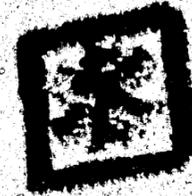


FBI LAW ENFORCEMENT BULLETIN



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Physical Security



By
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Security of a Multimillion Dollar Lottery

The Massachusetts lottery came into existence in September 1971, when the legislature established a five-member commission and set in motion the mechanics of what would develop into a \$200 million-a-year business by 1981. In the 6 frenzied months following the passage of legislation, 120 employees were hired, 4,000 stores (called sales agents) were enlisted to sell tickets, 700 branch banks were organized to act as ticket distribution points and depositories, and 4 additional commission members were appointed to work with the State treasurer, who also served as chairman of the commission in accordance with the statute.¹

Security at the Massachusetts State Lottery Commission is as much a part of the business as the smiles on the faces of the million-dollar winners. Following the appointment of chief of security by the commission, the first priority was to establish background

investigation procedures for all potential lottery employees. Joining the staff at the outset were security officers with investigative experience in Federal, State, and local law enforcement agencies and a security guard force to provide the necessary physical security, thereby providing the basic elements for fraud prevention and protection of assets. All lottery security officers have statewide special police powers to make arrests for any criminal offense committed in connection with the operation of the lottery, under warrants issued by the Massachusetts Department of Public Safety.²

Security Measures

Lottery headquarters is located in Braintree, Mass., a suburb 11 miles south of Boston. All accesses to the building are covered by closed-circuit television, with monitors mounted at the security desk in the front lobby. Additional hall and room cameras in

high-security areas are monitored by members of the security guard force, which is on duty 24 hours a day, 7 days a week.

Employees and visitors must obtain identification badges at the security desk before proceeding to any part of the building. The rear and side doors are alarmed and wired to the main security desk. When in use, such as for delivery of tickets, the security desk is notified and the alarm shut down. After business hours, the alarms remain in force and only the front door provides access.

In higher risk areas, i.e., computer rooms, ticket distribution area, and rooms storing drawing equipment, security measures include closed-circuit television and electronic and sound alarms. Entrance to the computer and distribution rooms is provided by key card access boxes. Each employee assigned an access card is given an individual code designed to allow that



Mr. Weinstock

employee entrance only into areas in which he is authorized.

Although visitors obtain an identification tag at the security desk, they can proceed into the building only when accompanied by the employee with whom they have business. The visitor must also sign a register when entering and exiting the building.

Ticket Security

Security officials targeted the prevention of counterfeiting or alteration of the preprinted lottery tickets as one of the top priorities. Basic to the protection of the weekly game is the numerical sequencing of the tickets, which are printed inhouse on high-quality stock by high-speed printers. A control number system having 1 million possibilities assigns the numbers sequentially to each ticket, thereby preventing the possibility of repetitions. In order to sell more than a million tickets, the random numbering was repeated in multiple pools identified by letter. During the first sales period, 9 pools of 1 million tickets were offered to prospective winners. As a result of the first weekly drawing, seven persons won \$50,000; the other two possibles were returned to the lottery unsold.

Ticket stock is purchased under bid procedures and stored at lottery headquarters. The stock is numbered sequentially in order to account for every blank ticket prior to the computer runs, since it is the six-digit number the player will use to match for prizes. To prevent tampering, a control number unique to each ticket must match the winning number on the computer file in

order for the prize to be paid. In addition, the name of the store to which the ticket is assigned is also printed on the face, as is the drawing date. Weekly game tickets are printed 5 weeks in advance, then are held in a high-security area until the time for distribution.

Sales agents at the store level are allowed to pay prizes up to \$25. Above that, the ticket must be returned to lottery headquarters for validation and processing. Each claimed prize is entered into the computer file by a key-punch operator and must match the weekly winning number for the drawing date and the control number. Prior to the weekly drawing, unsold tickets are returned to headquarters where the playing numbers and control numbers are entered into the computer file, voiding them for contention in that week's drawing.

The lottery was in operation only 2 months when there was an opportunity to test the security of the numerical codes. Following a weekly drawing, a young man brought a ticket with the winning number to the claim center to collect the \$50,000 prize. A photographer, who was in the center at the time, took a picture of the ostensible winner and delivered it to newspapers and wire services that published the story and picture throughout the State.

