Cracking down on the new safecracker: automatic dialers provide the latest threat to security.

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IT'S 11:30 PM AND BRENT ATKINSON is driving home from a business dinner that turned into a marathon bargaining session. He is tired, but the weariness doesn't register because he has just bargained his way into a deal with one of the largest and most respected financial corporations in the country. His modest check cashing business will become one of the first independent firms authorized to accept credit card account payments for the giant company. Even at the minuscule percentage he has agreed to, Brent stands to profit handsomely from the deal. Tomorrow the final details will be hammered out in his office.

So far, everything is going well. A last minute check of the store might be a good idea-it will only take a few minutes to make sure everything is clean, neat, and organized. As he pulls into the parking lot of the small shopping center where his business is located, Brent is struck at how different the area is now from the hurried pace of daytime. Only one other car is in the parking lot, and it looks abandoned for the night. The sidewalks are empty, and the only activity is small clouds of insects hovering around the overhead lights. Brent hears nothing but his own footsteps and the sound of a lone car passing by as he walks from the parking lot to the front door of his store.

He mechanically inserts his alarm key into its lock beside the door. Only then does it register that something is out of place. Brent's mind lets go of tomorrow's negotiations to focus completely on the indicator lights on either side of the key switch. He realizes the red light should be lit, not the green one. His mind reaches the logical conclusion almost immediately, and he assigns responsibility to the new counter person. How many times must he explain the importance of setting the alarm? A business like this runs on cash, and even though the safe is one of the most secure models available, no excuse for forgetting the alarm is acceptable.

As he unlocks the door and steps inside, Brent notices a rhythmic, whirring sound coming from just behind the partition that separates the counter from the bookkeeper's area. Realizing that is where the safe is, he runs outside to the pay phone. Although he is shaken, he manages to dial 911. In seven minutes, the area is alive with police cars. A

few curious onlookers begin to gather by the time the police have determined no one is in the building.

What Brent sees when escorted inside is something that looks like a large, motorized, metal mosquito stuck to the front of the massive safe. It is still whirring, turning the safe dial in specific patterns, oblivious to all the excitement. The lock on the safe then emits a loud click, and the mechanical insect beeps once and shuts itself off. The room is suddenly very quiet. The four police officers and Brent just look at one another, hoping one of them can explain what is going on. None of them knows it yet, but Brent's impregnable safe has just been unlocked by a relatively new device-an automatic safe dialer.

Although this account is fictional, it is based on a two-week series of actual burglaries. The thief was adept at bypassing alarm systems and relied on automation to take care of the safes. The total haul of these crimes was estimated at $700,000. Police are understandably reluctant to publicize details of this spree, even though a suspect has been caught.

The concept behind the piece of equipment used in these crimes is simple and direct-it generates and dials sequential combinations until the lock opens. No damage is done to either the lock or the safe, and chances are excellent that the safe owner will not detect any evidence that an automatic dialer has been used.

THE MOST COMMON TYPE OF LOCK used today is that of the three-wheel construction, which means three numbers must be dialed, followed by a turn to physically retract the lock bolt. In some combination-lock instructions, the final turn of the dial may be assigned a number where the dial simply stops, indicating that it is unlocked. Assuming 100 numbers on the dial, the theoretical number of unique combinations is 1,000,000. However, in reality, a good three-wheel lock offers only about 750,000 different combinations. Take into account as well that a lock will almost always open if dialed within half a number of the correct digit. Considering this tolerance, any combination set on a lock could be covered by dialing about 230,000 combinations. This amount of dialing would still be a formidable task for a human, but it is a fairly routine job for a mechanical automatic dialer.

One such device - the ITL-1000 Auto Safe Dialer, distributed to safe technicians by Lockmasters of Nicholasville, KY-can run through all the combinations necessary to open most three-wheel, combination safe locks in around 30 hours maximum. If just one number of the combination is known, the maximum dialing time is reduced to less than one hour. What makes autodialers really dangerous is the simplicity of operation-written and videotaped instructions are included.

A limited number of professional safe technicians have used manipulation to open some types of safe locks in the past. Manipulation, however, is a difficult skill to master and requires regular practice to maintain. To expect a criminal to master manipulation to steal from safes would be the equivalent of requiring car thieves to be master mechanics. An

autodialer will open some locks specifically designed to thwart manipulation and can be attached to a safe and left to work unattended. When it opens a lock, it shuts itself off and stores the combination internally.

The device does have some limitations. Realizing the negative potential of the automatic dialer, the manufacturer designed the dial attachment so two small holes must be drilled into the dial. Most people-except for trained safe technicians-would probably not notice these holes, which can be filled with matching putty to avoid detection. The dial could also be replaced by an identical, undamaged one, but this would require knowledge of safe lock servicing.

A more important limitation centers on the types of locks the dialer can open. The less common four-wheel lock adds another factor of 100. Instead of 1,000,000 theoretical combinations, there are 100,000,000, putting the maximum opening time around 125 days! The autodialer is also limited in that it only works on locks using single-action dialing procedures, which simply means the combination is entered and the lock bolt retracted by dialing clockwise and counterclockwise. This procedure has nothing to do with a safe's handle, which may have to be turned as well.

Locks requiring secondary actions in the opening process are still immune to the autodialer. For example, after its combination is entered, a lock may require the dial to be returned to zero, pushed in and released, and then turned a few degrees more until it stops. Until the introduction of the autodialer, some users expressed a preference for the simpler, single-action locks. Now the extra protection afforded by secondary action locks has overshadowed all other considerations.

The majority of safes in North America are equipped with three-wheel, single-action combination locks. When these units were constructed and sold, no automatic-dialer threat existed. Now, not only is it real, but it can no longer be ignored. Security officers and insurance carriers need to become aware of how automatic dialers work and what types of combination locks thwart them.

The fictitious Brent Atkinson was lucky-his business could have easily suffered a loss from which it would have been difficult to recover. His insurance company would have been understandably reluctant to settle in a case where there was no sign of forced entry. For a total of $150, he had a technician install a dual-action combination lock on his safe-a small price to pay to protect the thousands of dollars in negotiables inside. Now Brent is an authority on the automatic dialer. The rest of us need to catch up with his knowledge-hopefully before the same experience happens to us.

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