pocket. Do not trust your memory--write it down. There are many times when the reporter will forget the notepad. Keep extras where you can get to them in a hurry.

18. Water bottle--Keep it filled up and drink steadily

throughout the day. If you are thirsty, you tire much more quickly. In extremely hot weather, while I am carry seventy or eighty pounds of gear I sweat profusely. I drink water even when I'm not really thirsty. Your body has to have liquids. Plain water is the best.

19. Aspirin--Work is hard enough without a headache.

20. Soft Towels--One for sweat, another for lenses. It is essential to keep the talent looking dry, cool and collected. A sweaty head is shiny, looks bad and is difficult to light properly.

21. Masking Tape--Good for labeling tapes and keeping track of which batteries are charged. Once a battery is charged put a piece of tape on it. When it has been used you can tell it needs a charge because it lacks a piece of tape.

22. Hat--Keep the sun off your head and you will not heat up as quickly. Light colored hats are the best. Keep your hat clean and professional looking. Do not wear a hat that says something stupid. It is an embarrassment to the station.

23. Sunglasses--Keep the retinas sensitive and helps prevent headaches. They also provide protection from flying debris. They can save the day when covering stories dealing with airplanes (which kick up a ton of dust) or helicopters.

24. Skin So Soft--Most bugs hate it. SSS can be a life and shoot saver.

25. CamphoPhenique--Or some type of antiseptic for cuts and scrapes. In hot weather cuts go septic quickly.

26. Hair Dryer--Dries out your lens when going from a cold environment to a warm, humid inside shoot. A hair dryer can do a quick dry on your clothes as well.

You can also use a battery or AC light to dry out the camera lens, but cap your camera first to avoid burn ins.

27. AC Power Supply--You should be able to power your camera up by using AC power. This is electricity coming from the wall outlets. An AC power supply changes the 110 AC voltage into a 12 Volt Direct Current acceptable for Decks or Cameras. This is not an extra. It is essential.

28. Reflector--This is a lighting tool which folds out and reflects sunlight back into the talent's face. They are very helpful for backlit situations. If your station cannot afford a proper reflector, make one out of white cardboard. I have one side flat white, the other I spray painted with gold paint. This gives the reporter a warm sheen to their face.

29. Line-Microphone Level Pad--This is a device which plugs into an audio output and transforms a line level output into a microphone level output. Most decks have a switch for line or mic level. However, a pad can help clear up over modulated signals. Plug it in to the output and it reduces the signal strength.

30. BNC adaptors--Some cameras (such as the Hitachi C1) have the video outputs on the side of the camera. This causes a problem for the BNC cord when the camera is laid on its side. The BNC cable is put into a bad situation by being bent

at a hard angle. This can short out the cable. A ninety degree adaptor connected to the camera removes the stress on the cable by putting the video output parallel to the camera. The cable then lies beside the camera rather than sticking straight out from the camera.

Another handy BNC adaptor is a male to male plug. This connects two lengths of BNC. This is useful on live shots when extra cable is needed.

31. Telephone Book--The telephone book is a wealth of information. Every news truck should have one. It is also helpful to collect telephone books from cities that you visit regularly. They can really save time when searching for people.

32. Dry Clothes--No matter how hard you try there will be times when you will be caught in the rain. It is a great feeling to put dry shoes and socks on after having wet feet for several hours.

33. Lights and Light Bulbs--TV cameras need light. It is critical to have an AC powered light (and stand) as well as a battery powered light. We use 600 Watt lights for the AC light and 250 Watt lights for battery belts. These are extremely bright lights.

34. Barn Doors--They mount on the light and focus the angle of the light. They provide a mount for gels or scrims.

35. Scrims and Gels--Scrims reduce and diffuse the light coming from the AC light. They make the subject much more

comfortable as well as making the video look less harsh.

Gels correct the color in the light. Rosco Tough Blue 50 adapts 3200 K light into the more blue 5600 K light. These are helpful when there is a lot of natural light coming into the environment.

A dichroic filter is also used to change 3200 K light into 5600 K light. It is a piece of glass rather than a plastic gel. The dichroic tends to hold up longer than the plastic gels.

I have found a few other items to be handy in a pinch. You might consider these as well.

EXTRAS:

Chair--Foldable chairs are best. They help on those long shoots.

Mini-screwdriver set/ allen wrenches. Occasionally you will need these to tighten screws.

Small step ladder--Keeps you above the competition.

WD 40 lubricant--Helps with stuck mechanisms.

Paper napkins--For checking the oil or keeping your face dry.

Cooler with drinks--Comes in handy on hot shoots.

Generator--For providing AC power in the field.

Jumper cables--They can really save the day with a dead battery.

