

**WHAT IMPACT WILL SATELLITE TECHNOLOGY
HAVE ON POLICE RESPONSE TO
NATURAL AND MANMADE EMERGENCIES
BY 2004?**

JOURNAL ARTICLE

BY

JOHN H. TRUMBULL

COMMAND COLLEGE

CLASS 18

PEACE OFFICERS STANDARDS AND TRAINING (POST)

SACRAMENTO, CALIFORNIA

JULY 1994

This Command College Independent Study Project is a FUTURES study of a particular emerging issue in law enforcement. Its purpose is NOT to predict the future, but rather to project a number of possible scenarios for strategic planning consideration.

Defining the future differs from analyzing the past because the future has not yet happened. In this project, useful alternatives have been formulated systematically so that the planner can respond to a range of possible future environments.

Managing the future means influencing the future--creating it, constraining it, adapting to it. A futures study points the way.

The views and conclusions expressed in the Command College project are those of the author and are not necessarily those of the Commission on Peace Officer Standards and Training (POST).

The future of satellite technology in the management of natural and manmade emergencies in law enforcement is important. Satellite systems in private industry are presently monitoring and tracking many things that move and some that don't. The usefulness of satellite technologies in communication, tracking and sensing are opportunities available to law enforcement. California's law enforcement organizations have a primary duty to protect the lives and property of the citizens in the communities that they serve.¹ Major occurrences like riots, floods, fires and earthquakes represent a significant challenge to the accomplishment of law enforcement duties.

The availability of new technologies and the ways in which they are being adapted are signaling a start of a significant future for law enforcement. Many interesting and versatile technologies will be finding usefulness in law enforcement operations in the future. Geographic Information Systems; Global Positioning; infrared sensing; photographic mapping; communications; automated vehicle tracking; the Intelligent Vehicle Highway System and interactive training by way of satellite are just a few of the effective applications that can benefit law enforcement.

The use of satellite technology in the law enforcement community is already being applied by the California Commission on Peace Officer Standards and Training. POST has complemented its training curriculum by capitalizing on satellite technology through the Law Enforcement Television Network (LETN) broadcast on satellite, Galaxy 7. LETN already provides a wide variety of training across the entire state of California, not to mention

accessibility on a national basis. The versatility of this method of training can provide instant access to many kinds of learning opportunities.

The same instant access could be available during natural and manmade emergencies. Televised images by way of satellite could provide instant response for accuracy of resource deployment and damage assessment after emergencies.

Successful organizations of the future, including law enforcement, will be compelled to find people inside and outside of their organizations who understand the value and strengths of the application of these kinds of technologies in law enforcement. Not only must they find these people, they must be innovative in the way they provide law enforcement services in the future.

In March 1967 President Lyndon Johnson spoke to a group of government officials and educators in Nashville Tennessee about space photography. As he spoke about our ability to photograph our enemies' missile capabilities he said that our satellite photography program was worth ten times its cost. The satellite photography program demonstrated that previous military estimates were way off and that the photography program helped to provide a better assessment of existing conditions.²

Law enforcement must likewise assess its capabilities and be able to develop current and accurate needs' assessments during critical incidents. Only in this way can law enforcement managers adequately respond to the needs of their communities during disastrous times.

Law enforcement managers must establish critical incident management philosophy before involvement in disastrous situations. That management philosophy should include how

each organization will respond in time, with what resources it has available, and how it hopes to accomplish its tasks.

The result of a recent government information technology survey suggests that long range planning is not performed in most governmental agencies. Only 13.1% of those reached in the survey said that they had any long range plans at all.³ How California law enforcement professionals prepare for the future is key to effective and efficient response to natural and manmade emergencies.

The dramatic evolution of technology and its application in law enforcement operations will radically alter the routine delivery of law enforcement services in California, especially during natural and manmade emergencies.

A Changing Environment

As a result of developing technology, California law enforcement professionals will have many opportunities to change the way traditional critical incidents are managed. It need not be just a reactionary response with little or no intelligence information directing the police response. The adaptation of satellite technology in police operations is growing throughout the nation and state. Satellite technologies are being adapted to many different kinds of police operations ranging from vehicle and narcotics tracking⁴ to traffic accident investigation.