When the claim form and attached ticket reached lottery headquarters later that day for routine processing, it was immediately apparent that the ticket had been altered. The serial numbers originally assigned to the ticket were not those of a winning combination.

Security personnel contacted the claimant, who boldly told them he would pursue the prize money. The proper paperwork was assembled, and a warrant was sought for the young man's arrest on charges of uttering an



Security guard mans the desk with alarm controls and closed-circuit television monitors.

altered lottery ticket, a felony under the statute.³ He was arrested, tried on the charge, and found guilty following testimony by lottery security and computer personnel. Since then, there have been few prosecutions for ticket forgery.

Security surrounding the drawing of the weekly winning number is as rigid as that governing the printing process. Total integrity of the drawing process is necessary to demonstrate to the buying public that each ticket has the chance of being a winner.

"Untouched by human hands" was an advertising slogan used to promote a product now long forgotten, but it still applies to the device used by the Massachusetts lottery to draw the winning numbers. At the heart of the system are 13 numbered, balanced lucite wheels, each containing digits from 0 through 9 in a unique random sequence. Within each of the wheels is a small red rubber ball, similar to a child's toy. The perimeters of the wheels are louvered and inside, between each digit, are small lucite triangles to separate the numbers. Each wheel is enclosed in a clear plastic box. Six of these boxes are mounted on the Big Money Game board, in an order determined by a computer pro-

gram. At the appropriate time, the only element needed to activate the wheels for number selection is compressed air.

Every Wednesday evening at 7:30 p.m., the weekly winning number is drawn live on a half-hour television show broadcast from a major Boston studio. The weekly drawing is part of the Big Money Game Show on which contestants have the opportunity to compete for the biggest prizes that the lottery offers—\$100,000 (paid \$10,000 a year for 10 years) and the million-dollar prize.

When the program reaches the point at which the weekly number is to be drawn, the cohost of the show simply opens a valve attached to a compressed air tank holding the air at 130 pounds per square inch. The air, forced through six small nozzles beneath the wheels, blows against the louvered rims, which causes the wheels to spin in a blur. The air is released for approximately 5 to 6 seconds, and the wheels spin on their own axles for about 45 to 50 seconds. Inertia and the weight of the rubber ball slow each wheel until the ball finally comes to rest in 1 of the 10 possible digits in each wheel. Even if a lead ball were inserted, the wheel would still spin, and while

it would make fewer rotations, the spot at which it would stop could not be predicted.

Wheels are tested periodically for bias by spinning each 100 times and noting the position each time the ball stops. Once a month an independent testing laboratory checks each axle for balance. When the wheels are not in use, they are stored in a locked room under 24-hour audio and visual surveillance. They are removed 2 hours before the Wednesday evening show and transported to the television studio by a member of the security department. At the conclusion of the television show, they are returned to the locked facility at lottery headquarters.

A similar set of wheels and procedures are used to determine the nightly winning number in the lottery's Daily Numbers Game. Four digits are selected each night at 10:30 p.m. at lottery headquarters in a drawing open to the public and subject to the same security provisions as the weekly drawing.

Instant Game Lottery

Very different problems were encountered when the Massachusetts lottery decided to introduce the first Instant Game in the country.

In 1974, after months of study, the Massachusetts lottery, in conjunction with a private firm, developed a concept which would take all lotteries in a new direction. The idea was to sell a game in which all tickets would be a self-contained lottery, i.e., a player would know whether the ticket was a winner simply by matching numbers or symbols on the card. This presented obvious difficulties in preventing alterations of tickets.

The initial stumbling block was overcome by the development of a latex coating to cover the numbers a player would use to determine a win-

"Security at the Massachusetts State Lottery Commission is as much a part of the business as the smiles on the faces of the million-dollar winners."

ner. The coating devised could not be candled, and handlers and retailers would not be able to discern if a given ticket was a winner. If the coating was disrupted before sale, the ticket was ruled ineligible for purchase. A second vital security measure was taken by printing a unique code number on each ticket. This, too, was covered with the latex coating, but marked with the warning "Void If Removed." That number was the key in the computer file to the playing numbers on the face of the ticket. One copy of the master file was retained by the printer and a second copy was kept by the lottery's validation department.

