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Using Global Positioning Systems (GPS) for Sex Offender Management

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There appears to be a national contest among our legislators and Governors: vying for who will be able to enact the toughest sex offender laws in the nation. Imbedded in these new proposals are harsher punishments, residency restrictions and the use of Global Positioning Systems (GPS), ostensibly to enhance community safety and protect children from sexual victimization.

> **California** *"I am sponsoring this legislation to give California the strictest laws and the toughest penalties for the worst crimes. We want to provide greater protection for all Californians especially the children against sexual predators."* [1]
>
> **North Dakota** *"A person who has that (electronic monitoring) may be less likely to offend," says Dahle. "Because they know this is going to trace where they were." Lt. Todd Dahle is hesitant to say if the changes would make North Dakota's laws the toughest in the country.* [2]
>
> **Iowa** *"It is, indeed, the toughest sex offender bill in the country, and it needs to be,"* said Governor Tom Vilsack of Iowa. [3]
>
> **New Mexico** "*Gov. Bill Richardson proposed toughening New Mexico's sex offender laws to the toughest level in the country."* [4]

Unfortunately, legislators promoting GPS, and media following suit, are

Conference

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Unfortunately, legislators promoting GPS, and media following suit, are misrepresenting the system, creating the public illusion that GPS is a device that will prevent sexual crimes from occurring rather than a promising new technology whose goal is sex offender supervision, management and control. While states are enacting legislation mandating the use of GPS tracking for sexual offenders, corrections officials are weary of the public's mistaken beliefs.

> *"The public likes quick fixes and this appears to be a quick fix. The reality is it's a tool, but it's not a quick fix. It doesn't solve all problems. It does not prevent offenders from committing crimes." (*Mike Fall, Minnesota Department of Corrections)[5]

Global Positioning System as a tool for managing sexual offenders has made its way into legislation without empirical support regarding its effectiveness. The following is a brief description of the science behind the technology, its usefulness and challenges for supervising and managing sexual offenders, and some of the civil rights issues yet to be answered.

GLOBAL POSITIONING SYSTEM: WHAT IS IT?[1] [4, 6, 7]
A Global Positioning System is a network of satellites funded and controlled by the United States Department of Defense (DOD). There are three components of GPS: The satellites in space, the satellite ground control and the user GPS receiver. The system is available to users 24 hours a day anywhere in the world.

The Space Component: Approximately twelve thousand miles above the earth's surface, DOD controls 24 or more active satellites (there are currently 29 satellites in the constellation due to the upgrade program) constantly transmitting coded radio signals that allow for the calculation of time from satellite to GPS receiver on earth. The satellites are powered by solar energy with backup batteries to keep them running in the event of a solar eclipse when there's no solar power. The orbits are arranged so that a receiver on earth, at any time, can receive information from at least four satellites. The radio signals are able to travel through clouds, gas and plastic, but are unable to go through most solid objects like buildings and mountains.

Satellite Ground Control: The GPS satellite control system consists of six monitor stations around the globe and four ground antennas. Information from the monitor stations is then processed at the Master Control Station, operated by the 2nd Space Operations Squadron at Schriever Air Force Base, Colorado, and used to update the satellites' navigation messages. The Master Control Station sends updated navigation information to the GPS satellites through ground antennas using an S-band signal. The ground antennas are also used to transmit commands to satellites and to receive the satellites' telemetry data. [8]

GPS Receivers: GPS receivers continually pick up two coded data signals from

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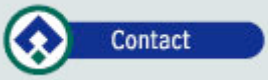

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each satellite: this provides the receiver with the accurate location of the satellites and timing information.

HOW THE GLOBAL POSITIONING SYSTEM WORKS [4, 7]
The location of a GPS receiver is determined by knowing where the satellites are located and calculating, through a series of formulas, the distances of the GPS receiver from each of those satellites. Locating someone through GPS is accomplished through a process of triangulation.

> *To triangulate, a GPS receiver precisely measures the time it takes for a satellite signal to make its brief journey to Earth—less than a tenth of a second. Then it multiplies that time by the speed of a radio wave—300,000 km (186,000 miles) per second—to obtain the corresponding distance between it and the satellite. This puts the receiver somewhere on the surface of an imaginary sphere with a radius equal to its distance from the satellite. When signals from three other satellites are similarly processed, the receiver's built-in computer calculates the point at which all four spheres intersect, effectively determining the user's current longitude, latitude, and altitude.*[9]

GLOBAL POSITIONING SYSTEMS AND SEX OFFENDER MANAGEMENT [10-12]
"*GPS is designed to be a sex offender management tool. It is designed to pick up violations. "* [13]

GPS is an advanced form of electronic monitoring that provides a high degree of surveillance that manufacturers believe has the capacity to inhibit recidivism. GPS monitoring is not designed to be a stand-alone sex offender management tool. Along with other supervision tools (e.g. specialized sex offender supervision caseloads, home contacts, employment verifications, alcohol and drug testing, treatment, case reviews, risk assessment instruments, collateral contacts, polygraph testing) GPS can assist parole and probation officers in actively monitoring sexual offenders living in the community and provide law enforcement with crime scene correlation capabilities.

