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Using Offender Tracking Technology in Domestic Violence Cases

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Offender tracking technologies emerged in the mid 1990s in response to a prison and jail overcrowding crisis. The technology was hailed as a secure alternative to incarceration. Whether the participant was a prison diversion, a high risk parolee or a defendant awaiting trial, corrections and law enforcement officials quickly recognized that this technology provided much more accountability than any previous methods of community supervision. The technology quickly became a tool used in a vast majority of states and has significantly helped agencies balance their budgets while freeing up much needed prison beds.

With many high profile sex offender cases making headlines across the country, legislators began to eye this technology as a tool to increase the accountability of sexual predators. Twenty-six states now have passed or are considering legislation requiring sexual predators to be under some form of continuous tracking. Other states began to view the technology as a means of combating inner city gang problems. The State of California has recently launched an initiative to require convicted gang members to wear tracking devices to monitor their criminal associations and to correlate their location data points with known crime scenes.

Now, the tracking of offenders is being contemplated as a tool to protect victims of domestic violence. These cases have frustrated the criminal justice system for decades. Knowing that domestic violence offenders cannot be incarcerated indefinitely, judges must set conditions of release which typically prohibit an offender from contacting his/her victim. In many cases, especially when a Temporary Restraining Order has been issued, a requirement to remain a designated distance away from a victim's residence or employment is required. Offender tracking initially appeared to be an ideal technology to enforce these conditions, seeming to offer

a level of protection that has never before been available. However, a closer examination of the technology, as it exists today, reveals that there are shortcomings that may leave the victim vulnerable.

Currently, all vendors who offer offender tracking equipment utilize the Global Positioning System (GPS) as their primary method of locating and tracking offenders equipped with tracking equipment. The system is comprised of a constellation of orbiting satellites that transmit data to receivers, like those worn by offenders. A receiver can calculate its position on the planet by receiving the signals from four or more of these satellites. The system was originally conceived for use in outdoor applications such as marine and aircraft navigation as well as tracking high value assets on our public highways. A limitation of the technology is the inability of its low power signals to penetrate most structures, rendering the system largely ineffective indoors.

Understanding this, one could argue that GPS is precisely the wrong technology to use when tracking people, who on average spend 80% to 90% of their time indoors. Recognizing this, some manufacturers of offender tracking equipment have developed clever techniques to compensate for this problem. For example, some of the two-piece devices on the market contain small motion detectors. An offender may be required to set his tracking device on a table after entering a building. The lack of motion is detected and the last valid GPS location point is deemed to be a good indication as to the location of the offender, assuming his ankle transmitter stays within range of the stationary tracking device. Similarly, when a device is placed in a charging stand overnight at the offender's home, the continuous charging process can be monitored and the device is deemed to be at rest. Even though there may be no GPS reception, the offender's location can be reasonably assured if he (and his ankle transmitter) remains close to the tracking device.

Unfortunately, it is not practical to expect offenders to be able to keep their tracking devices (of two-piece units) at rest every time they enter a building. Shopping in a grocery store or a mall requires constant movement. Many offenders work in warehouses or other large structures and must constantly carry (or wear) their tracking devices. Many of the products on the market will create an alert when the GPS signal is lost and may even send a message to the offender to go outside to re-acquire the GPS signals. This, however, is not always practical. Employers would become upset at the resulting loss of productivity. An offender using public transportation could not reasonably be expected to get off the subway at every station.

Most one-piece units are even more problematic. Unlike two-piece units that can often be placed in an "at rest" condition, one-piece units are in constant motion. Even when an offender is sleeping, his/her body moves. There is little that can be done to ascertain the location of an offender wearing a one-piece tracking device when there is sufficient shielding to block GPS signals.

Meanwhile, supervising officers are receiving many nuisance alarms, alerting them that a tracked offender is not in GPS range and his/her location is not known. Most agencies do not have the manpower to investigate each of these alarms. Knowing an offender's schedule may result in the officer shutting off these types of alarms during certain hours when the offender is supposed to be at a location where his position is known to be shielded from GPS signals. Another technique that has been adopted is to increase the time tolerance before initiating a "No GPS" alert. For

example, a default tolerance of ten minutes may be increased to 30 minutes before an alarm is generated. This may significantly reduce the number of nuisance alarms, but it also significantly compromises the security of the program.

