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FBI Law Enforcement Bulletin

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Fleet Management

Vehicle Rotation Criteria

By CURTIS W. EXLEY

If one common denominator exists that links law enforcement agencies across America, it is the ever-present patrol vehicle. From small-town police departments to large state agencies, the need for economical, high-performance, and comfortable patrol vehicles remains absolute.

While the demand for police vehicles is universal, each agency has its own specific needs. Those needs should focus on agency objectives, financial and operating capabilities, replacement specification, and overall efficiency. With each specific category in mind, the requirement for improved fleet management should become clear.

Transportation equipment costs rank second as the greatest expenditure that a law enforcement agency faces, just below personnel salaries and benefits. Considering cost and frequency of fleet vehicle replacement, law enforcement agencies must consider improved strategies for developing budget estimates and priorities. These estimates should include the bidding process, life-cycle estimates (i.e., vehicle operation and maintenance), purchase and lease options, vehicle rotation or replacement, and fleet liability.[1]

PROCUREMENT OF LAW ENFORCEMENT VEHICLES

Throughout the United States, law enforcement agencies of all sizes annually purchase a varied number of vehicles to replace outdated or worn-out equipment and, when possible, to increase the size of existing fleets. Procurement is a small word given to a large and extremely detailed process. Once an agency begins the procurement

"Leasing...allows agencies to acquire new, updated vehicles with the latest engineering changes."

Lieutenant Exley serves with the Idaho State Police in Coeur d'Alene.

process, it must examine a wide range of considerations, then prioritize and evaluate them. Agencies should weigh specifics on equipment, such as size, dynamics, acceleration, top speed, braking, ergonomics, communications, and fuel economy, according to their relative importance.[2]

However, one of the major areas of concern over procurement speaks directly to budget constraints and the number of vehicles necessarily targeted for replacement. "The posture of the company operationally and financially needs to be explored and the fleet's strategies should compliment the company's strategies short and long term."[3]

A law enforcement agency continually evaluates its budget according to specific needs and potential for growth, coupled with its ability to match increasing costs of equipment and calls for service. External factors, such as politics, hiring standards, and downsizing, ultimately take precedent over equipment prior to the bidding process. Once an agency has established the budget and given a dollar amount to the area of equipment, the bid process can begin.

Bid Process

All agencies, large or small, have mandatory guidelines that they follow. However, new data and specified requirements on vehicle equipment pose additional responsibilities on the individuals or groups responsible for outlining criteria involved with the bidding process. Typically, agencies base selection of option packages on input from other departments and line personnel, word-of-mouth, or what they learn at law enforcement conferences.

After this, agencies review performance tests. Two agencies, the Michigan State Police and the California Highway Patrol, represent trend setters in performance testing.[4] Each year, the two agencies perform a series of predetermined tests that rate police vehicles on their capabilities and performance qualities. These tests ultimately give light to a specific vehicle that has placed highest in all categories and will predominantly depict what most agencies will strive to attain with their bidding process. "Every year since 1978, the Michigan State Police has conducted performance tests on a wide variety of police and special service vehicles. The results of these tests are plugged into a unique competitive bidding formula. One percent of the lowest bid is used as a bid adjustment figure. Better vehicle performance, in six weighted categories from top speed to fuel economy, is rewarded with a dollar and cents advantage."[5]

Once the agency has reviewed all of the data provided by budget analysts and performance standard testing, it can begin the bidding process. "The purchasing process of police cars typically begins with a law enforcement agency drawing up a wish list for what it wants in a vehicle. This list, called a specification, is then submitted to area auto dealers (in some cases, corporate representatives) for bids. The dealers calculate how much the vehicle will cost them, equipped as requested, from the manufacturer and then tack on their overhead costs along with a profit."[6]

For years, the perception has existed that most agencies opted for the lowest bid on their fleet vehicles. Often, the manufacturer or dealer with the sharpest pencil merits the award of the bid. This, in itself, can translate into the ideology of the lowest bid. In actuality, however, it usually is the auto dealer's sales team that steps outside the traditional paradigms of pricing. When that occurs, agencies can get the vehicles they want.

In line with the bid process, a procedure called "piggybacking"

gives smaller agencies the ability to acquire vehicles under the umbrella of a larger agency's bid. In this approach, smaller agencies will attach themselves and their number of required fleet vehicles to a larger agency's bid. This proves advantageous to all who participate as each entity can profit from the cost reduction acquired by ordering a larger number of vehicles. However, the one drawback is that smaller agencies have to accept the standards that the larger agency has endorsed.

As the bidding process nears completion, including requests for specialty, high-performance vehicles, each agency waits its turn for the manufacturers to work through the hundreds of orders. This way, each agency can project a target date as it waits for the acquisition of next year's fleet. The fleet manager must project target dates with acute accuracy so that appropriate priorities can materialize and aging equipment still will fall within the serviceable requirements of the agency. Failure to accurately project equipment life-cycle estimates can have a tremendous effect on maintenance budgets, causing major complications for any agency, large or small.

Life-Cycle Estimates

Considering the cost and frequency of vehicle rotation or replacement, law enforcement agencies must find better strategies for developing life-cycle estimates, including vehicle replacement, operation, and maintenance. The development of strategies can improve vehicle operating efficiency, reduce unnecessary equipment costs, and improve overall agency efficiency.

Because the needs, objectives, and financial and operating capabilities of agencies differ, each agency must analyze the advantages and disadvantages of its methods of maintaining equipment to determine which method will best contribute to the overall objectives of the agency in a cost-effective manner.[7] "Most of all, economic life is of critical importance to equipment managers. It relates to the total stream of costs associated with the specific unit over a period of time. Therefore, it has impact upon both capital and operating budgets. The economic life of a unit refers to the length of time the average total vehicle cost is at a minimum. Total unit expense encompass all costs associated with the ownership of the vehicle."[8]

"The initial purchase price of a vehicle does not always accurately or completely indicate the cost of the vehicle."

The initial purchase price of a vehicle does not always accurately or completely indicate the cost of the vehicle. While the price of a new vehicle represents the expenditure to acquire the automobile, several component factors determine the cost. The identification and analysis of these components of cost form the basis of life-cycle costing.

Agencies should apply life-cycle costing (a method for projecting and evaluating the costs of one particular vehicle with another similar, yet alternative, vehicle) to determine when they should rotate or replace a vehicle. The optimum time to replace a vehicle is when its total costs, averaged over the vehicle's lifetime, are at a minimum. This concept, referred to as the economic life expectancy of the vehicle,[9] includes such costs as depreciation, operating expenses, maintenance, and downtime. Agencies can reasonably expect that some cost components will rise during the economic life of a vehicle, whereas others can decline.[10]

While optimum replacement of a vehicle represents an annual economic dilemma, the key factors in evaluating an efficient replacement program have specific data collection requirements that constitute major concerns in any life-cycle costing. These include initial acquisition costs, purchase price of the vehicle, cost of specifications preparation, preparation for use, operating expenses, insurance, preventive maintenance and repair costs, downtime, and costs related to the disposal of the vehicle.

With this data, a trade-off in costs occurs between young and old fleets. However, the younger the fleet, the lower the fuel, maintenance, and repair costs, but the higher the capital outlay. Because a younger fleet is less prone to breakdowns, these increased capital costs are reduced somewhat by a

decreased need for backup or spare vehicles.[11]

An agency must set priorities to determine which vehicles it needs to replace with its available funding. If an automobile is due to be replaced, an agency should project the total costs of that unit for the following year and compare that cost to the proposed replacement price. An agency should use the price difference, in itself, as the basis for not holding the current vehicle beyond its economic point of replacement. "In order to maintain the lowest cost and maximum vehicle availability for top utilization, replace older vehicles when the cost to operate and maintain them is higher than a new vehicle or when technical obsolescence occurs. This is the basic concept of life-cycle costing and good business common sense."[12]

Once an agency has determined its basis for life-cycle costing, it has the responsibility to place its funding within the most appropriate areas when replacing its fleet. This has brought to light the consideration of a new and recently developed option. Dollar for dollar, which is best—leasing or buying?[13]

Purchase and Lease Options

When should an agency purchase a vehicle? When it has money. Should an agency lease or own? That depends on the amount of money available and the number of vehicles needed. If agencies have cash, they own. If a poor cash flow exists, they have the option to choose the action of using someone else's money by leasing.

Leasing, a recent development, allows agencies to acquire new, updated vehicles with the latest engineering changes. It also allows them to take advantage of increased efficiencies and productivity demands on operations. Agencies also can lower annual operating and maintenance costs due to the new technology. Vehicle maintenance costs of older vehicles change, based on use, proper or improper application, fleet mix, density, and operational or ergonomic modifications.[14]

> ***"While the demand for police vehicles is universal, each agency has its own specific needs."***

Over the past few years, many organizations and fleet managers have pondered the issue of fleet leasing. In today's market, leasing represents a viable option that has sustained merit and is increasing in popularity, especially for smaller agencies. With leasing, agencies look to step outside the traditional paradigms of buying vehicles. All agencies need to focus on what makes the most common business sense when they tie the bidding process, life-cycle costing, and specific-use requirements of patrol vehicles together.

In private industry today, fleet-vehicle leasing is a common practice, with cost as the reason most often cited. As always, a multitude of financial options exists when considering cost and programs available, money management, and budget constraints.[15] "A national account agreement offers fleet managers a variety of branded products and services from multiple vendors nationwide at uniform, predetermined, and usually discounted prices."[16]

Many lease options or packages exist and vary from company to company. However, a consensus of fleet managers nationwide revealed four basic sources for national lease programs.

1) Direct from the manufacturer/vender: The end-user (fleet) can negotiate a national account agreement directly with the manufacturer or service provider. However, agencies must obtain individual agreements for each category of service or product, as well as for each brand name. This method results in multiple billings and is subject to fleet-size requirements. This would constitute a viable option through specific vendors for smaller fleets operated locally.

2) Through an independent service company: These companies negotiate agreements with multiple vendors for a variety of services, products, and brand names of vehicles within each category. They often will perform as a vendor by generating their own programs, including statistical reporting. Some positive features include the agency obtaining complete coverage,

benefitting from single-source central billing, and maximizing all available discounts in light of the service company's huge volume.

3) Through a leasing company: Working with a leasing company proves essentially the same as dealing with an independent service company. However, the use of only national account program coverage, if and when it is available, may be subject to maximum fleet-size requirements. For those fleet managers that use a purchase/disposal program, this method carries the added advantage of combining both programs together for a total package.

4) In-house programs: Larger fleets, operating thousands of vehicles, can develop their own national account program. They can negotiate agreements with manufacturers/vendors for desired services and brand name vehicles when desired. With this approach, multiple billings still would occur, but would enable a company-owned fleet to maximize its available discounts. The advantages in taking this approach would depend on the anticipated lower cost of services and products as opposed to the cost of setting up and maintaining the program.[17]

Regardless of the type of lease program, agencies need to pay particular attention to the detailed requirements listed within any lease agreement. Law enforcement is noted for its 24-hour service and the maximized operations of fleets during strenuous use periods and in all variables pertaining to weather conditions. They also commonly alter the vehicles to accommodate the installation of radios, light bars, video cameras, screens, shotgun racks, and other necessary equipment. When looking at lease options, open-ended leases stand as the most practical for law enforcement. "Fleet administrators should

be looking at open-ended leases where it doesn't matter whether holes are drilled into the vehicles or how many miles they've been driven or how old the cars are."[18]

An open-ended lease gives equity participation, the same as owning the vehicle. At the end of the use cycle, the vehicle will sell for whatever the sale value is at that time. Then, the lessee and the lessor mutually agree on the differential between the sale price and the remaining book balance. If the sale price is higher than the book balance, the agency obtains credit. If the sale of the vehicle is less than the book balance, the agency owes the lessor additional depreciation money. "The state of Michigan put financial models through several different versions and scenarios and each time the models showed that leasing saved the state money. One reason was that the state deferred capital cash expenditures, paying instead only the lease costs incurred in each individual year. We flattened the state's budget in that lease payments are consistent year after year and there are no varying years where we need to go ask for increased appropriations. We are constantly replacing vehicles based on replacement criteria."[19]

For some smaller agencies or municipalities, another option—tax-exempt, lease-purchase financing—exists. This type of lease provides the best of both ownership and leasing: no major capital outlay for acquisition of vehicles and payment spread out over 2 to 5 years. With this option, the agency acquires ownership at the conclusion of the lease term. In that regard, it resembles a conditional sale or an installment purchase transaction. "...Municipal leases are specially designed contracts that do not create general obligation debt. The lease payment is generally an operating expense in the municipality budget even though the agreement may cover many years."[20]

The tax-exempt, lease-purchase agreement allows a governmental entity to acquire essential vehicles immediately. An agency finances the costs at tax-exempt rates and pays no federal income tax on the interest. This type of program is very advantageous if coupled with the open-ended lease.