Active Transmission and Passive Transmission: GPS technology for sexual offenders varies slightly by manufacturer, (some are one unit while others are multiple units) but essentially includes four components:

1. A GPS receiver the supervisee wears around his ankle.
2. A Mini Tracking device worn on a belt that includes a radio frequency receiver that collects radio signals from the ankle bracelet every few seconds to let staff know whether the supervisee is still carrying the mini tracking device
3. A computer processor that can be uniquely programmed for each

supervisee, depending on his particular parole or probation orders. For example, the processor can have information about specific exclusion zones (like the vicinity of the victim's home, school, etc.) as well as inclusion zones (at home after work, treatment programs, etc.). The supervising agency determines in advance whether they want the supervisee to be alerted when he violates conditions of supervision. According to the contract with the supervising agency, the processor will follow specific directions with regard to consequence for each specific violation.

4. A cellular modem that may be activated and follow a specific set of instructions with regard to how to alert the supervising agency when a violation occurs. This is called "**active transmission**" and makes immediate responses possible. However, while a supervising agency MAY have active, 24/7 monitoring and response via text messages, paging etc., it may NOT have the capacity to review the information until it is received. [13]

Passive transmission has many of the same features, but rather than sending information in real time, the system merely maintains a log of the supervisee's location throughout the day. When he returns home and places the tracking device in a charging unit, it is recharged and the stored data is downloaded using a landline telephone to transmit a summary to correctional officers the following day.

Crime Scene Correlation: When a crime occurs, Law Enforcement can input crime scene data into the system and then cross reference with GPS data to determine whether a GPS wearer was (or was not) in the vicinity where the crime occurred. [14, 15] For example, Seth Chamberlin, a registered sex offender with a history of indecent exposure to young girls and women, was arrested as a result of California's GPS pilot project. His GPS device alerted authorities that he violated his parole by entering an exclusion zone (coming within 100 feet of a Southern California high school and spending time on campus at University of Redlands).[16]

COST OF GLOBAL POSITIONING SYSTEMS [10, 11, 16-18]
The dollar cost for GPS devices varies according to manufacturer but runs between $6.00 and $10.00 per day per offender. This does not include the cost of replacing damaged or lost equipment. Although legislation might specify that the cost will be born by the offender, pilot projects around the country have found this provision essentially unenforceable. In Washington's pilot program for example, only one offender (out of 42) was able to pay.

The labor costs involved with using GPS are more difficult to calculate. Supervising officers have to be trained in the use of the technology and supervising sex offenders monitored by GPS is more intensive than general supervision. The California Pilot Program which went into effect in June 2005, quickly realized that

their anticipated 40/1 ratio of wearer to agent was twice as high as anticipated to allow officers to do an adequate job of monitoring. [19] According to a 2005 Florida report, Passive GPS is the most labor intensive of all forms of electronic monitoring because it produces the highest number of "false alarms." [20]

PROMISING OUTCOMES OF GLOBAL POSITIONING SYSTEMS [14, 15]
Utilizing new GPS technologies cannot guarantee that offenses will not occur, but it can give corrections and law enforcement agencies verifiable evidence when an offender has attempted to circumvent his condition(s) for release. [21]

Manufacturers of GPS devices claim that GPS is not a prevention tool, but rather a means of supervision that, along with other components of sex offender management, can help hold an offender accountable for his behavior.