A study was conducted to answer the question, "What Impact Will Satellite Technology Have on Police Response to Natural and Manmade Emergencies by 2004?".⁵

Three related questions of the issue were also examined. They are: How can satellite technology be applied to law enforcement?; What management skills or knowledge will be

required to implement this technology?; and, What satellite applications show possibilities in law enforcement emergency operations?

To address the answers to these questions a future study was conducted. In that study using the nominal group technique forty-one trends that were a series of events by which change is measured over time and thirty-eight events that were discrete one time occurrences were identified.

The trends and events identified in the study were ranked by order of importance to the nominal group. The top ten ranked trends are: level of global populations impact on immigration and cultural colonization; degree of privatization in police services; shift in defense spending from military to domestic; demands on the public education system; level of cooperation between federal; state and local law enforcement agencies; level of unemployment; public perception of the need of satellite technology and the environmental impacts of industry. The top ten ranked events are: efficient, accurate and timely deployment of responding emergency resources; hand held satellite communication devices are used by law enforcement personnel; personal locators make rapid location of lost persons and inanimate objects possible; United States Supreme Court rules satellite eavesdropping admissible during disasters and declared emergencies; law enforcement is included in classified technology loop; inadequate numbers of satellite radio frequencies available to law enforcement; satellite users execute sharing agreements; voluntary used of personal locators; Federal Communications Commission is merged with the Justice Department and vehicle encoders are installed on all cars at the factory.

Using a Future Scenario

The scenario that follows provides a starting point to build a foundation and strategy to implement change. The scenario was developed using the trends and events identified by the nominal group. The scenario depicts a large fictional agency providing law enforcement service throughout a geographically large area. The positions and persons in the scenario are also fictional. The thousands of square miles in Bear County are surrounded by metropolitan areas. The population has grown significantly during the past ten years and growth is expected to continue.

June 1, 1998 -- The Bear County Seat

"Sheriff Day approached the steps of the County Seat enroute to her appointment with the Board of Supervisors. Sheriff Day had gained quite a reputation for saving money and for the way she managed natural and manmade emergencies. It appeared that the Board was interested in seeing why she was so successful in managing operations in her department. Not only was she successful she was cost effective too. They probably wondered if some of the principles that she used would be applicable at the wider county governmental level.

The meeting started promptly at 2:00 p.m. After exchanging greetings the Chairman of the Board got right to the point. "Tell us Kathy, what is it that you do that makes your operation so efficient? We keep hearing about record recoveries of property and the location of lost people and that intrigues us."

Sheriff Day told the Chairman that for the past fifty years the United States government had been adapting satellite technology in many different ways. She told him that many years ago technology was exclusively military but that changed in the mid to late 1990's. She told the Chairman that the technology was originally used to spy on the enemy from space but there were many other applications today.

The Chairman asked the Sheriff to continue, wondering why we would even need such a system. "Isn't the public a little weary of government and big brother already?". The Sheriff's response was a resounding "yes."

Sheriff Day explained to the Chairman that his point was well taken but pointed out that the Board could play a vital role in the application of this technology. "You see Mr. Chairman, this technology, with certain guidelines,

could reduce loss and more importantly save lives. What we don't have as yet are laws and guidelines on the future use of this technology." The Sheriff told the Board that there were no requirements to use satellite locators anywhere in the county and the Sheriff explained that some people choose to use this technology and some did not.

The Sheriff told the Board that her department had saved thousands of dollars in their search and rescue operations when people voluntarily used satellite locators. She explained that a minimum of resources were deployed to conduct searches when this technology was being used.

The Sheriff also told the Board that their search and rescue operations were not always as simple as she explained. She said that sometimes additional resources were needed from outside the county. In those cases help was just a radio call away on California's Operational Area Satellite Information System (OASIS) that was operational, and in use, since 1992.

The Sheriff explained that the choice of whether or not to use a specially encoded satellite locator had a direct impact on how much an individual was billed for the rescue service provided.