It affords the agency the ability to acquire the vehicles it needs without major cash outlays, long-term debt obligations, or, in most cases, voter approval.[21]

However, when a lot of fleet managers take their own fleet and compare it against a lease, they typically leave out money costs because these do not appear on their budget line. Most fleet managers factor in depreciation, but they fail to consider other costs.[22] Therefore, while leasing represents a very versatile option, the majority of administrators responsible for police fleets still believe that buying is the only sensible path to take. They believe that considering all factors involving mileage restrictions, life-cycle costing, used-vehicle disposal, and money costs, purchasing the fleet remains the best alternative. "Any time money is involved, whether you use it in an owned environment or a leased environment, there is a cost of using money. When administrators don't identify that money cost, they come up with the conclusion: When comparing to lease costs which do include interest, ownership is less costly."[23]

In the end, only individual fleet managers can determine which is more advantageous for them. They have to weigh all of the advantages and disadvantages of leasing versus buying. As money gets tighter, all governmental entities must seek more creative ways to spread costs. Once an agency determines the direction fleet acquisition will take, it must establish parameters for vehicle replacement.

Vehicle Rotation or Replacement

Establishing fleet vehicle replacement criteria proves a delicate and time-consuming task. Fleet managers continually seek new and innovative ways to aid them in their timely decisions.[24] Typically, they base their evaluation of existing

Replacement Criteria Polling

The author polled several law enforcement agencies to obtain the established guidelines that they follow regarding mileage restrictions and vehicle rotation. The figures received gave merit to the informal survey conducted by the Michigan State Police as the numbers prescribed with rotation fell well within the survey's established parameters. The mean average for fleet vehicle rotation of these 15 agencies was 70,800 miles.

Agency Polled	Mileage Restriction
Ada County, Idaho, Sheriff's Office	80,000 miles
Boise, Idaho, Police Department	80,000 miles
California Highway Patrol	75,000 miles
Idaho State Police	85,000 miles
Kansas Highway Patrol	45,000-50,000 miles
Kent, Washington, Police Department	45,000 miles
Las Vegas, Nevada, Metro Police Department	45,000 miles
Michigan State Police	60,000-70,000 miles
Missouri Highway Patrol	45,000-50,000 miles
Montana Highway Patrol	87,000 miles
Nevada Highway Patrol	80,000 miles
Oregon State Police	90,000 miles
South Dakota Highway Patrol	80,000 miles
Washington State Patrol	75,000 miles
Wyoming Highway Patrol	100,000 miles

fleet equipment and ideal replacement decisions on criteria in several major areas. Because replacement criteria is not always detectable from the outward appearance or operation of the vehicle, agencies must establish such guidelines at the time of purchase.

Today, it is commonplace for all governmental entities to follow the requests of the public and stretch existing tax dollars. City councils, police commissions, and state legislatures continue to ask law enforcement agencies of all sizes to reduce their budgets. This results in agencies buying less, stretching supplies, and making things last longer, including patrol vehicles.

If an agency must make its vehicles last longer, it has to ask what its needs are and how it can work smarter to calculate how long a vehicle will last. That is a difficult, if not impossible, question to answer. "When asked how long a car will last, automobile manufacturers respond, 'That is like asking, how high is up?' They're not dodging the question; the fact is no one has done research on the subject. Even two of Michigan's major universities, Wayne State and the University of Michigan, have no idea of how long an automobile will last, despite the fact that they have large engineering schools that supply engineers to all the major automobile companies."[25]

An informal survey by the Michigan State Police shows that most police agencies take their patrol cars out of service between 60,000 and 100,000 miles. At the extreme ends of the mileage spectrum, some departments run cars only 45,000 miles and others up to 150,000 miles. Some agencies, bound by state law, must take their vehicles out of service at a specific mileage. Others use their vehicles for primary service until 50,000 miles and then place them into backup service, low-mileage service, or take them out of service completely and sell them at auction.[26]

"Once the agency has reviewed all of the data provided by budget analysts and performance standard testing, it can begin the bidding process."

Overall, with the cumulation of independent studies, benchmarking standards, technical data, and cost analysis surveys, fleet managers are aided in their decision-making process when they set their rotation or replacement standards. However, elected officials, who see budget constraints and want to make the dollars stretch even farther, continually challenge these standards. Therefore, fleet managers must look at one of the most important issues when deciding how long their agencies can afford to keep their vehicles safe, especially when trying to cut corners to appease citizens concerned with government spending. "When I'm chasing someone at 100+ mph in a car with over 100,000 miles on it, how safe am I? Even with the best of care and detailed safety inspections, potential problems can be undiscovered. While many parts failures are irritating at low speeds, at high speeds they can be disastrous, even deadly."[27]

Agencies should base replacement criteria for a fleet vehicle on elements surrounding the age of the vehicle, operating costs, mileage, vehicle fatigue, and current usefulness. These individual areas have their own importance and may seem insignificant; however, when considering the criteria in combinations, they provide a whole new perspective.[28]

With high-mileage vehicles, the most common reaction concerns the engine, transmission, and differential. While those objects represent the heart of the automobile and the highest cost items, they are the ones least likely affected overall by high mileage. In fact, the drivetrain of a police car with 100,000 miles on it may well be in better condition than the proverbial "little old lady's 25,000-mile sedan only driven to church and the supermarket."

More than 75 percent of engine wear occurs on startup and shutdown. During those times, bearings are not lubricated and literally run dry for a short period of time. Short trips, where the engine and other components never get a chance to fully warm up, also are hard on a vehicle because moisture does not

evaporate and can mix with the normal products of fuel combustion to form acids that attack bearings and other engine parts. As long as the prescribed maintenance intervals are followed, drivetrain components usually incur the more minor problems a high-mileage vehicle will suffer.

The ancillary parts of the vehicle are the ones that will break down. Suspension components wear out or weaken and break. Parts, such as bushings, deteriorate. Brake and fuel lines and wiring harnesses wear through at body attachment points or where they pass through frame members. Interior components, such as seats, controls, and interior upholstery, show signs of wear thousands of miles before a mechanical component. "Look at a 2-year-old patrol car; it will still look good on the outside while the interior shows wear on the seats, arm rests, pedals, and other areas. The passenger seat may look new, but the driver's seat, well sprung, showing the effects of thousands of hours of patrol."[29]

Engineers agree that two factors determine the life expectancy of a vehicle: environment and maintenance. Maintenance is seldom a problem for police agencies; common sense dictates that they take care of their equipment. As long as agencies follow the manufacturer's recommended maintenance schedules during the life-cycling process, their cars should hold up reasonably well.[30]

However, even regular maintenance does not guarantee that a vehicle will stay in good condition forever. Automobiles are made of plastic, steel, rubber, and aluminum, which will weaken over time. There has to be a point when those materials are not strong enough to take the wear and tear police give them.

Because no definitive information exists on how long various parts last in a vehicle, the question of when safety-related parts become dangerous constitutes an arguable point. Safe-operating procedures should dictate that parts be replaced at an arbitrary point before they show excess wear and certainly before any potential weakness and failure can occur. Arbitrary or scheduled replacement of parts leads to another problem—expense. Higher maintenance downtime increases costs. Mechanics and replacement components create expenses; moreover, cars off the road do not produce results, they produce bills.[31]

> *"...all agencies should take a long, hard look at their rotation policies."*

The other factor that determines the life expectancy of a vehicle is the conditions it operates under. Not just the use aspect, such as law enforcement or civilian, but the actual environment. The ideal environment for anything composed primarily of steel is a warm, dry climate such as the American Southwest. Because the area is warm and dry, steel is less likely to rust. In areas where there is more moisture or corrosive elements, such as salt, metal life expectancy is much shorter. States where salt or chemicals are used on the highways in winter or the coastal states where salt is always in the atmosphere provide the ideal recipe for short vehicle life.

Overall, a newer car may cost more money, but it can save the agency money in reduced fuel and maintenance costs. Also, an agency's image can suffer if all it uses are older cars. How safe will citizens feel when they see a 10-year-old patrol car on the streets? They may applaud the agency's fiscal responsibility, but they also may ask why the cars are not safer and more up-to-date.

Fleet Liability

A final point rests with litigation. What are the legal consequences of keeping a car too long? All in all, the concept of saving money by repairing cars or keeping them too long can be expensive. If an older car causes a crash,[32] is the officer, agency, or fleet manager open to litigation that could cost several times the replacement of the entire fleet? Agencies should not take lawsuits or litigation lightly. There are cases on file providing data where agencies have lost lawsuits because of poorly maintained equipment, which was the main cause in automobile crashes. A jury may hesitate to find fault with a case involving a new patrol vehicle, but has less of a problem finding guilt with an agency operating poorly maintained or out-of-date equipment.

In the private sector, the National Association of Fleet Administrators (NAFA) presents factual information that identifies the personal liability that fleet managers and their employers face when insufficient or improper maintenance causes traffic-related fatalities. They contend that this liability has surfaced specifically in the area of poorly maintained trucks or commercial carriers. NAFA has identified the area of commercial carrier/big-rig liability because of the tremendous amount of money attached to the suits. Facts state that when a tractor trailer is wrecked, the money figures run well over $150,000. Trucking companies that have large fleets of trucks are thought to have easy access to cash pools through insurance carriers. Therefore, they are projected as easy targets for litigation. Once the suit is filed, those individuals who manage the fleet are identified in the suit. Although NAFA has addressed this issue specifically concerning commercial/big-rig fleets, they want fleet managers who oversee fleets of all sizes to become aware of this increasing risk, as government also is sometimes viewed as having "deep pockets." "The cost associated with good maintenance pales in comparison to the price that you and your employer will pay if a poorly maintained truck in your fleet kills an innocent person. In New Jersey, for example, fleet managers and company owners have been convicted of manslaughter and jailed when their poorly maintained trucks caused traffic fatalities. Even when criminal prosecution is not called for, an investigation may expose a company to civil liability which can cripple or even destroy it. Strict adherence to some very basic principles will drastically reduce your liability as a fleet administrator and prevent you and your company from falling prey to risk."[33] While legal standards often are different for commercial and public enterprises and liability for state and municipal agencies often is limited by law, the issue of liability still is a major concern for law enforcement agencies.

With these types of issues becoming more prevalent with time, it becomes absolutely necessary to assess the risks and reevaluate the old ways of doing business. By making safety one of the top priorities and continually evaluating the life-cycling process, law enforcement agencies can replace older equipment with newer equipment, which will save lives and protect them from issues surrounding liability.

RECOMMENDATIONS

Research on fleet management points to a fleet remaining as new as possible. Most information states that the optimum mileage for rotation stands anywhere between 50,000 and 70,000 miles. Mechanical repairs go up quite substantially after a vehicle reaches an average of 70,000 to 75,000 miles.

Increase in the speed limits on state and federal highways is taking place nationwide. With the increase in the speed limits, additional stress occurs on each police vehicle that patrols the highways. This is because of the higher and longer sustained speeds that officers must use to overtake violators. Once the police vehicle has reached the higher speeds, it will incur additional wear and tear on an already taxed brake system as the driver must apply the brakes longer to slow down the vehicle.

With these areas of concern in mind, all agencies should take a long, hard look at their rotation policies. Law enforcement agencies should give specific consideration to not exceeding a 70,000- to 75,000-mile vehicle rotation policy. Agencies should place the safety of the men and women operating the vehicles above any other considerations.

CONCLUSION

The patrol vehicle represents a major expenditure for law enforcement agencies. Those elected officials who want to tighten government spending have begun to challenge the current methodology used for determining vehicle replacement. More and more law enforcement agencies are being forced into keeping fleet vehicles longer. Therefore, the equipment

sustains more mileage and wear and tear before being rotated out of fleets.

When looking at an appropriate time to rotate a vehicle out of service, agencies need to consider several items. First, they must take a candid look at the bidding process. If agencies address the proper specifications, they should have little problem in picking the best vehicle from the published performance testing. Second, when they decide which fleet vehicles are appropriate for their needs, they must look at their financial options. Some agencies have the capabilities to purchase their fleets and others have opted to lease. Third, once agencies receive their fleet of new vehicles, they must evaluate and project the economic life expectancy of the equipment. This happens during the vehicle life-cycling process and includes maintenance, operating expense, downtime, and depreciation. Fuel savings represent a big factor as a younger vehicle gets better fuel economy. Fourth, agencies must look at the established requirements surrounding mileage restrictions and extended warranties. Some agencies have rigid guidelines that require mandatory rotation at given intervals. Finally, agencies must give proper consideration to litigation surrounding the vehicles that comprise their fleets. If vehicles are causing crashes, it is imperative that agencies make adjustments in their replacement policies.