With this information in mind, intentional shielding becomes an issue. A clever offender may have observed that he is no longer being confronted about remaining inside a large structure until after 30 or more minutes. He may consider intentionally shielding his device with aluminum foil. This would allow him time to leave the building, commit a crime, and return to the building within the 30 minute window with his activities going undetected. He may even be eliminated as a suspect of the crime because the tracking system did not place him at the scene.

Most one-piece devices are especially susceptible to this form of spoofing. Simply wrapping foil around the ankle bracelet effectively shields the device from GPS. It can also be done with two-piece units, but the offender runs the risk of severing the RF link between the tracking device and the ankle tether which will generate an alarm. To combat this form of spoofing, some manufacturers monitor the cell tower activity that is generated. Since cell signals are more difficult to shield, a unit's movement can be detected if the cell phone signal is received by a new cell tower. However, this is not a reliable means of determining location. An offender could travel a significant distance before his device's cell phone is heard by a different tower. In a rural area where there is only one nearby cell tower, an offender could wander around an entire community with his movements undetected. It is also possible for a compliant offender to be wrongly accused of traveling with no GPS by simply moving from one side of a building to another. Even if a cell tower is several miles further away, if there is a direct line of sight to that tower while a closer one is blocked, a stronger cell signal could be received by the more distant tower.

Another concern about using GPS to track offenders, especially in domestic violence cases, is the emergence of GPS and cell phone jammers. These devices, which are readily available over the internet for about \$300, transmit jamming signals on the frequencies used by the GPS system and cellular phones. The overwhelming RF "noise" created by these devices, makes it impossible to track a GPS device. They can also keep the device's built-in cell phone from reporting any problems. Although these devices are easy to purchase, there are no known documented cases of offenders using jammers to defeat an agency's attempt to track them. This may be due to the fact that most supervising officers are unfamiliar with these devices and may not recognize the significance of seeing one in the field. The NLECTC has issued an alert about this technology and included pictures of what current jammers on the market look like.

BI, Inc., a leader in the offender monitoring industry, has removed from all of its marketing material any reference to using its equipment for victim protection. A product line called *Juris Monitor*, which had been specifically designed for victim protection, was totally discarded. In 1997, a domestic violence offender from Ft. Worth, TX, removed his *Juris Monitor* ankle bracelet 500 yards from his victim's home. Although the bracelet immediately went into a tamper mode, the BI technology requires the bracelet to be near a monitoring unit to detect a tampered transmitter. The victim had one of the units in her home, but the discarded transmitter was too far away to receive the tampered bracelet's transmissions. The offender proceeded to the unsuspecting victim's home and viciously murdered her. He burned down her house and

later killed himself. The surviving family members of the victim won a civil law suit against BI, Inc. and were awarded over \$200,000.

Because insurance companies fear cases like these, the cost of product liability insurance may become prohibitive for vendors who make claims that their equipment can be used to protect victims. BI, Inc. was asked what their liability insurance rates were following this incident, but they did not provide this information. They did indicate that insurance costs were a factor in their decision of discontinuing their product line designed to protect victims.

The shortcomings of tracking offenders with solely GPS technology does not impact just domestic violence cases. These shortcomings can allow any criminal offender to circumvent an agency's attempt to track him. These are significant concerns for all cases. But, when this technology is utilized for the specific purpose of protecting a very vulnerable victim, the equipment needs to be effective 100% of the time. At this point, the industry has not progressed to that level of reliability.

There are promising developments on the horizon. By utilizing a secondary location technology as a supplement to GPS, offender tracking devices may soon become much more reliable in compromised environments. Triangulation techniques using cell towers, television signals, and public safety radios are all being studied. Another technology uses three-axis accelerometers that measure an offender's movements when no GPS is available which can provide an estimated location. One progressive company, OmniLink, Inc., has introduced a one-piece tracking device that utilizes GPS tracking that is supplemented by cell tower triangulation. The NLECTC has tested this equipment and was very impressed by its indoor tracking capabilities. This relatively new company's system has a few problems that caused its location data to be less than totally reliable, but the introduction of this technology is seen as a big step forward.

The objective of this paper is to encourage agencies to proceed with caution when considering an offender tracking solution, not to abandon this application altogether. Many domestic violence offenders equipped with a tracking bracelet will choose to comply with the conditions of the program. The added accountability may help the offender make the appropriate choices that result in less victimization. However, victims should be clearly warned that the system is not foolproof and they should be encouraged to never let their guard down. A false sense of security may be more dangerous than if no safeguards are taken at all.