The Board started to see that positive impacts of satellite technology application and thought that if the county vehicles and valuable property were equipped with such equipment it would be possible to limit thefts and recover property. The Sheriff reinforced the idea with the Board and remarked that accomplishing this task would involve innovative partnerships with organizations like insurance companies, vehicle manufacturers, and even legislators.

The Board was convinced that they would work towards developing guidelines and legislation that would require the use of satellite technology.

As Sheriff Day left the meeting she was convinced that she had gained valuable support from the Board for implementation of satellite technologies. The Sheriff wondered if the Board would propose some of the legislation that would facilitate implementation and if they would be willing to fund those new programs."

Developing a Strategic Plan

A strategic plan for change was developed for the fictional agency. The plan included two mission statements. These mission statements provide a framework to accomplish the department's goals. The "macro" statement emphasizes the overall mission of the Bear County Sheriff's Department. The "micro" statement emphasizes the Bear County Sheriff Departments' mission as it relates to the application of satellite technology in law enforcement operations.

The macro mission statement for the Bear County Sheriff's Department is:

The mission of the Bear County Sheriff's Department is to focus on the quality of service and interaction with the community it serves. To that end the Bear County Sheriff's Department will strive to:

- * Recruit and retain the best trained personnel.
- * Constantly monitor changing demographics to ensure that the service levels in the community are adequately maintained.
- * Pursue innovative ideas and techniques to aid in the delivery of law enforcement service to the people it serves at the least possible cost.

The Bear County Sheriff's Department is committed to the principle of providing public service and protection through fair enforcement of all laws.

The micro mission statement of Bear County Sheriff's Department is:

The mission of the Bear County Sheriff's Department is to focus on the quality of service to the communities it serves by:

- * Identifying opportunities to enhance service by the use of technology.
- * Developing and coordinating partnerships and joint ventures with industry to improve efficiency and effectiveness of services.
- * Developing and using technologies in ways that are unique and innovative to law enforcement.

Strategy for Change

A strategy that called for the application of satellite technology during natural and manmade emergencies was developed to form a plan to bring about a more desirable future. That strategy called for the county's board of supervisors allowing the use of satellite technologies, like monitoring and tracking devices, during emergency operations.

Before this strategy was selected an analysis of Bear County Sheriff's Department's external environment and its organizational capabilities was conducted. The key stakeholders were identified and their assumptions regarding the issue were listed. Stakeholders are normally individuals or groups, who if they disagreed, could radically impact implementation of the strategic plan.

The most important stakeholders were identified as the critical mass. That group included: the Sheriff; the Chairman of the Board of Supervisors of Bear County; a representative of the American Civil Liberties Union; the liaison officer to the Commission on Peace Officer Standards and Training (POST); the liaison officer to the California Office of Emergency Services (OES); the staff analyst for the Board of Supervisors of Bear County; and the Sheriff's special adjutant.

The strategy to bring about the change called for the Sheriff appointing a member of her staff to be a project manager. A project team was formed and was representative of a diagonal slice of the public and private sector. The project management team's job included the identification of what emergency situations were most applicable to the application of satellite technologies, how these technologies should be used and what future technologies might be used.

Key stakeholders in the public and private sectors were identified. Individuals in that group, considered the critical mass, were identified. The critical mass includes: the Sheriff; the chairman of the board of supervisors; a representative of the American Civil Liberties Union; a POST (Peace Officer Standards and Training) consultant; a representative of the

California Office of Emergency Services; a staff analysts for the county board of supervisors and the special adjutant to the sheriff.

After the critical mass was identified their readiness and capability to support the strategy was assessed and charted. The readiness of the critical mass was an important issue to the management team who had to be able to work with and gain support for the strategy. Equally important was the commitment level of the critical mass. The team would need to negotiate to achieve the commitment and support of the critical mass.

Management Structure

The management structure recommended for the strategy is a project management team, with the project manager appointed by the Sheriff. The team members represent a diagonal slice of representatives of various groups in the public and private sector.