All and all, fleet rotation is not a simple process. Administrators must consider many factors and reevaluate them annually. The safety of their officers and the public they serve, the image their agencies project, and the efficiency and effectiveness of their operations depend on their decisions regarding how they manage their vehicle fleets. ✦

> **“...even regular maintenance does not guarantee that a vehicle will stay in good condition forever.”**

Endnotes

[1] The author based this article on research that he conducted for his agency in 1996. The purpose of the project was to provide factual data and alternative measures that agencies should consider when establishing fleet vehicle rotation criteria. For more recent references on this topic, see Tom Yates, “Time and Money Saved: Illinois State Police Bring Fleet Management Close to State-of-the-Art,” *Law and Order*, March 1997, 84-86; “Extended Replacement Cycles Can Bring Positive Results,” *NAFA Fleet Executive*, November 1997; “Resolving the Lease vs. Ownership vs. Reimbursement Question,” *NAFA Fleet Executive*, October 1998; “Depreciation: For Many, *the* Key to Controlling Fleet Costs,” *NAFA Fleet Executive*, January 1999; “Demystifying the Science of Ergonomics and How It Applies to Fleet” and “Fleet Managers Share Productivity Tips,” *NAFA Fleet Executive*, February 1999; “Refurbishment: A Less Costly Alternative to Vehicle Replacement,” *NAFA Fleet Executive*, March 1999; “Taking the Sting Out of the Lease vs. Buy vs. Reimburse Question,” *NAFA Fleet Executive*, June 1999; and the National Association of Fleet Administrators (NAFA) Web site *http://www.nafa.org*.

[2] Mark Levine and Dierdre Martin, “The Procurement of Police Cars,” *Law Enforcement Technology*, September 1989, 22-23 and 39-43.

[3] John E. Dolce, *Analytical Fleet Maintenance Management* (PA: Society of Automobile Engineers, Inc., 1994).

[4] Supra note 2.

[5] Ed Sanow, “1996 Michigan State Police Vehicle Tests,” *Law Enforcement Technology*, November 1995, 23-28.

[6] Supra note 2.

[7] Bob Duran, “The Price Is Right,” *Police Technology and Management*, September 1990, 28-31.

[8] Supra note 3.

[9] “Saving Dollars with Preventive Maintenance,” *Business Vehicle Management*, First Quarter 1996, 22-24.

[10] Supra note 7.

[11] David Griffith and Associates, LTD, “Benchmarking for Quality in Public Service Fleets,” *National Association of Fleet Administrators* (1993): 14-26.

[12] Supra note 3.

[13] “How National Account Programs Can Control Fleet Expenses,” *Automotive Fleet*, February 1996, 18-22.

[14] Supra note 3.

[15] “Police Fleets Question the Benefits of Buying vs. Leasing,” *NAFA Fleet Executive*, October 1995, 10-16.

[16] Supra note 13.

[17] Supra note 13.

[18] Supra note 15.

[19] Supra note 15.

[20] Supra note 15.

[21] Supra note 3.

[22] Supra note 15.

[23] Supra note 15.

[24] Supra note 3.

[25] Tom Yates, “It Ain’t the Years, It’s the Miles,” *Law and Order*, August 1992, 69-72.

[26] Supra note 5.

[27] Supra note 25.

[28] Supra note 7.

[29] Supra note 25.

[30] Supra note 3.

[31] Supra note 25.

[32] Crash is the current term used in the industry because it more clearly defines an incident that may be caused by certain elements or actions as opposed to a strictly “accidental” occurrence.

[33] Supra note 15.

Focus on Technology

Communications Assistance for Law Enforcement Act (CALEA)

By Michael P. Clifford

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Lawfully authorized electronic surveillance remains important to law enforcement as telecommunications systems become cornerstones of everyday life. Dependence on telecommunications for business and personal use has increased dramatically. Computers, data services, and mobile communications have become increasingly important to consumers.

The three primary techniques of lawfully authorized electronic surveillance available to law enforcement are pen registers, trap and trace devices, and content interceptions. Pen registers and trap and trace devices account for the vast majority of lawfully authorized surveillance attempts. These techniques record and decode various types of dialing and signaling information used in processing and routing the communication, such as the signals that identify the numbers dialed (i.e., outgoing) or the originating (i.e., incoming) number of a telephone communication. The third, and more comprehensive, form of lawfully authorized electronic surveillance includes not only the acquisition of call-identifying, or dialed-number, information but also the interception of communications content.

Lawfully authorized electronic surveillance is crucial to effective law enforcement, but it is used sparingly. This is particularly true with respect to the interception of communications content. The federal government, the District of Columbia, the U.S. Virgin Islands, and 45 states allow the use of this technique, but only in the investigation of felony offenses, such as kidnaping, extortion, murder, illegal drug trafficking, organized crime, terrorism, and national security matters, and only when other investigative techniques either cannot provide the needed information or would be too dangerous. A judge may not approve a call-content order for a "period longer than is necessary to achieve the objective of the authorization, nor in any event longer than 30 days." [1] Applicable federal and state laws and procedures also require continuous judicial oversight throughout the tenure of the intercept activity. This oversight is accomplished through the filing of regular reports with the authorizing judge "showing what progress has been made toward achievement of the authorized objective and the need for continued interception." [2]

CALEA Inception

In October 1994, at the request of the nation's law enforcement community, the U.S. Congress enacted the Communications Assistance for Law Enforcement Act (CALEA) to clarify the scope of a telecommunications carrier's duty in effecting lawfully authorized electronic surveillance. Although telecommunications carriers were required since 1970 to cooperate with law enforcement personnel in conducting lawfully authorized electronic surveillance, CALEA, for the first time, requires these carriers to modify the design of their equipment, facilities, and services to ensure that lawfully authorized electronic surveillance actually can be performed.

CALEA Implementation

On February 24, 1995, the attorney general delegated management and administrative responsibilities for CALEA to the FBI. The FBI, in turn, created the CALEA Implementation Section (CIS), which works with the telecommunications industry and the law enforcement community to facilitate effective and industrywide implementation of CALEA. Consistent with the Federal

Communications Commission's (FCC) duty to regulate the use of wire and radio communications, Congress assigned specific CALEA responsibilities to the FCC. These include, but are not limited to—

- determining, in consultation with the attorney general, which entities should be considered telecommunications carriers for purposes of CALEA; and
- establishing technical requirements or standards for compliance with the assistance capability requirements of CALEA if industry associations or standard-setting organizations fail to issue technical requirements or if a government agency or any other person believes that industry-adopted standards are deficient.

Telecommunications carriers must ensure that equipment, facilities, or services that provide customers the ability to originate, terminate, or direct communications meet certain assistance capability requirements. These include the—

- expeditious isolation and interception of communications content;
- expeditious isolation and access to call-identifying information;
- delivery of communications content and call-identifying information to law enforcement;
- unobtrusive delivery of this information while protecting the privacy and security of communications not authorized to be intercepted; and
- ensuring the capability to perform multiple simultaneous interceptions.

Congress also recognized that without the assistance of manufacturers of telecommunications equipment and support service providers, carriers would be unable to comply with CALEA. Therefore, it imposed an affirmative duty on manufacturers of telecommunications equipment and support service providers to make available all features or modifications necessary to meet the assistance capability requirements of CALEA.

> "Lawfully authorized electronic surveillance is crucial to effective law enforcement...."

Funding Issues

The FBI has implemented a reimbursement strategy that allows telecommunications carriers to receive CALEA software at no charge. Under nationwide right-to-use licenses, the FBI pays the switch manufacturers to develop CALEA software. These manufacturers then provide the telecommunications carriers with this software at no charge for installation onto the carriers' switching equipment.

Law enforcement is now at an important juncture of CALEA's implementation as CIS proceeds to reimburse certain eligible carriers for deploying switch software solutions. The deployment of the software solutions to carrier switches will require a certain level of engineering work and hardware to bring the software online. As CIS negotiates with carriers toward reasonable costs in this essential phase of CALEA implementation, CIS will need to obtain support for the required funding. Based upon current negotiations, CIS anticipates those reasonable costs to exceed the remaining balance in the Telecommunications Carrier Compliance Fund by approximately $200 million dollars. CIS also needs to combat various industry-initiated efforts through the courts, the FCC, and Congress to delay or limit the implementation of CALEA. These delays are impeding, and will continue to impede, the ability of law enforcement to effect lawfully authorized pen register and trap and trace orders.

Liaison Efforts

To ensure that law enforcement leaders remain cognizant of the progress CIS is making and the issues with which CIS is grappling, CIS formed a Law Enforcement Executive Forum (LEEF) in October 2001. Membership in this forum (which was attended by federal, state, and local law enforcement officials from around the country) was extended to law enforcement executives recommended by their national organizations, including the International Association of Chiefs of Police (IACP), the National Sheriffs'

Association (NSA), the National Association of Attorneys General (NAAG), and the National District Attorneys Association (NDAA).

The CIS represents the interests of the entire law enforcement community in matters pertaining to CALEA. CIS has established a Web site, *http://www.askcalea.net*, to disseminate implementation details and provide an avenue for requesting additional information.

Conclusion

The technological advances of the past decade have affected every aspect of society, especially the criminal justice community. As new communications products arrive in the marketplace, new challenges arise for those in the law enforcement profession who must conduct lawfully authorized electronic surveillance.

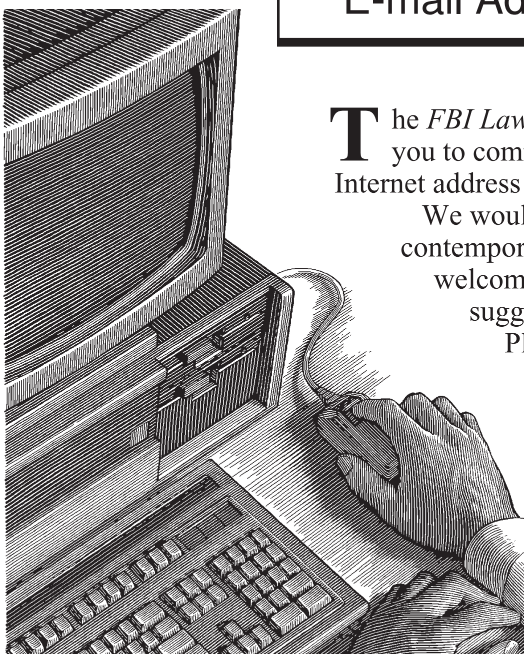
To assist the law enforcement community, the U.S. Congress passed the Communications Assistance for Law Enforcement Act to ensure that manufacturers and carriers design equipment, facilities, and services that are compatible with lawfully authorized electronic surveillance needs. The FBI has management and administrative responsibilities for CALEA and created the CALEA Implementation Section to work with the telecommunications industry and the law enforcement community to effectively implement CALEA. This partnership can ensure that lawfully authorized electronic surveillance remains one of the most valuable tools in law enforcement's crime-fighting arsenal. ✦

Endnotes

[1] 18 U.S.C. § 2518 (5).
[2] 18 U.S.C. § 2518 (6).

Special Agent Michael P. Clifford is the section chief of the FBI's CALEA Implementation Section in Chantilly, Virginia.

The *Bulletin's* E-mail Address



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We would like to know your thoughts on contemporary law enforcement issues. We welcome your comments, questions, and suggestions regarding the magazine. Please include your name, title, and agency on all e-mail messages.

Also, the *Bulletin* is available for viewing or downloading on a number of computer services, as well as the FBI's home page. The home page address is *http://www.fbi.gov*.

Bulletin Reports

Electronic Crime Scene

The *Electronic Crime Scene Investigation: A Guide for First Responders* from the National Institute of Justice (NIJ) presents procedures for handling an electronic crime scene. Computers and other electronic devices are being used increasingly to commit, enable, or support crimes against persons, organizations, or property. This NIJ guide is intended for use by first responders who have the responsibility for protecting an electronic crime scene and recognizing, collecting, and preserving electronic evidence. The document is not all-inclusive. Rather, it deals with the most common situations encountered with electronic evidence. This guide (NCJ 187736) is available electronically at *http://www.ncjrs.org/txtfiles1/nij/187736.txt* or by contacting the National Criminal Justice Reference Service at 800-851-3420.