Lottery personnel oversaw the printing of tickets at the plant, and the finished products, packaged in booklets of 300 tickets each, were shuffled in a random fashion for distribution. When the packets reached lottery headquarters, a further random sequence was assigned to the delivery system by a second block of lottery employees, who were not privy to the printing pattern. The distribution guaranteed that no employee of the printing company or the lottery would be in a position to pinpoint where any of the high-level winners might be purchased. The top-level instant prize was \$10,000. Remaining major prizes, up to

the first prize of \$1,000 a week for the rest of the winner's life, were distributed through a drawing at the conclusion of the game. As a matter of record, that prize was won by a 24-year-old South Boston woman in 1974, who told lottery officials that she planned on living a good long life.

As a step to check possible alterations, it was required that all tickets worth more than \$10 would be submitted to the lottery for validation. They were subjected to visual scrutiny and matched against the VIRN (Void If Removed Number) to establish that the ticket was indeed a winner on the master file.

The Instant Game printing, distribution, and monitoring system worked so smoothly that in the ensuing years, the final drawings were eliminated. In the past 2 years, all prizes are contained on the tickets, including 10 top prizes of \$100,000 each.

The Daily Numbers Game

Bringing the lottery into the most competitive aspect of legalized gambling, the Daily Numbers Game required as much preparation as the previous games. The lottery began with the premise that the illegal numbers purveyor in Massachusetts paid \$600 for a \$1 bet on a three-digit exact win and between \$3,000 to \$4,000 for a four-digit exact win. To make the program attractive to bettors, a winning payout system was devised that would keep the average payoff higher than the illegals. A parimutuel payoff was developed based on 60 percent of the income for a given night. Calculating that the most attractive wagers were three exact and any order, or boxed in the parlance of the streets, and four exact, it was determined that an average of \$5,000 would be paid to winners



Instant Game tickets (above) with latex covering intact on left and control numbers with covering removed from playing area on right. Weekly ticket with control number and weekly drawing number pictured below.

“... efforts made to guarantee the integrity of the products over the years has paid off in public confidence and an increasingly successful operation.”

of a four-digit exact bet and an average of \$700 for a three-digit exact winner. A player of the lottery's Numbers Game would end up with more money in his pocket, after paying the taxes, then he would playing with an illegal operator, where custom demands that the runner be paid a 10-percent bonus on wins.

Prevention of fraud was again a main objective in setting up the Numbers Game in 1976. The commission determined that a system which could be implemented statewide would have the most appeal at the outset, and a network of machinery and personnel was set up to take the daily bets. Betting slips were designed to come with three copies, one for the customer, one for the store, and one for the lottery. Validation machines were purchased to stamp the slip with the name of the store, the date, and a sequential code number identifying the machine and providing a chronology of the day's business.

The machines were relatively simple devices, yet contained several security elements which prevented tampering. Among these is a special ink used for the numbering stamp and a unique bar code within the 12-digit code itself.

To prevent past-posting, a lottery employee who picked-up the slips each day would open the validating machine and advance the date with a small pencil-line instrument. A slip would be run through the machine by the lottery courier, indicating that all the betting for the day was concluded, and any business taken after that point would apply to the next day's business. The employee arranged the slips in sequence. From the so-called “end slip” of the prior day to the current one, the only slips the lottery would honor for that night's drawing were represent-

ed by the lottery copies from that given store.

When the slips from more than 1,800 stores arrived at lottery headquarters in the evening, they were placed on microfilm which was stored in a safe. No bet would be honored unless the lottery copy appeared on the microfilm. After the microfilm was stored, all slips would be read by high-speed optical scanners. All pertinent information was picked off the slips and stored on computer tape. Bet types, total dollar value, the number of days played, and the bettor's number were recorded.

Once all the slips had been read

and the information stored, the winning number would be drawn in the manner detailed previously. The winning number would be fed into the computer and a simple long division would determine that among the players holding winning tickets, 60 percent of the income would be divided.

