Communications Division History

Shortly after the Missouri State Highway Patrol was organized in 1931, the need for a means of communicating with the officers in the cars was recognized. At that time, the officers used the telephone to call in information to their troop headquarters or to General Headquarters in Jefferson City. The dissemination of general police information to officers on patrol could not, however, be effectively handled in this manner. In its search for a method of getting information to these officers, the Patrol turned to the use of bulletins broadcast over radio station WOS, an AM station located in Missouri's Capitol building and operated by the Department of Agriculture. Patrol cars were equipped with regular automobile AM broadcast receivers, which were tuned to WOS at predetermined times for Patrol bulletins. While this proved to be an important step in the right direction, it was far from satisfactory. Bulletins were necessarily limited due to the fact that the public could easily overhear information being broadcast. They were also limited to daylight hours since WOS was licensed to operate only during daylight hours. Then, too, coverage was often poor on the WOS frequency of 630 kilohertz (or kilocycles in those days). Jesse M. Wherritt, first director of Radio (1935–1945) was a radio-licensed patrolman.

In 1936, when the operation of WOS was discontinued by the Department of Agriculture, the Patrol purchased the transmitting equipment. It was converted by Patrol personnel to operate on the regular police channel of 1674 kilohertz and licensed under the call letters KIUK. It became a 24-four-hour station, and power authorization was increased to 2,500 watts in the daytime and 1,000 watts at night. At this time, the Patrol began full-time radio operation from the Capitol building. The equipment was converted and operated by officers of the Patrol who were licensed radio operators, also.

While this progress was being made, the Patrol also was making plans for communication with other departments in other states for exchanging police information. In 1936, a radiotelegraph transmitter was installed in Jefferson City for handling messages with other states on the radiotelegraph net.

Encouraged by the progress made in the communications field, the Patrol began immediately to plan for the expansion of the communications system to provide complete coverage over the entire state. In 1937, a plan was presented to the legislature which outlined the building of six troop headquarters buildings, each to be equipped with radios for one-way (station to car only) communication with the units of that troop. The proposal also included necessary funds for the addition of sufficient radio personnel to operate these stations on a 24-hour basis. This plan was approved by the legislature, and work began immediately to put the plan into operation. While the construction of the buildings was under way, the Patrol began the process of hiring and training radio operators for the operation of the new stations. By the time the first building and station were ready for operation, 15 operators had been trained, and a simple manual of operating procedures had

been created for the efficient operation of the new communications system. Stations at Lee's Summit, Macon, Kirkwood, Springfield, and Poplar Bluff were completed in early 1939 and network operation began. At the same time, a new headquarters building was completed in Jefferson City and the radio station moved there from the Capitol building. By the time all six were in operation, the personnel of the Radio Division had grown to 24 operators. Following is a list of the radio operators from a January 1940 personnel roster, which is the earliest roster the Patrol still possesses. It is unknown why badge numbers two and three were skipped.

1	Harry Duncan	F	13	George Wallace	A
2			14	Frank Huber	A
3			15	E. Jack Scroggins	F
4	A.L. Woods	D	16	W.A. Hanks	F
5	Urso George	F	17	R.L. Wilcox	D
6	Charles O. Alexander	F	18	Henry Reiter	E
7	Sanford N. Turk	D	19	Norman Harrison	F
8	Jacob R. Bowers	F	20	Oscar Wittrup	B
9	Clarence Cox	B	21	John Bass	E
10	Joseph E. Martin	F	22	Clarence Fish	C
11	Parker Kilby	C	23	J.F. Padberg	F
12	Garland Winn	B	24	J.C. McAdam	E
			25	Ed Schaper	A

With this radiotelephone network in operation, it soon became apparent there was a need for additional means of communication between troop headquarters as atmospheric conditions frequently prevented communications on the radiotelephone network. Plus, it became obvious that intertroop communications needed to be kept off the regular frequency as much as possible to avoid interference between stations and from stations to cars. Therefore, late in 1940, radiotelegraph transmitters were added at each of the troop headquarters stations. These were Collins, 10-channel, automatically tuned units to be operated at a power of 500 watts. This proved to be an important step toward the efficient handling of communications between the Patrol's troop stations as well as those of other states and greatly reduced radio traffic on the radiotelephone channel. This allowed information for the officers to be handled more expeditiously.