Juvenile Justice

Preventing Delinquency Through Improved Child Protection Services from the Office of Juvenile Justice and Delinquency Prevention (OJJPD) reviews research on the link between childhood maltreatment and juvenile and adult offending. Research indicates that the prevalence of child abuse or neglect among delinquent offenders is substantially greater than it is among the general population. Moreover, maltreated children are significantly more likely to become involved in delinquent behavior than children who are not maltreated. The information described in this OJJPD bulletin shows that designing and implementing programs to reduce the incidence of child maltreatment are a promising, though often overlooked, strategy for delinquency prevention. This 20-page bulletin (NCJ 187759), written by Richard Wiebush, Raelene Freitag, and Christopher Baird, is available electronically at *http://ojjdp.ncjrs.org/pubs/delinqsum.html#187759*, or it can be obtained by calling the National Criminal Justice Reference Service at 800-851-3420.

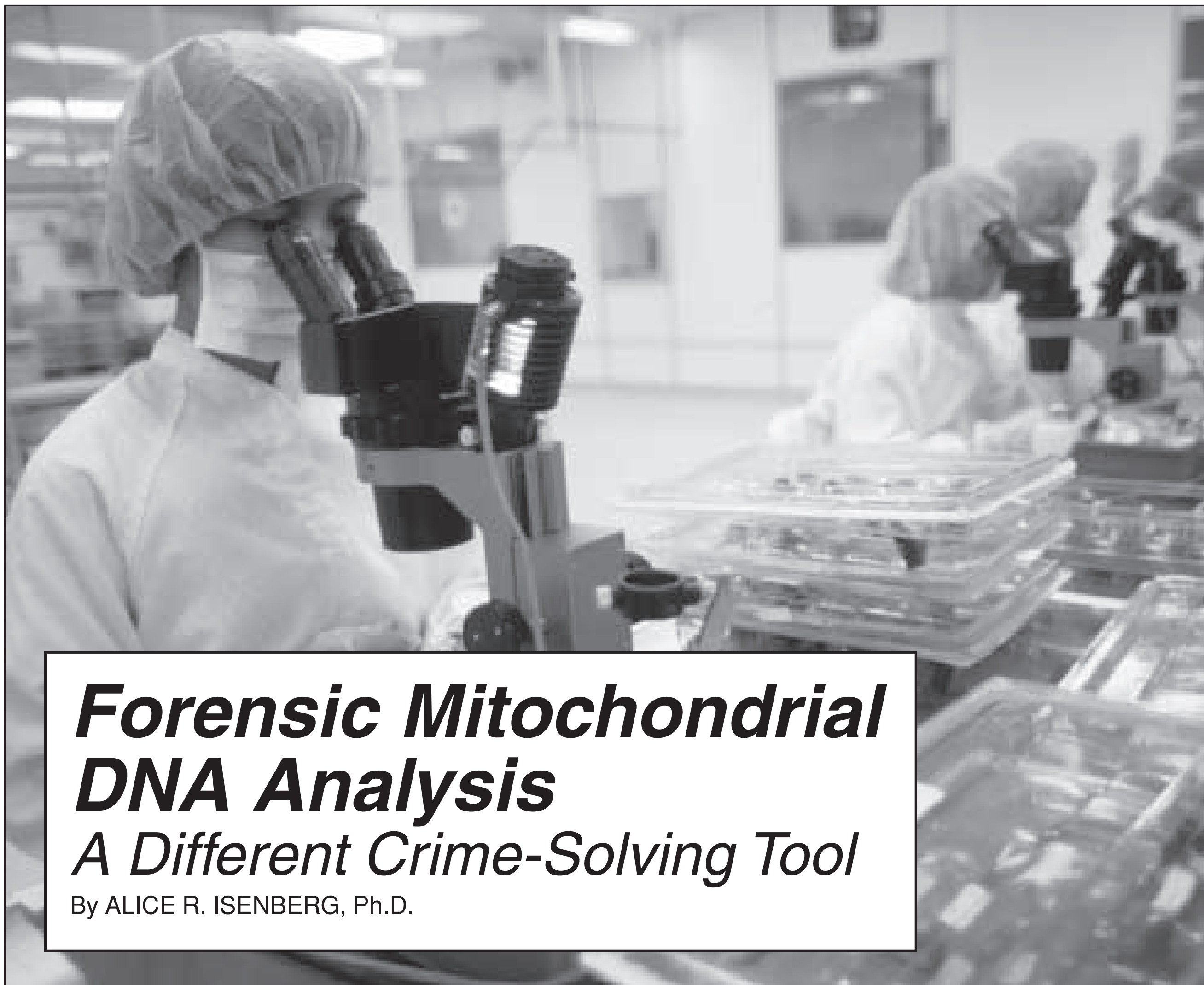
Violence Prevention

The Office of Juvenile Justice and Delinquency Prevention (OJJDP) offers *Blueprints for Violence Prevention*, a 16-page bulletin that provides information on effective violence prevention and intervention programs to reduce adolescent violent crime, aggressive delinquency, substance abuse, and predelinquent aggression and conduct disorders. This OJJDP bulletin describes the criteria established to designate model programs as part of the Center for the Study and Prevention of Violence's Blueprints for Violence Prevention Initiative and 11 model programs that have met these standards. It provides contact information for each program and discusses replication and funding resources as well. This Bulletin (NCJ 187079) is available electronically at *http://ojjdp.ncjrs.org/pubs/violencvictsum.html#187079* or by contacting the National Criminal Justice Reference Service at 800-851-3420.

Reference and Statistics

Indicators of School Crime and Safety 2001 provides the most current detailed statistical information of the nature of crime in schools. This report, the fourth in a series of annual reports on school crime and safety from the Bureau of Justice Statistics and National Center for Education Statistics, examines crime occurring in school and on the way to and from school. The information is presented from the perspectives of students, teachers, principals, the general population, and from an array of other sources. Indicators described include fatal and nonfatal student victimization, nonfatal teacher victimization, fights at school, threats or injuries at school from weapons, students carrying weapons to school, students' use of alcohol and marijuana, and student reports of drug availability on school property. This report (NCJ 190075) is available electronically at *http://www.ojp.usdoj.gov/bjs/abstract/iscs01.htm* or by calling the National Criminal Justice Reference Service at 800-851-3420.

Bulletin Reports is an edited collection of criminal justice studies, reports, and project findings. Send your material for consideration to: *FBI Law Enforcement Bulletin*, Room 209, Madison Building, FBI Academy, Quantico, VA 22135. (NOTE: The material in this section is intended to be strictly an information source and should not be considered an endorsement by the FBI for any product or service.)



Forensic Mitochondrial DNA Analysis

A Different Crime-Solving Tool

By ALICE R. ISENBERG, Ph.D.

On a December evening in 1994, a woman and her 4-month-old son were abducted and left to die in a wooded area in Pennsylvania. Although the woman's husband was an early suspect, detectives soon realized that he had not been involved in the crime. Before long, his jealous ex-girlfriend became the prime suspect in the murder investigation. Due to the careful collection of trace evidence from the victim's vehicle, investigators located a hair, stained with the victim's blood, on the back of the driver's seat. Laboratory tests performed on this hair and a sample from the suspect demonstrated that the evidentiary hair had the same mitochondrial DNA sequence as the one from the suspect and possibly could have come from her. Later, the suspect was tried and convicted of killing both the woman and her baby.

The FBI Laboratory began analyzing mitochondrial DNA (mtDNA) in casework in June 1996. Since that time, the DNA Analysis Unit II, using mtDNA sequencing techniques, has processed approximately 500 cases and recently has created the National Missing Persons DNA Database to assist the law enforcement community with missing person cases. Mitochondrial DNA analysis, while similar to the forensic nuclear DNA analysis[1] found in the news so often in the past few years, has several differences that impact its analysis. Because current cases, as well as

many cold cases housed in the archives of law enforcement agencies, potentially could benefit from mtDNA analysis, it becomes important for investigators to understand the capability of this technique as a crime-solving tool.[2]

> **Given the many different circumstances that can surround a case, sometimes advantages exist in analyzing mtDNA over nuclear DNA....**

Dr. Isenberg serves in the DNA Analysis Unit II of the FBI Laboratory.

SCIENCE OF MITOCHONDRIAL DNA

Found in almost every cell in the human body, DNA, an abbreviation for deoxyribonucleic acid, contains the information that enables the body to function and gives everyone a unique appearance. DNA is composed of four building blocks, called bases, represented by the letters A, C, G, and T. These bases form a structure known as a double helix because it is composed of two strands of DNA and looks similar to a twisted ladder or a circular staircase. In this structure, two bases comprise each rung of the ladder or step in the staircase. In mtDNA analysis, the order of the bases provides the forensic scientist with a basis for distinguishing between unrelated individuals. A phone number analogy can illustrate the importance of the order of the bases in DNA. The phone number 555-1234 would reach one particular individual when dialed, whereas a phone number containing the same digits in another order, such as 555-4321, would contact an entirely different individual. In a similar manner, forensic scientists can use the order of bases in mtDNA to distinguish between unrelated individuals.

DNA can be found in two separate locations within most cells in the body. As an analogy, the yolk and the white make up the two major components of an egg. Likewise, nuclear DNA is found in the nucleus of the cell, which is similar to an egg yolk. Two copies of nuclear DNA are found in each cell: one copy from the father and one copy from the mother. Because nuclear DNA is inherited from both parents, it remains unique to individuals, with the exception of identical twins. Over the past few years, nuclear DNA analysis has played a pivotal role in the adjudication of several important cases, thereby garnering much attention from the media. However, mtDNA analysis can offer the law enforcement community some equally noteworthy assistance in solving crimes.

Mitochondrial DNA differs from nuclear DNA in its location, its quantity in the cell, its mode of inheritance, and its sequence. Mitochondrial DNA is located in structures, called mitochondria, found in the outer layer of the cell, much like the egg white. While the nucleus of the cell contains two copies of nuclear DNA, cells may contain hundreds of mitochondria, each of which may contain several copies of mtDNA. Thus, mtDNA has a greater copy number than nuclear DNA. This characteristic of mtDNA proves useful in situations where the amount of sample is very limited. Typical sources of evidence suitable for mtDNA analysis include hairs without tissue, bones, and teeth.

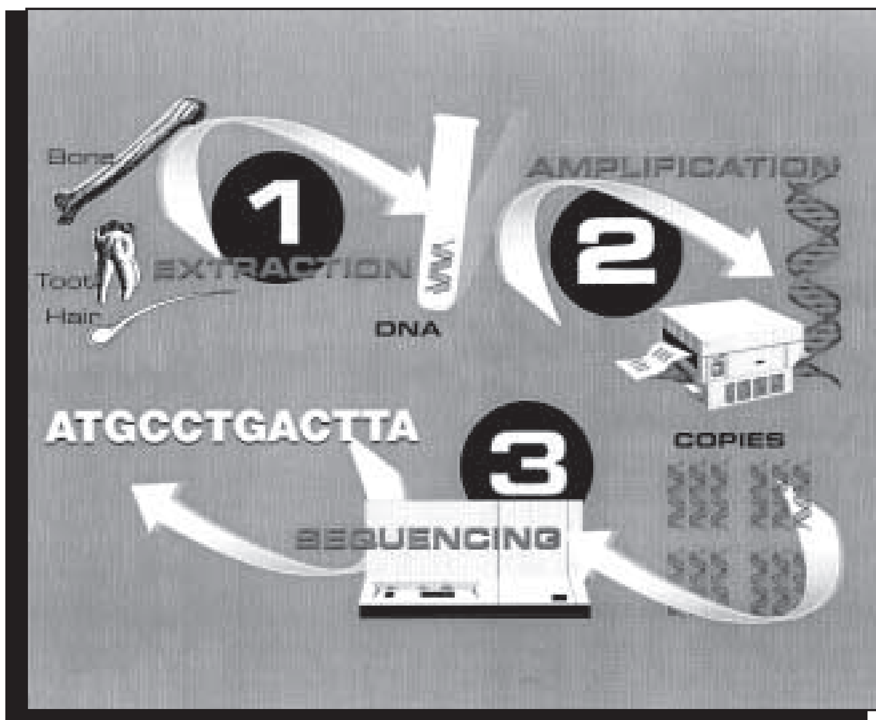
In humans, individuals inherit mitochondrial DNA strictly from their mothers.[3] Thus, the mtDNA sequences obtained from maternally related individuals, such as a brother and a sister or a mother and a daughter, will exactly match each other in the absence of a mutation. This characteristic of mtDNA is advantageous in missing person cases as any maternal relative of the missing individual can supply reference samples. However, mtDNA analysis is limited when compared with nuclear DNA analysis in that it cannot distinguish between individuals of the same maternal

lineage or individuals who have the same mtDNA sequence by chance.