The lottery system was challenged early in the Numbers Game by attempts to frustrate the security of the system. One method involved collusion between a customer and a store clerk. The clerk would run a blank slip through the validating machine and imprint on it the date and name of the store, as well as a sequence number

One of 500 online computers for the Daily Numbers Game tied to lottery headquarters.



which would appear to be well within the range of the day's business. The perpetrators would then hold the lottery copy out of the day's collection, and following the winning number selection, would fill in the three copies with the winning number and a large \$5 or \$10 bet. The bettor's copy would be presented to the lottery for payment, but under the validation process, the claim would not hold up. Neither the original nor the microfilm copy would appear. Some claimants pushed the matter to court, and in every case, the lottery system was upheld by the judiciary.

In some flagrant cases, lottery security officers noted repeated attempts to perpetrate this fraud, and several successful prosecutions resulted. However, there has been a continued, albeit decreasing, incidence of attempts to alter the number selection after the daily drawing.

Another phase of security responsibility is to control the possibility that a sales agent may decide to withhold “number” bets from the State lottery, pocket the money, and become the bookmaker. A review of the computer printout of a suspected sales agent may reveal skips in the sequential numbers of the lottery copies of the three-part numbers coupon which are validated on that agent's machine. Several investigative techniques may be employed to determine whether the skips are machine connected or attempts to become a partner, thereby defrauding the taxpayers of Massachusetts, the beneficiaries of the lottery profits. A weekly printout discloses the identity of every agent who had any missing slips on any day of the prior week. A standard service call will determine if the machine has malfunctioned. Replacement of the tape in the machine used to print the sequential

number of the missing slip was in fact struck, thereby warranting further investigation. Of course, when a customer arrives at lottery headquarters with a validated bettor's copy of a winning number coupon to file a claim and it is determined that the sales agent did not submit the official lottery copy, it becomes more apparent that a partner of the lottery may exist. Depending on the probability and weight of evidence, possible sanctions include suspension and revocation of the sales agent's license to sell lottery products⁴ or criminal prosecution by other law enforcement agencies for violation of antigambling State law.⁵

In 1981, the lottery purchased 500 online computer terminals for use in the major retail outlets in the State. These machines have absorbed nearly two-thirds of the Numbers Game business and eliminate the courier/slip system to a large extent.

The major benefit of the online system is that each terminal is integrated by a direct line with the central computers at lottery headquarters. Within this system, security is built into the programs which control the daily operations. Each machine is activated by a key start, and the store owner is alerted at the time the machine is installed to treat the terminal with the same precautions he would his cash register.

Once the machine is turned on, a unique agent's code must be entered on the keyboard to begin the day's activity. A bettor may then make a transaction by filling out a betting card or by verbally telling the clerk his bet—number, type of bet, length of play, and amount. The clerk then simply keys the information on the terminal.

The unique coding device prevents any unauthorized use of the terminal and does not allow any interaction with another terminal. The store owner may key in a special program at any time during the business day, and the terminal tape will provide up to the second information on the number of wagers made and the total dollar value. It is simple then for the owner to match that information against his receipts to prevent instore fraud.

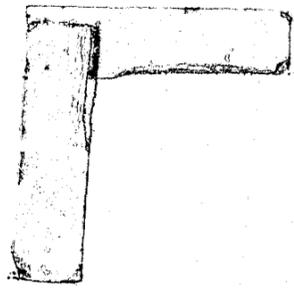
Each terminal is monitored at lottery headquarters, and repairmen are dispatched immediately in the event of malfunction.

At present there are nearly 500 terminals in operation throughout the State, and plans call for 1,000 when the program is fully implemented. With the Daily Numbers Game almost completely automated and the weekly Big Money Game tickets sold from the terminals under a new program, some of the burden of external security will be shifted to internal security—established procedures which monitor the computer personnel and programs.

In all, we are confident that the efforts made to guarantee the integrity of the products over the years has paid off in public confidence and an increasingly successful operation. Security has been the hallmark of this business which has grown from \$56 million in 1972 to \$250 million in 1981. **FBI**

Footnotes

- ¹ Mass. Gen. Laws, ch. 10, § 23.
- ² Mass. Gen. Laws, ch. 147, § 10K.
- ³ Mass. Gen. Laws, ch. 10, § 30.
- ⁴ Mass. Lottery Commission Rules and Regulations 961 CMS § 2.13(7).
- ⁵ Mass. Gen. Law, ch. 27.



END