In the first five years of the 1940s, World War II caused severe personnel shortages on the home front. The Patrol hired several women as radio operators on a temporary basis until the war ended.

In 1941, the Patrol conducted tests to determine the feasibility of two-way communications between the cars and the stations. However, since these tests were conducted with amplitude modulated (AM) type transmitters on frequencies, which made efficient antenna systems impossible and were necessarily made with low powered units, it was found that the transmitting range was insufficient

for extensive statewide use. It was about this time that frequency modulated (FM) equipment began to appear on the market.

In late 1941, the Patrol purchased 10 units, which were distributed to the troops to test. These proved to be as good as or better than expected and a new era in police communications was born. The Patrol began equipping all cars with FM transmitters, which operated on 39.78 megahertz. The FM transmitters in the cars worked out so well the Patrol began giving considerable thought toward the use of FM transmitters in the troop headquarters stations. This was to get away from the interference problems, which had become greater with increases in radiotelephone traffic. Amplitude modulated signals, like the signals from standard broadcast stations, would interfere with each other and were more susceptible to static and electrical noise. Frequency modulated signals, on the other hand, were much less affected by static and caused less interference since the stronger signal usually took over eliminating the weaker station.

In the mid-1940s, few agencies had FM transmitters. Plans for installing frequency modulated transmitters in the six troop headquarters began materializing in 1946, when 250 watt FM transmitters were installed at each troop headquarters to replace the old AM equipment. At that time, all equipment was shifted to the 42-megahertz band in accordance with a reallocation of frequencies dictated by the Federal Communications Commission (FCC). Station transmitters operated on 42.06 megahertz while mobile units normally operated on 42.22 megahertz. Mobile units could also switch to 42.06 megahertz for car-to-car transmissions. These frequencies are still being used in some troops.

Lieutenant F.O. Wickham was named director of Radio in 1946 and served in that capacity until 1947. Also in 1946, two new troops were formed–one at Willow Springs, MO, and the other at St. Joseph, MO. These included counties that were previously part of other troops. The new troops were formed to provide better radio coverage and administration in those counties. The new troops were equipped with FM radiotelephone and radiotelegraph equipment like that of the other troop headquarters.

Mr. Harry W. Duncan, a licensed radio operator, was named director of Radio in 1947. He would serve as the director until 1973. In the latter part of 1947, after obtaining an experimental license from the FCC under the call sign WOXAN, the Patrol installed a three-kilowatt FM transmitter in Jefferson City for conducting tests and compiling data which could be used to justify the use of these new, higher-powered transmitters on the police radiotelephone channels. The Patrol helped pioneer the use of high-power transmitters on police radiotelephone frequencies and was instrumental in bringing about FCC approval of the higher power systems for all police agencies.

In 1948 and 1949, similar transmitters were installed in all troop headquarters resulting in much improved coverage. These radios, based on continuously transmitting FM broadcast radios were developed by Fred Link to be transmit

switchable allowing clear air when the radios were not broadcasting. In the same years, a number of automatic relay stations were installed on towers around the state to relay transmissions from cars in the more remote areas back to the troop headquarters. Thus, a system of two-way communications was established which would allow cars in any part of the state to receive broadcasts and communicate to their troop headquarters.

During this same period, low powered transmitters and receivers were installed in several weigh stations around the state. This allowed the weigh stations to communicate with their troop headquarters as well as to contact local troopers when the need arose. Eventually, all weigh stations were equipped with two-way radios.

In 1950, another new troop was formed with headquarters in Rolla, MO. Troop I comprised six counties along U.S. Route 66 in the Fort Leonard Wood area. This troop was also equipped with the three kilowatt Link FM radio as well as with radiotelegraph. Troop I, the smallest troop in the state, is found along what is now Interstate 44.

By the early ‘50s, there had been a steady increase in the number of city and county law enforcement agencies with whom the Patrol maintained radiotelephone contact. With this increase, it became necessary to add separate radios at Lee’s Summit and Kirkwood to handle the added traffic. These radios operated on the statewide point-to-point frequency of 155.37 megahertz. This allowed radio traffic with the county and municipal agencies in the two troops to be conducted without tying up the regular Patrol channels and interfering with the radio traffic with the Patrol’s own mobile units. These two radios were installed in the spring of 1954. Similar radios were installed at Troop H in St. Joseph in 1968, and at Troop D in Springfield in 1970. During the early '70s, point-to-point radios were installed at the remaining five troops as well.