Given the many different circumstances that can surround a case, sometimes advantages exist in analyzing mtDNA over nuclear DNA for forensic purposes. First, the location and structure of mtDNA protect it from degradation when exposed to the environment. Mitochondrial DNA is buried deep within the cell and has a circular structure, which protects it from deterioration. Also, DNA is bound and protected by a substance, called hydroxyapatite, found in teeth and bones. Second, the high copy number of mtDNA gives the forensic scientist a better chance of locating and amplifying a piece of undegraded DNA in a sample. Finally, the maternal inheritance of mtDNA can prove advantageous in cases involving missing persons, even though this fact also makes it less discriminating than nuclear DNA because any person who is a member of the same maternal lineage will have the same mtDNA sequence. Mitochondrial DNA also is highly variable between unrelated individuals. In fact, the scientific community has not yet seen all of the variation that exists between human mtDNA sequences.

STEPS IN mtDNA ANALYSIS

Currently, the forensic analysis of mtDNA remains labor-intensive. Several biological techniques are combined to obtain an mtDNA sequence from a sample. The steps of the mtDNA analysis process include primary visual analysis; sample preparation; DNA processing, including extraction, amplification, quantification, and sequencing; and data analysis.



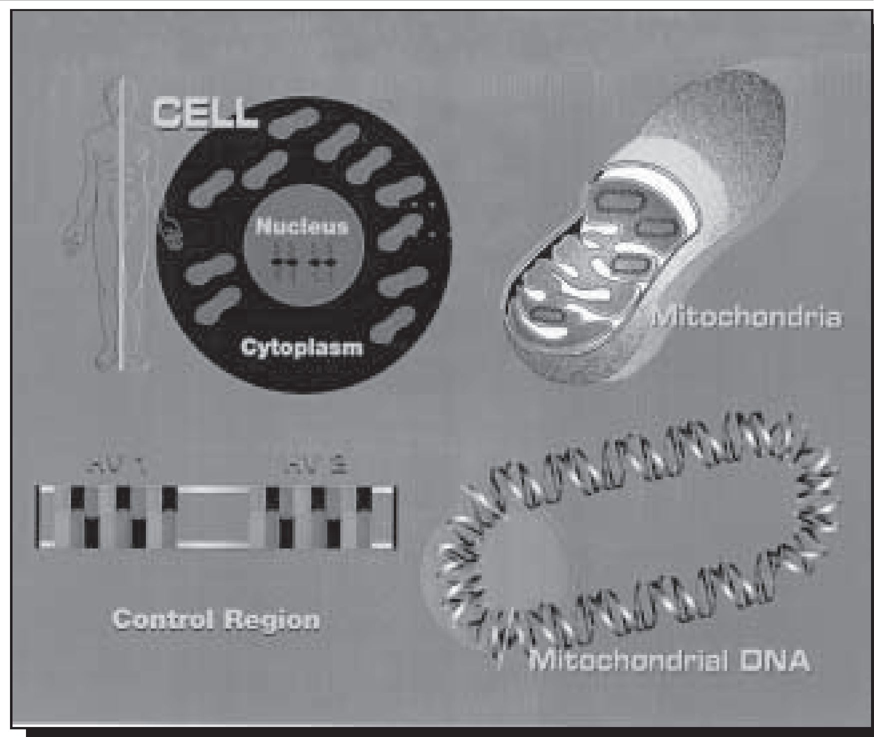
Primary Visual Analysis

Primary visual analysis of a sample set to undergo mtDNA analysis proves important because the techniques used to obtain an mtDNA sequence consume that evidence. Trace evidence examiners document the visual analysis through photography and written notations for future reference. The first step in the analysis of a hair involves a microscopic comparison of an evidentiary hair and a sample population of reference hairs. If the hair from a questioned source exhibits similar microscopic characteristics as hair from a known source, examiners perform mtDNA analysis to determine, on a molecular level, if the hair is consistent with reference standards from a particular individual. At times, hairs, such as body hairs or hair fragments, are not microscopically compared prior to mtDNA analysis because they are not suitable for such examination.

In instances in which bone or tooth material is collected, forensic anthropologists or odontologists inspect the tissue first. If the tissue is of human origin, mtDNA analysis can be used in conjunction with medical, anthropological, and odontological examinations to assist in the identification process. If available, X rays or other medical records often are considered preferable to mtDNA analysis for identification purposes.

Sample Preparation

DNA analysts clean evidentiary samples prior to the mtDNA sequencing process to remove contaminating materials surrounding or adhering to the sample. This step



ensures that the sequence of the DNA obtained from the sample originates from the sample and not from exogenous human DNA.

The cleaning process for hair samples uses a detergent treatment in an ultrasonic water bath, which removes possible contaminating residues from the hair. The hair sample is then placed in an extraction solution and ground using a small mortar and pestle, resulting in a mixture that contains both the cellular material and the released DNA.

Bone and tooth samples also undergo a cleaning process. To clean a bone or tooth, an analyst sands the exterior to remove any extraneous material that may adhere to the surface. Then, the analyst removes a small sample, grinds it into a fine powder, and places the powdered bone and teeth in a solution to release the DNA from the cells.

DNA Processing

To extract DNA, analysts expose the cellular mixture from the sample preparation step to a mixture of organic chemicals that separate the DNA from other biological material, such as proteins. Analysts then purify the DNA sample to prepare it for the amplification process, which makes many copies of the target DNA. The DNA of interest must be amplified because initially it is not present at a concentration high enough to be detected by laboratory instrumentation used in the analysis. After the DNA is copied, it is purified and quantified prior to determining the order of the bases in the DNA fragment. The sample undergoes a series of chemical reactions and is then placed in an instrument that "sequences" the bases in the DNA sample.

Data Analysis

The FBI Laboratory has established guidelines for the interpretation of differences and similarities between sequences. Basically, samples cannot be excluded as originating from the same source if sequence concordance (the presence of the same base or a common base at every position analyzed) exists between them. In cases of sequence concordance, at least two examiners independently analyze each sequence obtained.[4]

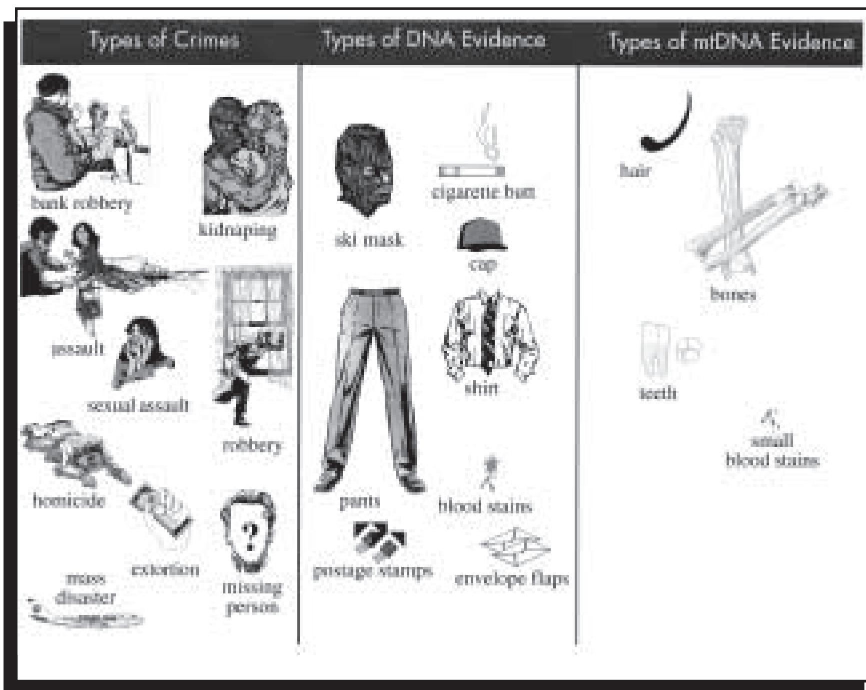
The human body contains trillions of cells, each of which can contain hundreds to thousands of copies of mtDNA. A complete homoplasmy (the same mtDNA sequence) for each of these copies is unlikely because of the immense amounts of mtDNA present in the body. Thus, heteroplasmy (the occurrence of more than one mtDNA type at a particular position or region in a DNA sequence) is expected to be present at some level in all individuals, though not always detectable with current instrumentation.[5]

The level of heteroplasmy may not always be the same in various tissues. In cases where heteroplasmy is thought to occur, examiners can sequence additional samples to determine if the heteroplasmy is visible in other tissues. Obviously, further testing cannot always be performed on a crime-scene sample of limited quantity, but it can prove helpful for interpretation of known samples. In most instances, the presence of heteroplasmy makes data interpretation more complex, but does not render the data nonfunctional.

The FBI Laboratory has collaborated with other laboratories to compile an mtDNA population database containing the sequences from major racial or ethnic groups: Caucasians, Africans, Asians, Native Americans, and Hispanics. The database currently contains 4,142 mtDNA sequences from unrelated individuals in a forensic index and another 6,686 sequences gathered from published literature.[6] However, the laboratory updates the database regularly and, thus, constantly increases its size.

When a sequence from a sample of questioned origin is the same as a sample of known origin, laboratory personnel search the mtDNA population database for this sequence. The FBI Laboratory lists the number of observations of a sequence in each racial subgroup of the forensic database in a report of an mtDNA examination. For example, a sequence might be seen five times in the database samples of Caucasian descent and one time in the database samples of Hispanic descent, yet not appear in the remaining database subgroups.

Currently, the FBI Laboratory does not provide frequency estimates of mtDNA types in laboratory reports because of restrictions involving the mtDNA database size. The FBI states only the number of occurrences of an mtDNA sequence in the current database. The number of mtDNA sequences present in the general population is unknown because scientists have not observed all of them yet. However, statistical methods exist for calculating an upper-bound estimate of the frequency of mtDNA types with zero, or very few, occurrences in a database of limited size. This upper-bound estimate describes the highest frequency expected for a particular mtDNA sequence using the database. As the database grows in size, the frequency estimates for individual mtDNA profiles will become more and more refined.



QUALITY ASSURANCE IN mtDNA TESTING

Forensic mtDNA analysis uses some extremely sensitive techniques. Because the laboratory analysis may begin with very few copies of the mtDNA of interest (if a sample is degraded), the presence of any foreign DNA in the sample can harm the analysis. Any extraneous DNA that is amplified with the evidence has the potential to interfere with the interpretation of the sequence data. Thus, the FBI Laboratory performs many precautionary measures to prevent contamination of evidence and to ensure the quality of results.[7]

For example, the FBI Laboratory follows the quality assurance standards established by the DNA Advisory Board (now called the FBI Standards for Forensic DNA Testing Laboratories) and the American Society of Crime Laboratory Directors-Laboratory Accreditation Board (ASCLD-LAB). The laboratory also has two external proficiency tests conducted annually for all unit personnel working cases and retains a record of these tests. In addition, the laboratory follows general and specific precautions designed to minimize contamination, including the physical separation of pre-and postamplification areas; the separation of evidence from questioned

CASES SOLVED USING MITOCHONDRIAL DNA ANALYSIS

Murder Investigation

In September 1994, a mother and her 4-year-old daughter were at a friend's house. The mother was going out on a date and arranged to have her friend watch her daughter. During the course of the evening, the mother's friend decided to go out and left the victim and her own children with her sister's boyfriend. Later, the boyfriend put the children to bed, with the 4-year-old girl sleeping in one of the twin beds in the room she shared with her mother. At about 2 a.m., a family friend, who had been at the house repairing a screen door earlier in the day, returned after drinking heavily. He went into the same bedroom where the girl was sleeping to lie down. The sister's boyfriend, who assumed that the friend would pass out in the other twin bed in the room, continued watching a movie. He heard two noises coming from the bedroom, but thought they were car doors slamming.

The girl's mother arrived home about an hour after the friend and talked with the sister's boyfriend for approximately 20 minutes. Then, she went to check on her daughter. Finding the bedroom door locked, she yelled for the friend to open it. When he did not, she obtained a knife from the kitchen to unlock the door. Upon entering the room, the mother found both beds empty and the girl and the family friend, both without clothing, on the floor of an adjacent utility room. The girl was unconscious and cold to the touch; the friend was unresponsive. The mother immediately took her daughter to the hospital, but all attempts to resuscitate her failed, and she was pronounced dead at 3:30 a.m. The medical examiner found several hairs clinging to her body and evidence of sexual abuse. The FBI Laboratory performed mtDNA testing on the hairs found at the crime scene and on the victim's body. Analysts compared the results to the mtDNA profile for the family friend. All sequences were the same, and the sequence was not present in the FBI's database of 742 individuals at the time. The male was sentenced to life without parole for felony murder, plus two concurrent 25-year sentences for the rape convictions.

