

Surveillance Systems 101

March 2010

Based on the recent survey results, many of you wanted to learn more about surveillance systems, so I thought I'd start with an introduction for those considering whether such a system would be a wise investment for their own theft and fraud deterrence programs. This month, we'll start with a simple guide to help you think through whether surveillance cameras are right for you.



The Role of Surveillance in Safety and Security Programs

Surveillance plays a unique role in the timber industry. Our work includes several hand-off processes, oftentimes with different suppliers and different management as wood moves through the fiber supply chain. This exposes the timber to possible theft and fraud. Complicating the problem, most of the hand-offs are done in remote locations which can only add to the temptation. Your first step is to consider the entire fiber supply chain and your role in the process. Once you have fixed your position in the chain, you can then assess your company's exposure to potential theft and fraud. Focus on areas where you have little control or oversight for the work and where there is a transition from one process to another. Those areas should be monitored for red flags. If you don't have control over much of the process or you have some glaring exposures, perhaps surveillance is right for you.

Five W's of Surveillance Systems

Each business has common elements to consider in selecting a surveillance system depending on the size of the operation, the location, and even the budget available. At the same time, each is unique in its processes, exposures and level of control. The five W's help you think through the decision about whether to include a surveillance system as part of your own theft deterrence program. If there is a decision that some type of surveillance is appropriate, the 5 W's will also direct you through the decision process to ensure you have the right level of equipment and technology to bring the greatest value for your investment. Asking these questions up front can save headaches and regret later on. Too little or too much are both poor decisions.

Here are the questions you should be asking yourself:

Why?

Why have surveillance cameras? This is an important question for you to ask yourself. By first defining the purpose for having a surveillance system and identifying how it fits into your total security program you will be better prepared to select the right equipment for the job. Remember that you are looking to establish a security culture that includes prevention as well as detection. Cameras can support both. A well-thought out and comprehensive solution considers cameras as an independent source of information and a tool that communicates that you are serious about theft and will take action if needed. If cameras are the only element of your program, you ultimately create a "gotcha" mentality that can undermine your efforts to build a supportive climate for honesty.

Where?

- Does your operation dictate a need for surveillance at remote locations, e.g., contractors and gates, or in the wood yard or scale house?
- Do you want the cameras visible as a deterrent or hidden to provide an independent source of information?
- Where is the best placement to ensure activity is adequately monitored?
- Where cameras may be placed dictates the appropriate power sources.

Who?

- Who will deploy the system? Employees or independent contractors?
- Will there be one person available all the time or will it be passed among different individuals?
- Who is the subject of the surveillance - contractors, employees, vandals, etc.?

When?

When should the cameras be set up? After a vandal strikes? After a tip that you're missing something? After your suspicions are aroused? Or, before there's a problem as part of a systematic approach to fraud prevention?

What?

- What kinds of surveillance equipment should be considered with regards to installation? Consider factors such as ease of installation, sensors vs 24-hour recording, repeatability, power utilization, serviceability, and system flexibility. Once the other W's are answered, you will be better able to address these questions.

- What type of documentation capabilities will be needed? Consider factors such as Evidence Integrity (Watermark), Night vision abilities to ensure clarity 24 hours per day and archival requirements and ease of footage review.
- What is the right amount of money to spend? Determine your budget considerations and overall program and plan equipment needs appropriate to your situation. Consider budgets for surveillance systems to range from \$1000 to \$10,000, with a wide variety of options in between. Buy only what you need to support your program or outsource your camera surveillance audits to qualified individuals.

Answering these questions allows you to think through your own security needs so you can make a thoughtful and planned decision about how surveillance fits into the total picture. It's a decision you might have to consider periodically as you strive to continuously update and improve your fraud and theft prevention efforts. Once you've established your needs, you can begin evaluating the wide variety of equipment that is available and select what is right for you and your budget. More about that next month.

Give me a call if you want to talk about your own situation. I'd be happy to answer any questions that will help you answer the five W's.

Surveillance Systems (Continued)

April 2010

Last month we discussed the questions you need to ask yourself to determine if a camera surveillance system is right for your operation. Of course, if you already have a camera system, those questions are also helpful in deciding if your current system is appropriate for your needs or if an upgrade or change makes sense.

If you've made the decision to move forward and purchase a system, the next steps are to consider how much is the right amount to spend on the system (always an appropriate consideration) and what are the options within a given price range. This discussion is focused on the remote surveillance systems deployed in the woods to monitor vandalism, illegal trash dumping and log hauling patterns. And for the purposes of this discussion, a camera surveillance system includes a power source, camera, camera monitor, recording device, waterproof enclosures and connectors. As with most things, there are low end systems and high end systems.



Comparing Low and High End Camera Systems

Originally, low end systems consisted primarily of VCR time lapse machines with large batteries to power the system for a 5-7 day period. Although the technology has been around for a while and there are slicker options now, these legacy systems are still being used by a few companies since they are easily deployed and relatively reliable. However, if you're looking to get started, those systems are no longer available on the market. Low end DVR's (digital video recorders) have taken over the VCR environment in much the same way as digital cameras have replaced film. With these DVR cameras, the image is recorded to a memory card instead of film.