The recommended manager for the project is the sheriff's special adjutant. As the adjutant to the Sheriff he functions from the executive manager's office and would receive power and authority from that office. The team members were selected from the list of stakeholders identified as the critical mass. This choice also frees the Sheriff to devote time to running her organization and to work for implementation behind the scenes.

The project manager will use a variety of methods and techniques to implement the changes that the team recommends. Those methods include:

- * Designing the management team to include individual responsibilities.
- * Development of a plan of action that will include the construction of a responsibility chart.
- * Development of a plan of communications that would keep all stakeholders informed.
- * Development of time tables for implementation of the selected strategy.

* Setting future expectations of management of critical incidents.

* Assessment of the availability of funding for the project.

The following chart represents how the Project Management Team would look.

Project Manager

1 POST Consultant

1 OES Consultant

1 Bear County Staff Analyst

1 POST Representative

1 ACLU Attorney

The responsibility of each team member must be clearly defined. The teams' duties would include:

- * Developing support for technology use.
- * Development of guidelines for technology use during emergencies.
- * Identification of applicable technologies for use.
- * Identification of future technologies.
- * Development and implementation of training strategies.
- * Identification of sources of funding.
- * Approving funding.

Conclusions

As technology continues to develop and change California law enforcement agencies likewise need to change. One area of change will be in how technology is applied to law enforcement operations.

Satellite technology will play an important role in many kinds of law enforcement tasks. Global Position Systems will not only report locations but will monitor elevations of objects like bridges, power and communication lines. Satellite technology will provide a valuable uninterrupted communication link covering vast areas. These communication links will be less susceptible to interruption from natural and manmade causes.

Learning to use and implement satellite technologies into emergency situations will be as important as managing an operational budget. These technologies can radically have an impact on other areas of operations and save countless amounts of time, money and lives.

To create a better future, law enforcement managers must recognize the impacts of satellite technology on many areas of law enforcement operations. The transfer of technology in disaster management operations is almost immeasurable. The transfer of technology, like monitoring, tracking and photography will certainly have an impact on critical incident management in the future.

Governmental agencies, like police and fire agencies, must establish procedures and guidelines to deal with the application, and implementation, of technologies that will help during natural and manmade disasters like riots, fires, earthquakes, floods and other types of emergencies.

Technology, and indeed the world around use, is changing rapidly. A land based program called Real Time Earthquake Monitoring (RTEM) was a proposal in 1991 that was to help generate post earthquake information that is so critical to rescue efforts.⁶ Then a National Research Council panel reported that the California earthquake monitoring network could be relatively inexpensive to update. In two short years, by 1993, the United States and France

were jointly conducting the first major space mission that could detect the change in sea levels on the southern hemisphere. During that time period a rise in the sea level of twelve inches was reported.⁷ The early recognition of a rise in sea levels could be of significant value in anticipation of flooding and potential evacuation.

How police managers make use of resources will be directly impacted by how they use new technologies. Satellite technologies like monitoring from space can significantly impact timely, effective and efficient response to natural and manmade emergencies.

Recommendations

The breadth of benefits of satellite technology use in law enforcement emergency operations and disasters suggest the issue is suitable for further study.

One issue that needs to be looked into is the development of funding strategies. Because of the high cost of changing technologies police managers will be required to examine different methods of funding available for implementation. The competition for available dollars to increase emergency operation capabilities will be keen and an event that will require significant police management skill. Considerations must be given similar to those given by legislators during the summer of 1993 in association with the Disaster Protection Act. It was discussed that the successful implementation of technologies might come about by the formation of federal trust funds to defray costs to local agencies.⁸ Other funding strategies should also be developed due to the high costs of changing technologies. The continuous update, and change, in technology will require significant funding to stay current.

Adaptability and flexibility are key in the approach to implementation. The skill with which management approaches funding will demonstrate who has been the best planner in the interests of their organizations and communities.