In 1955, the Patrol installed a toll teletype machine at the Net Control Station in Jefferson City (Troop F) to provide contact with those states not equipped with radiotelegraph. Messages handled on toll teletype cost slightly less than a long-distance telephone call to the state involved. For this reason, the bulk of the Patrol’s out-of-state radio traffic at that time continued to be handled on radiotelegraph since it involved no charges for individual messages.

In the fall 1959, the Patrol added the frequency of 42.38 megahertz to the regular FM radios. This allowed troops to communicate with each other by voice without having to use the regular Patrol frequencies, which were becoming increasingly busy.

In April 1962, a statewide private line automatic teletype network was installed by the Patrol. This permitted the sending and receiving of messages between the troops, General Headquarters, and the Motor Vehicle Bureau automatically by means of perforated paper tape. This was brought about by the rapidly

increasing volume of message traffic on the Zone Radiotelegraph Net. Teletype provided a much faster method of handling message traffic. Since that time, teletype has given way to modern, high-speed computer equipment, which served as the primary method of communication between troops and other agencies. Though the teletype machine no longer exists, many people still refer to computer messages as “teletypes”.

In March 1965, the Patrol joined the Midwest Law Enforcement Teletype Network. This network was formed for handling messages to and from various midwestern states by means of automatic, leased, private line teletype. A short time later, this network became part of a newly formed national message switching system. By the early 1970s, this switching system had evolved into the National Law Enforcement Teletype System (NLETS). By the 1990s, NLETS had further evolved into a computer-based, continent-wide switching system serving all states and provinces in the United States and Canada and had replaced “teletype” in its name with “telecommunications”. Through NLETS, state systems were interconnected through a common switching system based in Phoenix, AZ, providing rapid communications between departments throughout North America.

In January 1968, the Patrol installed a terminal on the National Crime Information Center (NCIC) network. NCIC was a newly formed, nationwide computerized file of police information maintained by the FBI in Washington, D.C., with terminals in every state and in many of the larger city police departments. Through NCIC, police officers anywhere in the United States had instant access to nationwide files of stolen vehicles, wanted and missing persons, and stolen property. Now, in the 21st Century, NCIC has become one of the most important tools in the law enforcement field.

In the spring 1968, the Patrol began switching its statewide teletype circuits through the St. Louis Police Department’s computer system rather than by mechanical polling. This provided personnel with experience to be used in the planned installation of the Patrol’s own computer system. On October 21, 1969, the Patrol’s communications switching program was transferred to the newly installed Patrol computer in Jefferson City and the Missouri Law Enforcement Telecommunications System (MOLETS) was born. This system provided a separate line from each of the original teletype machines to the Patrol computer and thus allowed teletype messages to be handled more quickly. The MOLETS network was later interfaced with the NCIC computer, so that NCIC inquiries and entries could be made from any terminal on the network. MOLETS was also interfaced with the Region 5 computer network in St. Louis, the Kansas City Police Department’s computer known as Automated Law Enforcement Response Team (ALERT), and the Missouri Department of Revenue (DOR) computer. The St. Louis Region 5 system would later become Regional Justice Information Service (REJIS).

MOLETS continued to expand its operation to include an online file of stolen license plates, stolen vehicles, and both serialized and non-serialized articles.

Seeing the benefits to law enforcement with this system, the Patrol began to make terminals available to sheriff's departments and police departments around the state on a fee basis.

In July 1971, at the suggestion of Major Sam Smith, MOLETS changed its name to Missouri Uniform Law Enforcement System (MULES). MULES became a computer-to-computer interface between terminals and other computer systems in Missouri and other states. MULES would grow into a system providing rapid access to files containing stolen licenses, stolen vehicles, stolen property (later moved solely to NCIC), wanted and missing persons, criminal history information, weather reports, and a message switching system. It would also provide interface to DOR, NCIC, and NLETS. By the 1980s, with the growth of law enforcement computer systems, both NLETS and NCIC would decree that one system in each state must be designated as control system and all computer traffic in or out of the state would pass through this system. For Missouri, MULES was designated as the control system and the Patrol as the state control terminal agency.