The lowest of the low end surveillance system is a simple set up known as Trail Cameras or "Deer Cameras." These units are sold in most outdoor stores. They are relatively inexpensive (\$200-\$500), not difficult to operate, and the unit includes batteries, camera, and recording medium all in one device. To operate, you mount the entire device with a clear field of view to a tree or a fence post. It will detect motion and capture still images of the activity. Some of these units include cameras that have day/night ability, meaning the camera takes color photos during daylight hours and switches to black and white at nighttime. Some of the systems also provide "infrared lighting" to allow the operator the ability to manually light the area in front of the camera at night. This is helpful if you can actually see what set the camera off in the middle of the night. The downside to these systems is they are one of the more difficult to hide as they need to be close to the action to be effective and the entire unit needs to be mounted on the tree. It may fool deer but not necessarily intruders.

The next level of system available is any unit with a DVR as the "brains" of the system. These systems normally begin around \$2300 and range up to \$9000. Wait, you say, I saw a DVR on the Internet for \$500? Well you may have, but it wasn't a system that lends itself to being placed outdoors. Low end DVR systems are normally pixel motion activated and can be "programmed" to monitor only one aspect of the picture. An example of this would be to have the camera focused on your house and then you program the camera to activate automatically when something moves at the front door. The rest of the picture is ignored. Obviously if the location of the camera is compromised, an intruder may either be deterred from entering or just deterred from entering in the range of the camera's sight.

The same pixel motion activity is utilized in almost all DVR systems sold today but as the price increases you gain greater flexibility in programming, lower power requirements and longer manufacturer warranties. Once footage is captured on the DVR, most systems allow for playback of the footage on a computer. One of the more expensive systems available has over 20 programmable menu's, can record 24 hours a day, 7 days a week on up to four cameras at once, and during playback the screen provides the user a "motion graph" which details where the action happened during recording. This allows the users to focus on those areas where there is activity and ignore the times when nothing moved in front of the camera. A great time saver during review!

Now, as with all things, you can customize and accessorize as much as your heart desires. I'll briefly run through the more common accessories.

Sensors

Sensors attached to the system can provide the user flexibility to set up the camera in many different types of situations. Anyone who has deployed cameras can attest to the fact that one type of sensor will not work in all situations. Sensor types include Passive Infrared motion sensors (PIR), seismic sensors, beam break sensors, and even sound sensors. Each type triggers the camera to activate and record after it senses its unique activity. The trick is to know what works best in each environment and take the time in the field to "tailor" your setup to that site. Keep in mind however, that as quick a set up time as possible is critical. The more time it takes to install the system, the higher the likelihood of someone spotting you and knowing the camera's location. Although there is still a deterrent factor in having a known camera on site, effectiveness is improved when the camera is not

visible or known.

I know of a case where a seismic sensor was deployed to monitor the truck traffic in/out of a tract of timber. A seismic sensor detects the vibrations in the ground created when something passes by the sensor. If the sensitivity of the sensor is set correctly it can detect anything that moves in the camera's range, e.g., humans, dogs, wildlife, varmints, trucks, etc. In this case, the sensor was deployed along the access road and about 100 yards away from the logging deck. As it turned out, that was too close to the deck. The sensor detected the vibrations in the ground from the loading operations and activated the surveillance system so much that the unit was out of power within two days. The operator was expecting to get seven days use from his system and was sorely disappointed when retrieving the system.

Sensors also require more time to setup in the field. Again, more time in the field setting up the system increases the chances you will be observed. If the camera is observed, you may not only lose your advantage, but also find that your system is gone when you go back to retrieve it (a very disconcerting feeling).

Cameras

Cameras come in all shapes and sizes. Generally, the higher the priced ones provide the greatest flexibility in customizing the "on the fly." In other words, if you have another camera with you, they are easy to change out and replace. Typically, in the field, bullet style cameras provide a good picture and are small enough to deploy close to the action without being easily spotted. Of course cameras do come in pinhole size (which is literally about the diameter of the writing tip of a pencil) and can range up to the size you see mounted above the bank parking lot. Most cameras can have the lens size customized to provide wider angles, or zoom in closer to the action. The newer cameras will switch from color to black and white at night to give a better image. Each camera comes with a lux rating. The lower the lux the better the camera will be able to pick up the image at night. In addition, cameras vary with the level of picture resolution. If you want to identify license plates at night, you will need a higher resolution camera! And last but not least, remember to account for the different power requirements as you swap cameras for different applications.

Power Sources

Of course, as with all things electronic, you must provide the proper power source to be able to keep the system running in the woods. Currently, and for the foreseeable future, lead acid batteries provide the most economical way to power the surveillance systems. The trick is to find a system you can deploy for at least a seven-day period that is small enough that it can be easily carried. I have seen systems that required three 200 amp/hour batteries to operate for a seven-day period. In case you haven't carried one lately, a deep cycle marine battery can weigh up to 100 pounds each! The system I use weighs about 90 pounds, including the camera and batteries. There are lighter options available and as technology improvements march on, things will get lighter. For you gear heads out there, a few individuals are using solar panels and fuel cell technology is getting closer to being an option. A German company is offering fuel cells to the public now and as prices fall, that option will get more attractive. At the moment, \$2500 and up just for a fuel cell as a power source is a little steep.

Where can I learn more?

I am aware that I have not made specific recommendations on your next camera and hopefully you can appreciate the fact that there are dozens of considerations for each application. What works well in the woods, may not work well in a scale house environment and vice versa. Each camera deployment is unique and any number of things can cause your camera to quit operating. So don't be shocked if you retrieve your camera and find you only have footage of you while you were installing the system

and nothing else. If you find that happens to you keep in mind you can always outsource your camera audits to professionals.

For some of you this discussion was too basic and you want more details. If so, please feel free to contact me, as I am familiar with several different camera surveillance systems and can answer your questions or provide additional information.