ENDNOTES

- ¹ DeJong, Dean, Civil Disorder: Preparing for the Worst, " FBI Law Enforcement Bulletin, March 1994, p. 1-7.
- ² Burrows, William E., Deep Black, Berkley Books, New York, NY, 1986.
- ³ Talcove, Haywood J. and Spencer, Milford H., "Executive Briefing: Local Government IT Survey Results", Government Technology, March 1994, p. 38-40
- ⁴ Government Technology, Narc tracking shares info, keeps secrets", Government Technology, November 1991.
- ⁵ Trumbull, John H., "What Impact will Satellite Technology have on Police Response to Natural and Manmade Emergencies by 2004?", Commission on POST, Sacramento, CA, 1994.
- ⁶ Government Technology "Real Time Earthquake Monitoring", Government Technology, November 1991.
- ⁷ Associated Press, "Satellite detects changes in global sea levels", The Daily Press, June 30, 1993.
- ⁸ Associated Press, Lawmakers propose new national disaster plan", The Daily Press, August 5, 1993.

Selected Bibliography

- Associated Press, "Landers Earthquake was World's Strongest in 1992", The Daily Press, January 30, 1993, World Section, p. A1.
- Associated Press, "New Space Radar Will Check Earth's Health", The Daily Press, March 24, 1993, p. D3.
- Associated Press, "Florida Governor Blasts Weather Service", The Daily Press, March 19, 1993, World Section, p. A3.
- Associated Press, "Is terrorism taking hold in U.S.?", Oakland Tribune, April 3, 1993.
- Associated Press, "Congress OKs \$8.6 billion in quake relief," The Daily Press, February 12, 1994, p. A1 and A6.
- Beckhard, Richard and Ruben T. Harris, Organizational Transitions Managing Complex Change, Addison-Wesley Publishing, Reading, Massachusetts, 1987.
- Bernstein, Robert and Benedicte Dousset and Pierre Flament", Los Angeles Fires Seen From Space," EOS, January 19, 1993, p. 33-38.
- Berry, Scott and George Brown and Bruce Muramoto, "Navigational technologies, personal position locators", unpublished monograph, POST Command College, February 23, 1993.
- Bock, Walter H. and Michael A. Meyers, "Law Enforcement in the Year 2000", California Police Recorder, January 1993, p. 28-30.
- Boswell, Ben and Ron Peret, "Florida Public Safety Response to Hurricane Andrew", San Bernardino County Sheriff, unpublished monograph, November 10, 1993.
- Bowman, Teri, "Privatization increases at state level," Government Technology, December 12, 1992, Vol. 12.
- Brown, Peter J., "Jason IV: Busy in Baja", On Sat, March 1, 1993, p. C4-C7.
- Brown, William F., "Technical Reserve Program", FBI Law Enforcement Bulletin, March 1993, p. 10-11.
- Business Week, "The case for not letting 'em rot", Business Week, August 16, 1993, Social Section.

- Campbell, Charles W., The Impact on the California Highway Patrol's Role in Development and Implementation of Intelligent Highway System Technology by the Year 2002, Commission on POST, Sacramento, CA, 1993
- Capps, Steven A., "This year was one of the worst in California's history for disasters", San Francisco Chronicle, December 31, 1993.
- "Future combat soldier system", unpublished monograph, Command College, February 22, 1993.
- "Tracknet, LaserMap", unpublished monograph, Command College, February 22, 1993.
- Davis, Merrel E., What Impact Will Satellite Technology Have On California Law Enforcement By The Year 2000?, Commission on POST, Sacramento, CA, 1989.
- Davis, Robert, "Dual track focus hurt FEMA, ex-official says", USA Today, February 23, 1993.
- Drabek, Thomas E., Laboratory simulation of a police communications system under stress, University of Delaware Research Center, Newark, New Jersey, 1968.
- Fisher, Roger and William Ury, Getting to Yes, Penguin Books, New York, NY, 1991.
- Gaebler, Ted, "Bureaucracy's gotta go!", The American Legion Magazine, August 1993, p 28-29, 52-53.
- Gomes, John and David Williams, "The personal digital assistant", unpublished monograph, Command College, February 23, 1993.
- Government Technology, "Sale on spy satellite data", Government Technology, February 1994 p.49.
- Government Technology, "Narcotics tracking shares information, keeps secrets", Government Technology, November 1991.
- Harris, James L., "Cargo cats: Law Enforcement private industry partnership", Los Angeles County Sheriff's Department, January 1990.
- Hill, G. Christian and Ken Yamada, "High-tech stakes: Five electronics giants hope general magic will turn the trick", The Wall Street Journal, February 8, 1993.
- Hodges, Jane, Earthquake preparedness in California: submitted to Joint Committee on Fire, Police, Emergency and Disaster Services, The Committee, Sacramento, CA, 1981.