Although Parole agents in pilot projects acknowledge that using GPS is time consuming and at times frustrating, they are learning new information about sex offender behavior patterns. One of the goals of the California GPS Pilot Program is to increase compliance with parole conditions for "High Risk Sex Offenders," and according to Dan Stone, Project Manager for the Program, the results are promising. GPS monitoring is providing agents with information about curfew and travel violations and knowledge of when sex offenders enter exclusion zones. For example, in San Bernardino County, California, a man on parole for sexual battery and indecent exposure was fitted with a GPS device. He was arrested after being tracked to exclusion zones near high schools and college campuses, where two weeks earlier law enforcement received a report of suspicious activity by a man driving a car matching this parolee's vehicle. [22] Another offender in a different California County was arrested when a rape/homicide was committed in his own home and GPS logs showed that the offender was in the home at the time of the crime. [18]

CHALLENGES AND OBSTACLES OF USING GPS FOR MONITORING SEX OFFENDERS [11, 15, 18]

GPS has significant limitations. Signals can be lost in dense vegetation, urban and mountain canyons, in high-rise buildings, subway systems, or if the device is improperly positioned while traveling in a vehicle. Every lost signal must be checked out by a supervisory agent. Ken Merz, director of administrative programs at the Corrections Department in Minnesota, states that GPS monitoring increases the workload for supervisory agents. He says putting more offenders on GPS monitoring will mean more false alarms consuming agents' time. "*You cannot ignore that. You have to go check it out," ..."In the outstate areas, that could mean quite a distance that agent will have to drive to check on something that may very well be a technology problem."* [2]

The devices are not tamper proof. Some manufacturers have acknowledged that

GPS receivers can be cut off with a scissor. Ordinarily this would produce a 2-5 minute delay in signals; however, if the offender was in a dead zone, his tampering would not be picked up in real time. An offender can learn how the device works and violate without the knowledge of the supervisor. For example: He can go to work in an urban center. The receiver will show that he has entered the building, but then loses tracking ability. An offender can put tin foil around the device and leave the building without discovery. According to authorities in Boise Idaho a paroled sex offender was able to cut off his GPS bracelet and flee.[23] This might be avoided by having supervisees carry a motion sensor that notifies the supervising agency of movement when the GPS device is out of communication. However, these sensors are so cumbersome that they have been abandoned for more compact devices that do not have this ability. [13]

GPS technology is presented by the media and politicians as a *"cost effective use of a new technology to help protect our families."* [24] However such rhetoric fails to consider that the overwhelming majority of child victims of sexual abuse are assaulted by someone they know and trust, and that GPS technology will have no impact on children molested in their own homes or the home of the abuser.

GPS and Civil Liberties/Constitutional Issues [25]

Although states are clamoring to get on board using GPS, there have been few outcries from civil rights groups. Yet, use of GPS with Sex Offenders raises some important civil rights issues:

- When does surveillance become a civil rights issue?
- At what point does a society's fear of sexual offending take precedence over the right of a criminal who has paid his debt to society to be fully reintegrated into the community?
- How can we justify targeting an entire class of criminals (sex offenders) for such punitive measures, unrelated to recidivism issues?
- Does lifetime monitoring constitute "Cruel and Unusual Punishment?"

Marc Rotenberg, Executive Director of the Electronic Privacy Information Center, said that GPS monitoring of sex offenders opens a Pandora's Box.

> *"If you start tracking convicted sex offenders, what about convicted drunk drivers or registered handgun owners? What about people law enforcement might consider suspicious but have no basis to arrest? States should proceed down this road carefully."* [16]

John La Fond, a law professor at the University of Missouri-Kansas City and author of the book "Preventing Sexual Violence" says,

> *"A law that requires that everyone who has committed a crime against a young child should be subject to lifetime locator technology is simply foolish."* [23]

Kent Willis, Executive Director of the American Civil Liberties Union in Virginia, further states,

> *"Stigmatizing sex offenders after they've paid their debt to society by tracking them with GPS devices will undermine the goal of making them stable, productive members of our communities…"* [26]

CONCLUSION

Politicians who want to appear "hard on crime" are clamoring to have all registered sexual offenders fitted with GPS tracking devices for life and a public, frightened by media exploitation of admittedly horrifying but nonetheless rare events, seems largely supportive of such measures. When used in concert with other management tools, GPS does hold promise for supervising predatory sex offenders. But a more careful examination of salient facts indicate that universal GPS monitoring of all registered sex offenders would be ill advised. First, most sex offenders, rather than being predatory, victimize in places where we expect them to be (i.e. their own homes and the homes of people they know well.) Second, GPS uses relatively new and expensive technology with known flaws and limitations. There is as yet, little scientific research regarding its effectiveness for management of even predatory sexual offenders. And finally, there are unresolved civil liberties issues that will most likely make their way through the court system during the coming few years. These facts seem to lead to the conclusion that carefully documented trials of varying approaches should continue, but that universal GPS monitoring of all predatory registered sex offenders is premature, and GPS monitoring of non-predatory sex offenders will likely never make much sense.

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[1] Special thanks to Steve Chapin, President, Chief Executive Officer of Pro Tech Monitoring Inc. for reviewing this section for technical accuracy. http://ptm.com/biopage.shtml

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