With the continuing expansion of MULES into the county and municipal venues, the Patrol's Communications Division was assigned the responsibility of training terminal operators. Ed Keeney, an operator at Troop F, Jefferson City, was given the responsibility of training all new MULES terminal operators throughout the state. He developed a curriculum for a week-long inquiry school followed a month or so later with a week-long entry school. Ed spent much of his time traveling around the state presenting these classes as more agencies were added to the growing network.

Throughout the '70s, law enforcement communications and computer systems continued a rapid growth in capabilities and technology. During this time, MULES moved from teletype machines to the new computer terminal equipment based on the IBM Selectric typewriter. Sitting in a table-like frame about three feet on each side, these 2,740 computer terminals required a "high speed" telephone line of 600 baud. Out on the road, the Patrol experimented with replacements for the tripod-mounted radar units, which were operated by designated officers who traveled through several counties on a rotating basis. Moving radar was eventually legalized in Missouri and units were eventually assigned to all road officers. As with other electronic devices, the size of radar units continued to decrease. As these and other electronic equipment were added to the patrol cars, the installation and maintenance of the equipment became the domain of the Communications Division.

In the early 70s, the growth of population centers throughout Missouri made it necessary to expand the Patrol's administrative coverage. Thus, the first of three satellite stations began operation in Troop E, Sikeston, MO, in 1973. Troop D's satellite in Carthage, MO, came online later in 1973, and Troop C would open a satellite at Flat River eight years later. Each satellite station was equipped with radios similar to the troop headquarters and was staffed by personnel with the title of office manager. Many of the original office managers were former weight

inspectors and driver examiners. By the early 1990s, they became part of the Communications Division.

Also with this growth, the need for further improvements and separation in radio communications became necessary and a plan to move adjoining troops to different frequencies within the 42-megahertz range was implemented in the late 1970s. The system underwent several modifications and improvements over the years as it evolved into the multi-channel system used today.

In 1973, significant computer equipment changes occurred with the replacement of the hard copy IBM 2740 terminals with IBM 3270 video displays and separate printers. At Troops A, C, D, and F, this provided a separate terminal at each operating position where in the past, the single 2740 had to be shared. Also in 1973, the 25-year-old all tube Link radios became backups to the newly installed and hybrid tube/transistor GE-PECO radios.

The ability for rapid retrieval of vehicle registration and driver information from other states became a reality in 1973, when Automated Law Enforcement Computer System (ALECS) began operation. This Illinois-based system allowed users in eight midwestern states to access each other's licensing files. Curiously, when this system began operations, the state of Kentucky only computerized records of suspended or revoked drivers. This meant a response of "Not on File" from Kentucky meant the person was either valid or had no license. A year later, NLETS became computerized and changed its name to National Law Enforcement **Telecommunications** System. ALECS ceased operation as it was absorbed into NLETS, which eventually expanded to provide switching service to all North America.

The mid-1970s saw a dramatic rise in the popularity of Citizens Band (CB) radios throughout the country. This popularity even spawned popular "story" records such as "Convoy" and "White Knight" while the impact on the Patrol led to the acquisition of 714 CB radios for the Patrol cars and CB base stations in each troop headquarters, satellite office, and weigh station. The Patrol was assigned the call sign of KMO-0911, and officers and troop radio rooms began monitoring CB channel 9 for emergency calls.

By the mid-1970s, the Communications Division had grown to 99 operators throughout the state at troop headquarters and the radio shop in Jefferson City. As more duties were added to the division's personnel, the need for additional supervisors became apparent and the position of assistant chief operator was created with one person at each troop filling this position. The complement of assistant chiefs would double by the end of the 20th Century. Captain Raymond P. Bilbrey was named director in 1973, serving until 1981.

Previously illegal in Missouri, moving radar was approved for use and, in 1975, the Patrol acquired 99 moving radar units. Thirty-four nonmoving units were

added, bringing the Patrol's total to 202 radar units of various configurations assigned to officers around the state.