- Holtz, Robert L., "Demanding the Ability to Snoop", The Los Angeles Times, October 3, 1993, Science Section, p1.
- Hoverson, Paul and Lori Sharn, "Military navigation tool has \$10B peacetime potential", USA Today, May 24, 1993, p. 9A.
- Hurst, Norman L., Managing Cultural Diversity in Law Enforcement By The Year 2003, Commission on POST, Sacramento, CA, 1993.
- Krackhardt, David and Jeffrey R. Hanson, "Informal networks: The company behind the chart", Harvard Business Review, July-August 1993, p.104-111.
- Lacey, Marc, "City agrees to pay \$625,000 in car chase death", LA Times, May 1993.
- Leroy, B.E., Global disaster satellite communications system for disaster assessment and relief coordination, Lewis Research Center, Cleveland, Ohio, 1979.
- National Research Council, Antennas, satellite broadcasting, and emergency preparedness for the Voice of America: a report, National Academy Press, Washington D.C.
- Martino, Joseph P., "Technological Forecasting: an introduction", The Futurist, July-August 1993, p. 13-16.
- McGivney, James J. M.S.Ed., "Multimedia Educational Systems", FBI Law Enforcement Bulletin, February 1993.
- National Geographic, "Geographica", National Geographic, April 1993, Vol. 183, No4, p7.
- Nelson, Elden, "Can we talk?" Wordperfect the magazine, July 1992.
- Navin, Patrick T., "Portable affordable GPS: The Trimble Transpak", Pipers Magazine, April 1992, pp. 8-11.
- Newsweek, "California in the rearview mirror", Newsweek, July 1993.
- Post, Michael S., Broadband interactive multimedia telecommunications: The impact on law enforcement in the new millennium, Commission on POST, Sacramento, CA, 1993.
- Powers, Matt and Clark Lynch and Joe Grebmeier, "Sensors that warn of human material hazards", unpublished monograph, POST Command College, February 23, 1993.
- Sacramento Bee, "The little bang theory", The Sacramento Bee, April 18, 1993.
- Scripps Howard News Service, "Few terrorist acts reported in United States", The Daily Press, March 3, 1993, World Section, p. A3.

- Sivo, Joseph N., Satellite communications for disaster relief operations, NASA technical memorandum, 79198, Lewis Research Center, Cleveland, Ohio, 1979.
- Smith, Raymond W., "The global, interactive, human network", Vital Speeches of the day, September 1, 1993.
- Stephens, Gene, "High-tech crime fighting: The threat to Civil Liberties", The Futurist, July-August 1990. p. 20-25.
- Swanson, Scott D., "Back to the future part IV: An expanded environmental role for law enforcement", League of California Cities, January 1990.
- Trumbull, John H.,. What Impact Will Satellite Technology Have on Police Response to Natural and Manmade Emergencies by 2004?, Commission on POST, Sacramento, CA, 1994
- Unsen, Joan Marie, Credentialing of physicians and registered nurses in the emergency room satellite unit, and freestanding emergicenter, Typescript, Department of Nursing, 1984.
- Vortex Communications, SATERN, satellite assisted emergency rescue news, quarterly.
- Walters, Jonathan, "The perils of imported management", Governing, July 1993, p 53-57.
- Webb, Gary L., Ph.D. and James E. Hendricks, Ph.D., "Confronting citizen fear of crime: Police victim assistance training", The Police Chief, November 1992.
- Williams, Jack, "The war on gridlock: Commuter tech comes of age", The Daily Press, March 12, 1993.
- Wood, Daniel B., "Crime fighting technology to take hugh leap" The San Diego Union-Tribune, June 14, 1993, p A-5.