Missing Person

In the fall of 1979, a 61-year-old patient wandered away from a U.S. Department of Veterans Affairs medical facility. Despite an extensive search, authorities never located the missing man. Over 10 years later, a dog discovered a human skull in a wooded area near the facility. The DNA Analysis Unit II of the FBI Laboratory received the case in the winter of 1999. The laboratory determined that the mitochondrial DNA profile from the missing patient's brother matched the mitochondrial DNA profile from the recovered skull and provided the information to the local medical examiner. Subsequently, the remains were declared to be those of the missing patient and returned to the family for burial.

and known sources in time and, often, space; the proper cleansing of work spaces and instruments; and the use of control samples. The FBI Laboratory uses positive and negative controls in mtDNA processing to monitor amplification and sequencing and does not proceed with the mtDNA analysis if these controls fail to meet established criteria.

CONCLUSION

Forensic mitochondrial DNA analysis has become a valuable crime-solving tool for law enforcement investigators. Work is ongoing in a new program, the National Missing Persons DNA Database, at the FBI Laboratory. This program has a mission to create a database of the mtDNA sequence of the remains of missing individuals and their maternal relatives. In

addition, several state and local crime laboratories are validating mtDNA analysis for implementation into their casework capabilities.

The future of all DNA analyses looks promising as techniques for smaller-scale and higher-throughput testing become available. While mtDNA analyses do not provide the discrimination potential of some nuclear DNA tests, mtDNA data often are the only information that examiners can gather from degraded evidence, which is either old or has been exposed to the environment for a significant period of time. The development of forensic mtDNA sequencing over the past decade has been helpful to many past cases and will continue to provide useful information to the law enforcement community in the future. ✦

Endnotes

[1] For information on collecting DNA evidence, see "The Microscopic Slide: A Potential DNA Reservoir," *FBI Law Enforcement Bulletin*, November 2000, 18-22.

[2] The author adapted this article from a research paper previously published in the July 1999 issue of *Forensic Science Communications*, at *http://www.fbi.gov*. For additional information, contact the DNA Analysis Unit II, FBI Laboratory, 202-324-4354.

[3] For additional information, see M.M. Holland and T.J. Parsons, "Mitochondrial DNA Sequence Analysis—Validation and Use for Forensic Casework," *Forensic Science Review* 11 (1999): 21-50.

[4] The *FBI Laboratory DNA Unit II Mitochondrial DNA Analysis Protocol* (Rev. 7/01) contains a more detailed description of the FBI Laboratory's mtDNA interpretation guidelines.

[5] Supra note 3.

[6] K.W.P. Miller and B. Budowle, "A Compendium of Human Mitochondrial DNA Control Region: Development of an International Standard Forensic Database," *Croatian Medical Journal* (2001).

[7] Supra note 4.

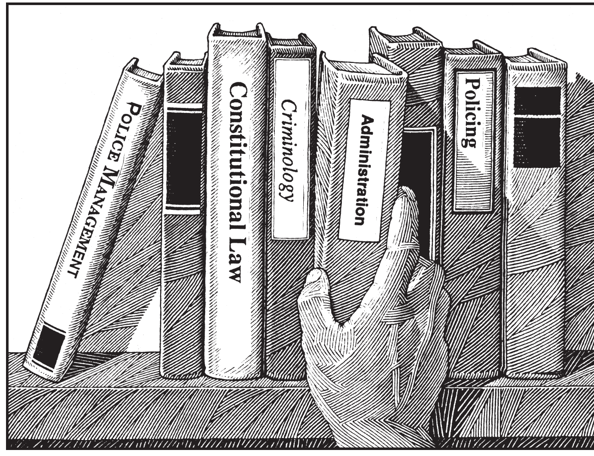
Unusual Weapon

Flashlight Handgun

The Swiss police arrested a known arms dealer who had five firearms disguised as flashlights in his possession. The normal glass lens of each flashlight had been replaced with an opaque cover to disguise the barrel, and a plunger was added to the rear. To fire the weapon, the plunger must be pulled back and released. Then, the tip of the plunger strikes the primer, firing the weapon.

Submitted to the FBI's Berlin, Germany, Legal Attache by a guard supervisor serving with the U.S. Embassy in Berlin.

Book Review



Get the Dope on Dope: First Response Guide to Street Drugs, Volume One *by Detective Steve C. Walton, Burnand Holding Co. Ltd, Calgary, Alberta, Canada, 2001.*

In a compact compendium, *Get the Dope on Dope: First Response Guide to Street Drugs, Volume One* thoroughly details the most current information available on commonly encountered street drugs. Detective Steve Walton, a 23-year law enforcement veteran and drug expert, has written the 78-page book in an easy-to-use, quick-reference format that allows officers and emergency medical first responders to immediately access the information that they need to stay safe and informed in street drug encounters.

The information presented on each drug ranges from detailed descriptions of the drug's physical and olfactory characteristics and time frames for post-use onset of effects and duration to current methods of use, associated paraphernalia, and dangerous symptoms that users may illustrate that can threaten an officer's safety. The author also includes a listing of the common street names associated with each drug and up-to-date street pricing.

In the introduction, Walton includes a valuable description of the "Rhomberg Internal Clock" method of field testing for possible drug use, a procedure that capitalizes on a user's common inability to accurately determine elapsed time. To ensure that officers can use the method for each drug presented in the book, the author shares the typical test results that can act as indicators of use for each particular substance.

Get the Dope on Dope: First Response Guide to Street Drugs, Volume One also includes an extensive symptom chart that helps officers pair a wide variety of physical and mental characteristics users often illustrate. Ranging from blurred vision, teeth grinding, and dehydration to depression, convulsions, and vomiting, the author lists over 70 symptoms that can help officers discern the substance a subject may have taken.

An extensive glossary of current drug terms indexed in the back of the book proves helpful for keeping officers up-to-date on drug culture jargon and helps in translation, if necessary, during street encounters. Walton also includes fascinating background information throughout, ranging from how many drugs are made clandestinely to common societal settings in which specific drugs often are found.

In addition to its impressive contents, the physical qualities of the book prove equally valuable. Printed on nearly indestructible, waterproof pages and secured with a heavy-duty spiral binding, the book should stand years of rigorous field use. In fact, the author tested the book for physical durability prior to releasing it. Also, with each copy comes a four-color poster, sized for a locker door or departmental bulletin board, that synopsizes useful reference information for each drug covered in the book. Officers can order a copy of this useful guide directly from the publisher by calling the toll-free number 877-255-1166 or through Calibre Press at 800-323-0037.

Reviewed by
Scott Buhrmaster
Former director and editor-in-chief
Calibre Press *Street Survival Newsline*
Chicago, Illinois

Issue-Oriented Policing

Avoiding the Cookie-Cutter Approach

By Steven Edmondson

A cookie cutter is a device used to maintain a consistent pattern of cookies cut from dough. A "cookie-cutter approach" describes any attempt at replicating or maintaining consistency of an effort or program. Unfortunately, many agencies too often apply the cookie-cutter mentality in attempts at furthering the cause, practices, and philosophies of community policing. A philosophy that emphasizes effective working partnerships, community policing was designed to reunite the police with the community.[1]

Topsham, Maine, is an emerging commercial center of approximately 10,000 residents along the middle coastal area of Maine. Several large retail businesses have opened stores in the community, which have brought more consumers, as well as residents, to the area. Although Topsham's population has grown substantially over the past two decades, the number of officers in the Topsham Police Department (TPD) has remained the same.

TPD implemented community policing in the mid-1990s. Begun as an effort to return to what often is considered old-fashioned policing, many agencies emphasize police working in collaboration with citizens of a community to devise strategies to combat crime and other issues that detract from the quality of life. TPD has worked with this mind-set since the mid-1990s using a strategy called Enhanced Neighborhood Policing (ENP). ENP attempts to provide a certain level of autonomy for officers to promote a problem-solving atmosphere, which often is stifled in more traditionally structured law enforcement agencies.

A Traditional Approach

TPD has experienced varying degrees of success since initiating the ENP strategy. The first Topsham community to introduce this type of policing was the Woodside Neighbors. This group established themselves as an example for others to follow in such areas as retention, organization, civic responsibility, and interest to the ever-important problem-solving process and worked with law enforcement in a team effort. However, attempts at replicating this success in other Topsham neighborhoods have met with interest levels ranging from moderate to nonexistent.

The ENP practice was designed to have an officer assigned to a particular neighborhood within the community. This officer would serve as the contact person to the department, a facilitator for meetings, a conduit to other agencies and departments, and the overall resource agent to the neighborhood. One of the more unusual aspects of ENP included having officers spend the majority of their shifts within their assigned neighborhood working on their issues and leaving only to answer emergency calls elsewhere. According to ENP belief, random patrols rarely reduce crime or fear of crime in the community. As designed, ENP ultimately would reduce the volume of annoyance calls, thus leaving the officer available to work on more serious issues, such as property crimes or drug abuse. Because TPD routinely staffs just one or two officers during the evening hours and due to the existing dynamics of the town, freeing officers to maintain this pattern became prohibitive.

The lack of officer interest and participation presented another problem with community policing in Topsham. Without a reward or punitive system in place to use with officers who did well or those who refused to get involved at all, mostly due to contractual obligations, the administration felt hindered in fully instituting ENP.

Topsham remains one of the largest communities in Maine that still clings to the town meeting form of government. Their usual 5 percent voter turnout at the annual town meeting indicated the lack of civic interest TPD faced when encouraging citizen participation. Instead, they found a rise and fall in citizen interest with each neighborhood crisis. When a particular problem became public and occurred frequently, the turnout at neighborhood meetings grew tremendously and citizens overwhelmingly wanted to participate. Unfortunately, as soon as the problem was resolved, attendance declined. Further, a military installation near Topsham results in a high transient population, and, as a result, many residents fail to take hold of an ownership in the community.

Due to the combination of financial restraints and the tremendous growth of Topsham, both of which place a premium on TPD's services, the agency no longer could support or further its ENP efforts with the necessary resources. Also, with the lukewarm response from some neighborhoods, TPD could not justify the continued effort in those areas. Because TPD did not want to totally abandon the community policing philosophy or the ENP, they reevaluated where they were, what they needed to do, and what they had to offer.

Despite sustaining a low crime rate for a community this size, TPD became plagued by traditional annoyance complaints that occupy a great deal of time and effort, which only diminishes the quality of life for citizens. Therefore, with these complaints in mind, TPD revised their approach to community policing by applying the practices and philosophy to issues, rather than neighborhoods.

“TPD uses the interests and skills of their officers to address specific and identifiable problems....”

The Solution

TPD uses the interests and skills of their officers to address specific and identifiable problems that, ultimately, will benefit a larger number of residents throughout the entire community. As currently designed, TPD's chief of police and sergeant will maintain contact with the community policing advisory board and existing neighborhood groups and serve as coordinators and facilitators with participating officers, an initiative they titled initiative issue-oriented policing (IOP).

For an initiative to receive the police chief's support within this program, an identifiable problem or issue must exist with a workable plan for resolving or addressing the problem. TPD places very few limitations on this effort, but emphasizes issues that will have the most impact on residents. For example, TPD consistently receives nuisance complaints involving all-terrain vehicles (ATV) and snowmobiles. To reign in the violators and reduce the number of complaints, one TPD officer, who is an avid rider, formed a snowmobile/ATV club to provide an atmosphere where the riders will govern themselves and work toward developing trails and programs for riders. Through education, training, and developing structured activities, TPD hopes that unsupervised and unstructured riders will find enjoyment in voluntary compliance with the law and safe-riding procedures.

Other traditional problems for TPD involve traffic violations and complaints. A TPD officer who has a passion for and a proficiency in traffic enforcement coordinates special details addressing high-complaint, high-volume, and high-risk traffic areas. Two other officers work on school-based and juvenile issues, such as TPD's police cadet program, while another officer serves as a media and public relations coordinator. Other officers will join these groups as they develop interests and experiences in problem areas and when they become comfortable with this approach.

Issue-oriented policing has several advantages. First, the problems addressed often are felt throughout the town, thus, problem resolution will benefit a greater number of residents, even those who had not participated in the previous ENP efforts. IOP also provides an avenue for officers to further their personal passions or to develop an interest in a specific field. TPD anticipates greater commitment by the officers because of a natural affiliation and ownership in the chosen project.