By 1978, MULES had grown to serve over 150 agencies throughout Missouri. The impact this had on the Communications Division was twofold – with more agencies having their own equipment, fewer entries and inquiries were received from these agencies, which allowed Patrol radio operators more airtime for the Patrol's officers. However, with more county and municipal terminal operators, training of these persons and the technical expertise provided to them by Patrol operators also increased. To ease the training burden, a second radio operator from Troop F was assigned to assist Ed Keeney.

In 1979, the emphasis on moving radar resulted in the goal of issuing a unit to all road officers. Toward accomplishing this goal, an additional 311 units were acquired bringing the Patrol's total assigned moving units to 588. Another milestone occurred in 1979, with the Patrol's hiring of the first female radio operator since World War II, when female radio operators were hired on a temporary basis, a common practice with many other companies and industries. In a mostly female dominated profession, the Patrol was one of very few agencies in Missouri whose radio operators were all male. By the start of the 21st Century, the Patrol's ratio of female to male had grown to over 50 percent.

1981 marked the Patrol's 50th anniversary. Mr. Marion J. Brent was named division director, serving until 1982. The third satellite station began operation in Troop C, Flat River, MO. The number of assigned radar units had grown to 922. Also in 1981, the number of MULES terminals had grown to such an extent that it was no longer possible for the two trainers assigned to the Communications Division in Jefferson City to keep up with the demand. As a result, a training specialist was designated at each troop headquarters. This provided the MULES agencies with a "resident" trainer to conduct their training and to answer questions about day-to-day operation of their computer equipment. The nine original training specialists (now titled radio & telecommunications training engineers) were:

Bob Heald	Troop A, Lee's Summit
Larry Willingham	Troop B, Macon
Jim Biggerstaff	Troop C, Kirkwood
Delbert McCormick	Troop D, Springfield
Tim Wever	Troop E, Poplar Bluff
Richard King	Troop F, Jefferson City
Arlie Toll	Troop G, Willow Springs
Roger Heard	Troop H, St. Joseph
Pat Botts	Troop I, Rolla

By this time, Ed Keeney, the original trainer, had been promoted to chief operator at Springfield. Stan Strope and John Lewis were the trainers in Jefferson City.

With the creation of the training specialist position, Stan Strope became the chief trainer and John Lewis transferred to the radio shop.

By 1982, the MULES network had grown to nearly 300 terminals throughout the state and the average number of monthly transactions had increased to over five million. Ten years earlier in 1972, there were 47 terminals accounting for an average monthly usage of 400,000 transactions. This number continued to grow dramatically and, for June 2003, there were 11,655,850 transactions handled by the MULES network. Mr. Charles O. Floyd was named division director in 1982 and served until 1988.

On April 30, 1984, the first MULES Training Conference was held at the Ramada Inn in Jefferson City. Originally known as the MULES Users' Conference, the two-day event drew 153 participants from around the state as well as some attendees from neighboring states. The conference, a joint production of the Communications Division and the Information Systems Division, became a popular event held every 18 to 24 months and drew an average of 350 people per conference. By the start of the 21st century, due to computer changes and various other reasons, the conference went on hiatus. It resumed in 2006.

For the first time in over 25 years, in 1984, a new frequency was added to the Patrol's low band group of frequencies allowing for future system growth and an additional car-to-car frequency. A year later, the MULES network had grown to 430 terminals, and monthly transactions to almost 7 million. Also in 1985, a hiring age litigation was settled, allowing the Patrol to fill five operator vacancies, which had existed since 1982.

Among the computer changes occurring at mid-decade was the implementation in 1986 of the FBI's standard for training of computer terminal operators and the designation of a state control point. As mentioned earlier, the Patrol was designated as Control Terminal Agency for the state of Missouri. Along with this came the restriction in 1987 that any NLETS and NCIC traffic to and from the state must be routed through MULES. Prior to this standard, which NLETS adopted a few years prior to NCIC, REJIS, and ALERT each had their own lines to NCIC. Missouri was one of only two states (the other was Texas) which had three separate systems accessing NCIC. Another part of the FBI standard required the biennial audit of agencies accessing computer Hot Files and Criminal History Files. This biennial audit, called a Terminal Agency Performance Review in Missouri, was added to the duties of the Communications Division's training staff.