Tool set with pliars and ratchets--For those simple auto

repairs that could otherwise keep you stranded.

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This is a good start up list of support equipment you will need in order to be a good newsgatherer. As you find yourself needing these items perhaps you will be convinced of the neccessity of the rest that are listed.

The phrase "improvise, adapt and overcome" rings in my ears whenever I have a problem in the field. By checking my bag of support equipment I can often improvise a solution that will make the difference between getting the story or not.

Check One

Each of these "Checks" is designed to test your comprehension of the material presented in this book. Do yourself a favor and write down your answers. Educators have shown that writing down the information helps the student retain the knowledge.

Every answer is presented in detail in this section of the book. If you are not sure about the answer reread the portion of the Field Guide which pertains to the problem.

1. On the camera be able to find, without looking:

   Zoom control (which direction for tight and wide?)

   White balance switch

   Black balance switch

   Manual/Auto iris (which direction for each?)

   Return video switch

   Power switch for each supply (which direction for AC Power? For external battery source?)

   Memory settings and preset for white balance.

   Gain control switch

   Check switch (Zebra pattern)

2. You drive up to a bad car wreck. It is night. Describe the filter setting you would use.

3. On the deck be able to find:

   Play/Record/Pause

   Video out for BNC

   Video in for BNC

   XLR audio inputs and outputs

Line and Microphone level settings

Headphone monitor settings

Auto and manual switch for audio

Audio monitor jack

Video, Ch. 1 audio, and battery switch test and level.

4. What are the most fragile areas on the camera and the deck? Describe how to protect them.

5. Describe the connecting cables used between the camera and the deck. Where are the inputs on the camera and deck? These include both video and power cables.

6. NiCad batteries are the life blood of the ENG system. Describe at least five ways they can be damaged. Describe the charging system. How far should the batteries be run down? What are the minimum acceptable voltages for the camera, deck, battery belt and 2-way batteries?

7. You are in a very backlit situation. Describe how to put the camera into manual iris. Which direction do you turn the iris to allow more light into the camera?

8. You are shooting action coming towards you. Which direction do you rack the focus ring?

9. You monitor the audio and you hear radio. What can you do to fix the problem? What generally causes the problem?

10. What is the difference between a stick microphone and a shotgun microphone? Describe the advantages of each microphone and under what circumstances they should be used.

11. Describe the difference between a microphone and a line

level of audio. How do you adapt the deck to compensate for these levels?

12. Describe the color difference between 3200K light and 5600K light. You come back to the station with blue video, what happened?

13. You are in a questionable lighting situation (half natural light, half 3200K light). What are some possible solutions?

14. When shooting outside, what are the main concerns as far as lighting?

15. When should a reflector be used?

16. The camera is picking up a great deal of reflected light from the subject's glasses. What can the camera operator do to compensate?

17. You are shooting in front of a busy street. It is a bright sunny day. The iris continues to adjust for light reflected from passing cars. What should you do?

18. You are shooting in bright sunlight, but your subject is standing in the shade. Where should you white balance? Why? If you white balance in full sun, and shoot in the shade what color will the video be?

19. Where should the iris setting be for most locations? Why is it important to know what the iris setting is on the camera?

20. Describe the relationship between lighting, F-Stop, focal length and how it affects depth of field in the shot.

21. You have no picture in the viewfinder. Describe the possible problems, and solutions.

22. The camera trigger does not work. Describe the possible problems and solutions.

23. The camera will not white balance. Describe the possible problems and solutions.

24. The camera focus goes soft every time you zoom out. What could be the problem and how do you fix it?

25. The tape will not engage in the deck. What can you try to fix it?

26. There is no audio coming into the deck. Describe possible problems and solutions.

27. You are monitoring the audio and it sounds very distorted. What could be the problem?

28. You are making up your bag of support gear for your truck. What are the essentials you must have to keep your gear and yourself running properly?

29. You are on a shoot and it is starting to drizzle. How should you protect your camera and deck?

30. When should you put the camera into a higher gain? How does this affect the look of the video?

31. What happens to a NiCad battery if drained down too low? When might this happen? How can this be prevented?

32. It is raining. The tape gets wet. Should it be used, if it has been allowed to dry out?

33. How can "popping" be avoided in the audio?

34. How can you check if the microphone is working or not--- without using an XLR cable?

35. Why should the audio be monitored?

36. The deck will not go into the record mode. What could be wrong? What is the first thing to check. What is one of the essentials you should carry with you in your equipment bag that relates to this problem?

37. What should be the deciding factor as to whether to use filter 2 or filter 3?

38. You are on a shoot and the umbilical goes dead. What should you do?

39. You are on a shoot and the camera battery goes dead. You have an umbilical cord. What should you do?

40. What is the best way to ensure long life with the equipment?