Conclusion

Because this new approach is still in its infancy, Topsham Police Department will have to wait to determine whether issue-oriented policing will have a lasting effect on the quality-of-life issues that the agency commonly faces and hopes to address. It has, however, produced a positive impact on participating officers that was sorely lacking with previous cookie-cutter community policing efforts. Enthusiasm by police officers is a by-product all administrators seek. Further, many residents have responded to and benefitted from this new strategy.

The Topsham Police Department has not abandoned community policing or minimized its standard response and investigative services. The department merely uses its existing resources in such a way to maximize its organizational options and strengths. ✦

Endnotes

[1] Kenneth J. Peak and Ronald W. Glensor, *Community Policing and Problem Solving: Strategies and Practices*, 2d ed. (Upper Saddle River, NJ: Prentice Hall, Inc., 1999).

Lieutenant Edmondson serves in the Topsham, Maine, Police Department.

Crime Data

Firearm Use by Offenders

The U.S. Department of Justice's Bureau of Justice Statistics (BJS) announced that about 18 percent of state prisoners and 15 percent of federal prisoners reported in 1997 that they were armed when they committed the offense for which they were imprisoned. This represents an increase from the 16 percent of state inmates and 12 percent of federal inmates who reported that they carried a firearm in 1991.

In the 1997 interviews, an estimated 9 percent of state prisoners and 2 percent of federal prisoners reported that they fired their weapon during the commission of the crime. The data were obtained from personal interviews with a nationally representative sample of more than 18,000 state and federal prisoners, the largest survey of prison inmates sponsored by the federal government.

Among those who carried a firearm during the offense for which they were sent to prison, about 10 percent of the state and federal prisoners carried a military-style, semiautomatic weapon. The firearm most favored by the inmates was a handgun, which was carried by more than 80 percent of the armed inmates.

Approximately 40 percent of state inmates and 56 percent of federal inmates who carried a gun during the offense for which they were incarcerated were given sentence enhancements because of their firearm use. Sentences for state inmates who had firearms averaged 18 years of incarceration compared to 12 years for those without firearms.

The percentage of inmates who bought their guns from a retail store fell from 21 percent in 1991, when the last such survey was conducted, to 14 percent in 1997. At the same time, the percentage who obtained their firearms from family or friends rose from 34 percent in 1991 to 40 percent in 1997.

The special report, *Firearm Use by Offenders*, (NCJ 189369) was written by BJS statistician Caroline Wolf Harlow and may be obtained by calling BJS at 800-732-3277 or by accessing the BJS Web site at *http://www.ojp.usdoj.gov/bjs/*.

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The Americans with Disabilities Act

The Continuing Search for Meaning

By THOMAS D. COLBRIDGE, J.D.

The Americans with Disabilities Act of 1990[1] (ADA) is a significant piece of social legislation. Yet, 12 years after its passage, its meaning still is debated. During its current term, the U.S. Supreme Court has decided three major cases involving unresolved issues arising under the ADA. The number of ADA cases heard by the Supreme Court this term alone is an indication of the act's impact on America's public and private workplaces.

The issues presented to the Supreme Court in these cases were: 1) the definition of an ADA disability relating to the performance of manual tasks; 2) the relationship between the ADA and binding arbitration agreements; and 3) the relationship between the ADA and seniority rules. This article reviews the facts of these important cases and discusses the Court's rulings.

ADA Basics

The ADA is an antidiscrimination statute. Its aim is to ensure that Americans with disabilities are treated fairly in the areas of employment, education, transportation, communications, recreation, institutionalization, health services, voting, and access to other public services.[2] In the employment area, the ADA seeks to ensure that applicants for jobs and workers are judged on the basis of their abilities, not their disabilities.

Employers are prohibited by the ADA from discriminating against a "...qualified individual with a disability because of the disability...."[3] A "qualified individual" is one who both meets the prerequisites for the position (e.g., education, job skills, and experience)[4] and, despite a qualifying disability, is able to perform the essential functions of the job with or without a reasonable accommodation.[5]

A qualifying disability under the ADA can be either a physical or mental impairment.[6] However, not just any impairment will do. To qualify as a disability, the impairment must substantially limit one or more of the major life activities of the claimant.[7]

"...a mere medical diagnosis of an impairment is not sufficient to claim ADA protection."

Special Agent Colbridge is a legal instructor at the FBI Academy.

Once individuals qualify for protection under the ADA, employers have an obligation to reasonably accommodate their disabilities.[8] Only reasonable accommodations are required, however. An accommodation that would impose an undue hardship on the employer is not required.

Since the ADA was enacted, American courts have struggled with the meaning of the ADA. The struggle continues, as the following cases demonstrate.

Substantial Limits on Major Life Activities

Ella Williams began working for the Toyota Motor Manufacturing company in Georgetown, Kentucky, in 1990. Her work included the use of pneumatic tools, eventually causing her pain in her hands, wrists, and arms. She sought medical treatment and was diagnosed with bilateral carpal tunnel syndrome and bilateral tendinitis. Her doctor placed her on permanent work restrictions. She was not to lift more that 20 pounds, frequently lift or carry more than 10 pounds, engage in constant repetitive flexion or extension of her wrists and elbows, and use vibratory or pneumatic tools. She returned to work and was assigned various modified duty positions for the next 2 years.

Eventually, Ms. Williams became dissatisfied with Toyota's efforts to find her appropriate work in light of her work restrictions. She filed a workers compensation claim that was settled. She returned to work. She then filed an ADA disability discrimination claim in district court alleging a failure to accommodate her disability. This suit also was settled, and she returned to work. Upon her return, she was assigned to modified duties in the quality control section of the auto plant, including visual inspection and wiping of cars as they passed on a conveyor belt. The parties agreed that Ms. Williams was physically capable of performing both tasks and was performing well.

Toyota then changed her duties to include a task that required her to hold her hands and arms at shoulder height for several hours a day. Her pain returned, and she was diagnosed with several additional medical problems that restricted her physical movement. She requested that Toyota accommodate her medical conditions by returning her to her two original jobs in quality control. Ms. Williams claimed that Toyota refused her request for accommodation; Toyota said she began missing work on a regular basis. On her last day of work for Toyota, she was placed under a no-work-of-any-kind order by her doctor. Toyota then fired her, citing her poor attendance record.

Ms. Williams filed a law suit against Toyota, alleging, among other things, violations of the ADA for failure to accommodate her disability and firing her because of her disability. The U.S. District Court for the Eastern District of Kentucky granted summary judgment for Toyota. The court reasoned that Ms. Williams was not disabled for purposes of the ADA when the company allegedly refused to accommodate her[9] because, while she suffered from a physical impairment, it did not substantially limit any major life activity.[10] The district court also denied her wrongful termination claim. Whereas she was under doctors' orders not to work at all when she was fired, she was not a "qualified person" under the ADA because she could not perform the essential functions of the job. Ms. Williams appealed.

The U.S. Circuit Court of Appeals for the Sixth Circuit reversed.[11] It held that Ms. Williams was disabled at the time of her request for accommodation, as her physical impairment prevented her from doing a class of manual activities affecting her ability to perform

tasks at work. The Sixth Circuit ignored evidence that Ms. Williams could tend to her personal hygiene and do personal and household chores, saying it was not relevant to its determination that she was substantially limited in her ability to perform the range of manual tasks associated with an assembly line job.[12] The circuit court agreed, however, that she was not wrongfully terminated for the reason set out by the district court.

The U.S. Supreme Court reversed the Sixth Circuit and concluded that Ms. Williams was not disabled as defined by the ADA.[13] The Supreme Court agreed with both lower courts that Ms. Williams suffered from a physical impairment. However, as the Court noted, to qualify for ADA protection, her impairment must limit a major life activity, and that limitation must be substantial.[14] The Court agreed that performing manual tasks is a major life activity.[15] The Court disagreed that Ms. Williams' impairment *substantially* limited her in the major life activity of performing manual tasks.

The Court held that to be substantially limited in the major life activity of performing manual tasks, an individual must have an impairment that "prevents or severely restricts the individual from doing activities that are of central importance to most people's daily lives."[16] In addition, the Court emphasized that a mere medical diagnosis of an impairment is not sufficient to claim ADA protection. Claimants must offer evidence that the impairment impacts them personally in a substantial way, meaning each claim must be decided on a case-by-case basis because the impact of impairments varies from person to person.[17]

The Sixth Circuit erred in several ways in the Supreme Court's view. First, the lower court limited its analysis to the impact of Ms. Williams' impairments on performing manual tasks in the workplace. Instead, the inquiry must be "whether the claimant is unable to perform the variety of tasks central to most people's daily lives,"[18] not the claimant's specific job. Occupation-related tasks only may have limited relevance in most peoples' daily lives. In this case, for example, Ms. Williams could not do repetitive work with her hands and arms extended at or above shoulder level. However, her work history demonstrated that she was able to do certain tasks in the workplace, and the court record showed that she could do many tasks of a personal nature, such as brushing her teeth, washing her face, bathing, tending her garden, fixing breakfast, doing laundry, and picking up around the house. She had to avoid sweeping, quit dancing, occasionally seek help dressing, reduce her play time with her children, and reduce her long drives.[19] On balance, in the Court's view, these changes to her life did not amount to restrictions upon her daily life severe enough to render her disabled for purposes of the ADA.

> ***"...its protections extend only to those whose impairments truly and substantially limit a major life activity."***

This case is limited to analysis of only one major life activity—performing manual tasks. However, it is important for several reasons. The Court spoke with a single voice; it is a unanimous opinion. The Court's opinion clearly demonstrates its intention to read the language of the ADA in a way that ensures its protections extend only to those whose impairments truly and substantially limit a major life activity. The ADA means what it says. Limitations upon life activities must be "substantial," meaning they must relate to or proceed from "the essence of a thing."[20] Life activities impacted must be "major," meaning they must be "of central importance to daily life."[21]

The ADA, The EEOC, and Binding Arbitration

The Equal Employment Opportunity Commission (EEOC) is the federal agency charged with enforcement of the ADA.[22] The EEOC has been given the authority to investigate and mediate charges of employment discrimination;[23] enjoin employers from engaging in unlawful employment practices;[24] order appropriate affirmative action, to include reinstatement with or without back pay;[25] and recover compensatory and punitive damages in the proper circumstances.[26] The EEOC acts independently of individual complainants and even can act if there is no individual complainant at all.

In 1947, Congress passed the Federal Arbitration Act (FAA).[27] Generally, the FAA states that binding arbitration agreements in contracts, including employment contracts, are valid, irrevocable, and enforceable.[28] The act expresses a preference for arbitration agreements. It provides for stays of federal proceedings when they involve questions referable to arbitration and for orders compelling arbitration when one party violates the arbitration agreement.[29]

In the case *Equal Employment Opportunity Commission v. Waffle House, Inc.*,[30] the Supreme Court faced the question of whether a binding arbitration agreement in an employment contract limits remedies the EEOC may pursue in an enforcement action against an employer for alleged violations of the ADA. The Court decided that it does not.

Eric Baker applied for a job as a grill operator in a Waffle House restaurant. He, like all prospective Waffle House employees, signed an arbitration agreement requiring that any employment disputes be settled by binding arbitration. A short time after being hired, he suffered a seizure at the grill. Soon after that he was fired. He never sought to arbitrate the termination, but he did file a charge of discrimination with the EEOC, alleging that his termination violated the ADA.

The EEOC investigated and tried unsuccessfully to conciliate the matter with Waffle House. The EEOC filed an enforcement action against Waffle House, alleging that Baker's firing was an intentional violation of the ADA and done with malice or a reckless disregard for Baker's federally protected rights. The complaint sought injunctive relief to end Waffle House's allegedly unlawful employment practices, as well as back pay, reinstatement, and compensatory damages for Baker and an award of punitive damages. Baker himself was not a party to the EEOC enforcement action. Waffle House responded with a request under the FAA that the district court stay the EEOC suit and order Baker to arbitrate the matter as required by the contract or dismiss the action altogether.

The district court declined Waffle House's request, finding that the arbitration agreement was not a part of the employment contract. The case was appealed to the U.S. Court of Appeals for the Fourth Circuit.[31] The court of appeals found that Baker's employment contract did include a valid, enforceable arbitration agreement. The court decided that the arbitration agreement did not bar the EEOC's enforcement action because the commission was not a party to the contract and has independent statutory to bring an enforcement action.[32] However, the Fourth Circuit ruled that the arbitration agreement did prevent the EEOC from seeking victim-specific relief (back pay, reinstatement, and compensatory and punitive damages) because the FAA's expressed goal is to favor arbitration agreements and required the court to credit the agreement in this case. Consequently, the court ruled that because Baker ignored the arbitration agreement, the EEOC's only remedy is injunctive relief.[33]

The Supreme Court reversed the Fourth Circuit's ruling,[34] holding that the presence of the arbitration agreement in the employment contract and Baker's choice to ignore it in no way limited the range of relief the EEOC could seek. The Court noted that the EEOC was not a party to any arbitration agreement. The EEOC has statutory authority to pursue these various remedies, and nothing in the FAA restricts this public agency's authority.[35]

Clearly, the Court's opinion affirms the EEOC's authority to both seek enforcement of alleged violations of the ADA and to choose the remedies it considers appropriate, even in the face of a valid arbitration provision in the employment contract. However, the Court also emphasized several points that are important to managers.

The Court noted that it has not decided the question of whether a settlement or arbitration judgment would affect the EEOC's claim or the kind of relief the commission

could seek.[36] The Court also stated that it remains true that a claimant's actions could limit the relief the EEOC may seek in court.[37] For example, if claimants fail to mitigate their damages,[38] accept a monetary settlement,[39] or litigate their own claims,[40] the EEOC's remedies would be limited.

The ADA and Seniority Rights

The ADA requires employers to make reasonable accommodations to the known physical or mental impairments of employees with disabilities unless employers can show that the accommodation would impose an undue hardship on its business.[41] The act says that reasonable accommodation may include reassignment to a vacant position.[42] An unresolved issue was whether a request for reasonable accommodation takes precedence over an employers' seniority system. The Supreme Court recently resolved the issue in *US Airways, Inc. v. Barnett.*[43]

Robert Barnett injured his back while working as a cargo handler for US Airways. Under the company's seniority system, he claimed a physically less demanding job in the mailroom. The mailroom position eventually became subject to seniority-based employee bidding under the terms of the seniority system. After learning that other more senior employees intended to bid for his position, Barnett asked the company to accommodate his physical disability by making an exception to the seniority rules and allowing him to remain in the mailroom. The company decided not to grant Barnett's request, and Barnett lost his job. Barnett sued the company under the ADA claiming that he was a disabled individual capable of performing the essential functions of the mailroom position, that assigning him to the mailroom was a reasonable accommodation for his disability, and that the company's refusal to give him the job was discrimination in violation of the ADA.

> ***"...if claimants fail to mitigate their damages, accept a monetary settlement, or litigate their own claims, the EEOC's remedies would be limited."***

The district court found in favor of US Airways, ruling that making an exception to the company's legitimate and long-established seniority system would work an undue hardship on both the company and its nondisabled employees who rely on the system.[44] The U.S. Court of Appeals for the Ninth Circuit reversed the district court.[45] It reasoned that a seniority system is but one factor to consider in the undue hardship analysis, which must be approached on a case-by-case basis in cases where reassignment is requested as a reasonable accommodation.

The Supreme Court decided that an accommodation in the form of an assignment to a position in violation of seniority rights of non-disabled employees is ordinarily unreasonable and, therefore, not required by the ADA.[46] Consequently, a request for accommodation usually does not trump a seniority system. According to the Supreme Court, seniority systems are beneficial to companies and employees because they tend to ensure fair and uniform treatment. They also provide for job security and steady, predictable advancement within the company. To require an employer to make exceptions for disabled employees seeking accommodations in the usual case seriously would undermine employees' expectations of continued fair treatment.

The Court noted that this conclusion is consistent with other cases decided in similar contexts. For example, in religious discrimination cases, the Court has held that employers need not change employees' work schedules to accommodate their religious practices where the change would conflict with other employees' seniority rights.[47] Lower courts have decided that seniority rights take precedent over the need for reasonable accommodation under the Rehabilitation Act,[48] and several circuit courts have reached the same result when faced with this same issue.[49]

The Court did not decide that seniority rules always will win out over requests for accommodation. It recognized that there may be cases where disabled employees may be able to demonstrate special

circumstances in which the seniority system will have to give way to the accommodation request. For example, where the employer reserves the right to modify seniority rules and does so frequently, the accommodation may be required. Similarly, if the system already has exceptions so that one more may not be burdensome, the accommodation may be required in spite of the presence of the system. Consequently, while seniority systems are preferred in the usual case, claimants are free to show special circumstances making the accommodation reasonable in the face of the seniority system.[50]

Conclusion

The ADA continues to be a major source of litigation in the courts. While the statute's goals are worthy, its meaning is elusive. As the Supreme Court continues to define the meaning of the ADA, certain trends are becoming clear.

The ADA means what it says. To qualify for protection, an impairment must limit a major life activity, meaning an activity that is central to one's daily life. In addition, the limitation must be substantial, impacting one's entire life, not just a portion of it. The Court has also emphasized that the statute was not meant to be preferential. Its goal is to ensure equal treatment of the disabled in public life, not to prefer them over the legitimate expectations of nondisabled coworkers. Finally, the Court has emphasized that the statute should be vigorously enforced by the EEOC unless the disabled claimants themselves limit the public agency. The search for the meaning of the ADA no doubt will go on.✦

Endnotes

[1] 42 U.S.C. § 12101 *et seq.*

[2] 42 U.S.C. § 12101(a)(3).

[3] 42 U.S.C. § 12112(a).

[4] *Bay v. Cassens Transit Company*, 212 F.3d 969 (7th Cir. 2000), citing 29 CFR app. 1630.2(m).

[5] 42 U.S.C. § 12111(8).

[6] 42 U.S.C. § 12102(2)(A).

[7] *Id.* See also *Bragdon v. Abbott*, 118 S. Ct. 2196 (1998) and *Sutton v. United Airlines*, Inc., 119 S. Ct. 2139 (1999).

[8] 42 U.S.C. § 12112(b)(5)(A).

[9] *Toyota Motor Manufacturing, Kentucky, Inc. v. Williams*, 122 S. Ct. 681 (2002) at 688, citing Civ. A. No. 97137 (E.D. Ky) (Jan. 26, 1999), App. to Pet. for Cert. A29, A34-A47.

[10] *Id.,* citing App. to Pet. for Cert. A34 to A42.

[11] *Williams v. Toyota Manufacturing, Kentucky, Inc.*, 224 F.3d 840 (6th Cir. 2000).

[12] *Id.* at 843.

[13] *Toyota Motor Manufacturing, Kentucky, Inc. v. Williams*, 122 S.Ct. 681 (2002).

[14] *Id.* at 690, citing 42 U.S.C. 12102(2)(A).

[15] *Supra* note 13 at 690, citing 42 U.S.C. § 12102(2)(A)(1994 ed.) and 45 CFR 84.3(j)(2)(ii)(2001).

[16] *Supra* note 13 at 691, citing 29 CFR 1630.2(j)(2)(ii)-(iii)(2001).

[17] *Supra* note 13 at 691-692, citing *Albertsons, Inc. v. Kirkingburg*, 527 U.S. 555 (1999) and *Sutton v. United Airlines, Inc.*, 527 U.S. 471 (1999).

[18] *Supra* note 13 at 693.

[19] *Supra* note 13 at 693.

[20] *Supra* note 13 at 691, citing 17 Oxford English Dictionary 6667 (2nd ed. 1989).

[21] *Supra* note 13 at 691.

[22] 42 U.S.C. § 12117(a) (1994 ed.). This section of the ADA specifies that the EEOC will have the same powers to enforce the ADA as Congress granted the EEOC to enforce Title VII of the Civil Rights Act of 1964.

[23] 42 U.S.C. § 2000e6(a) (1994 ed.). This reference is to Title VII of the Civil Rights Act of 1964. Congress has authorized the EEOC to exercise the same enforcement authority under ADA as it granted the commission under Title VII. *See supra* note 22.

[24] 42 U.S.C. § 2000e5(g)(1) (1994 ed.).

[25] *Id.*

[26] 42 U.S.C. § 1981a(a)(1) and (2), (d)(1)(B).

[27] 9 U.S.C. *et seq.*

[28] 9 U.S.C. § 2; see also *Circuit City Stores, Inc. v. Adams*, 532 U.S. 105 (2001).

[29] 9 U.S.C. §§ 3 and 4; see also *Gilmer v. Interstate/Johnson Lane Corporation*, 500 U.S. 20, 24 (1991).

[30] 122 S. Ct. 754 (2002)

[31] *EEOC v. Waffle House, Inc.*, 193 F.3d 805 (4th Cir. 1999).

[32] *Id.* at 809

[33] *Supra* note 31 at 812.

[34] *Supra* note 30.

[35] *Supra* note 30 at 762.

[36] *Supra* note 30 at 766.

[37] *Supra* note 30 at 766.

[38] *Ford Motor Company v. EEOC*, 458 U.S. 291 (1982).

[39] *EEOC v. Goodyear Aerospace Corporation*, 813 F.2d 1539 (9th Cir. 1987).

[40] *EEOC v. U.S. Steel Corporation*, 921 F.2d 489 (3rd Cir. 1990).

[41] 42 U.S.C. § 12112(b)(5)(A).

[42] 42 U.S.C. § 12111(9)(B).

[43] ____ S. Ct. ____ (2002); 2002 WL 737494.

[44] *Id.* at _____, citing App. to Pet. for Cert. 96a.

[45] *Barnett v. US Airways, Inc.*, 228 F.3d 1105 (9th Cir. 2000).

[46] *Supra* note 43.

[47] *Trans World Airlines v. Haridson*, 432 U.S. 63 (1977).

[48] *Eckles v. Consolidated Rail Corporation*, 94 F.3d 1041 (7th Cir. 1996); *Shea v. Tisch*, 870 F.2d 786 (1st Cir. 1989); *Carter v. Tisch*, 822 F.2d 465 (4th Cir. 1987); *Jasany v. United States Postal Service*, 755 F.2d 1244 (6th Cir. 1985).

[49] *Smith v. Maryland Brake, Inc.*, 180 F.3d 1154 (10th Cir. 1999); *Feliciano v. Rhode Island*, 160 F.3d 780 (1st Cir. 1998).

[50] *Supra* note 43.

Law enforcement officers of other than federal jurisdiction who are interested in this article should consult their legal advisors. Some police procedures ruled permissible under federal constitutional law are of questionable legality under state law or are not permitted at all.

The Bulletin Notes

Law enforcement officers are challenged daily in the performance of their duties; they face each challenge freely and unselfishly while answering the call to duty. In certain instances, their actions warrant special attention from their respective departments. The *Bulletin* also wants to recognize those situations that transcend the normal rigors of the law enforcement profession.

Officer Faulstich

Deputy Aubart

Officer Craig Faulstich of the Hayward, Wisconsin, Police Department and Deputy David Aubart of the Sawyer County, Wisconsin, Sheriff's Department responded to a fire at an inn. Upon arrival, Officer Faulstich and Deputy Aubart saw flames coming from the third floor of the building. After entering the main floor, they located a pass key and physically went from room to room and cleared them of their occupants. Although parts of the third floor were filled with smoke, Officer Faulstich and Deputy Aubart cleared that floor of all its occupants. As they cleared the second floor, the building's sprinkler system started spraying water. Despite being soaked with water, both officers assisted at the scene in zero-degree temperature for over 8 hours. Although the building was a total loss, Officer Faulstich's and Deputy Aubart's courageous and selfless actions saved 26 lives.

Sheriff Crocker

Sheriff Michael Crocker of the Traill County, North Dakota, Sheriff's Department responded to a domestic complaint. The estranged husband was drunk and disorderly and had taken the couple's two children from a day-care provider. The husband held a knife to the throat of one of the two children, exited the house, and entered a truck with the two children. As the subject attempted to move the vehicle, officers quickly blocked him in. Sheriff Crocker saw the subject sitting inside the truck violently shaking the head of one of the children. He then observed the subject holding a large butcher's knife to the throat of the same child. Moments later, the subject exited the truck holding the knife to his son's throat. As he started walking quickly toward Sheriff Crocker, the sheriff repeatedly ordered him to drop the knife, but he refused. Then, with his knife in his right hand, the subject lowered the child down to his waist with his left arm and started running toward Sheriff Crocker, holding the knife straight out in front of him. The subject was approximately 6 feet from the sheriff when the sheriff fired one round, fatally striking the subject. As the subject fell to the ground, the child fell with him, but was not injured. Sheriff Crocker's courageous, unselfish, and professional actions in this very difficult situation saved the life of the innocent child, as well as the lives of other officers at the scene.

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