The search for a computerized logging system to replace the typewritten logs begins in 1986 with evaluation of several Computer Aided Dispatch (CAD) systems. The determination was made at the time that none were suitable to the Patrol's operation and development of an "in-house" system was undertaken. The HP70 system, a joint project of the Communications Division and Information

Systems Division, came online as a pilot project at three troops in late 1988. A few months later, it was activated at the remaining troops.

The decade of the 1980s also saw a dramatic rise in crimes against police officers and the Patrol suffered dark hours with the loss of several officers to criminal attacks. The operation of command posts during the resulting manhunts puts radio operators into situations they had previously seen only on television or in the movies. These command post operations led to the purchase of a transportable emergency tower in 1987. This 54-foot tower system was mounted on a tandem trailer and could be quickly and easily transported to a field site and put into operation. This provided personnel working the operation much better communications than had ever been experienced.

Mr. Ken Ahrens was named director of Radio in 1988 and served until 1991.

Uninterruptible Power Supplies were installed at several troops during 1988. These systems allowed continued use of radio and computer equipment during power outages. Installation at all troops was completed in 1989. Also, during 1988, the computerized radio log became reality in all nine troops. This system provided many advances over the typewritten log previously used. It also provided a computerized database of accidents, incarcerations, stored vehicles, and stored property. Along with the implementation of computerized radio logging, the IBM System 36 in-house minicomputers were replaced with larger, more powerful IBM AS/400 minicomputers. Communications personnel designated as system coordinators attended extensive training in the use and maintenance of these systems.

On December 1, 1988, the statewide emergency number system went into operation. 1-800-525-5555 provided callers anywhere in the state with toll-free access to their nearest troop headquarters for emergency matters. The newly remodeled Troop I Headquarters in Rolla received a new telephone system with the remodeling project and was designated as the primary contact point for persons calling the emergency 800 number from a dial telephone.

Planning begam in 1989 for the conversion of the MULES computer to MULES 3, a new system which took advantage of the growing capabilities in the computer world. When completed in the first decade of the 21st century, it provided operators with menu driven or fill-in-the-blank transaction screens. Ultimately, MULES 3, along with NCIC 2000, which was also in development, allowed the retrieval of mugshots and fingerprints along with warrant entries and criminal history responses. The same year, programmable scanners began replacing the old crystal-controlled devices in the Patrol cars and troop headquarters. The Patrol cars had been equipped with crystal-controlled scanners since the mid-1970s.

By the end of the 1980s, computer use had risen dramatically, and, in 1990, MULES was handling an average of 14.5 million transactions per month. Along

with this growth was the addition of more equipment in the troop radio rooms, resulting in additional crowding and heat generation. A project began in 1990, which would result in much of this added equipment being isolated into a sound-controlled environment away from the operations consoles.

Mr. Verlin Luna was appointed as acting director of Radio for 1991-1992. Also in 1991, the Patrol began the process to receive national accreditation for the organization. This process eventually impacted every division of the Patrol and caused several new computer systems to come online as well as altering many of the Patrol's operating procedures. The computerized radio log was also enhanced during the early- to mid-1990s. Among these enhancements were the ability to make multiple source entries and embed vehicle and drivers license inquiries. The former gave radio operators the ability to log multiple officers having the same traffic with a single transaction. The latter allowed radio operators to log an officer's license request a single time in the radio log. The software then extracted the embedded data and generated a MULES inquiry returning the information to another screen on the operator's computer terminal. Many enhancements to the computerized radio log came about due to the input of Patrol radio operators around the state.

During the early 1990s, the office managers at the three troop satellite facilities became a part of the Communications Division and their titles were changed to communications specialists. To enhance the pool of qualified applicants for the division and to ease personnel shortages at the troops, communications specialists (who were not required to be licensed) were approved for employment at the troop headquarters. The first person hired for one of these positions was Katrina Gregg, who was assigned to Troop D, Springfield. Through this process, the division was eventually expanded from the 99 operators it had been authorized for several years, to over 120 operators. Mr. Donald Johnson was appointed director, serving from 1992-1993.

In 1993, Missouri, along with most of the Midwest, was inundated by what was ultimately be termed "The Flood of '93", and the Communications Division was once again at the forefront of changing technology. As a result of the summer floods and the following winter's heavy snowfall, the division began the establishment of an automated road report telephone system. This system was named the Missouri Automated Road Report Telephone System (MARTS).

Mr. James Biggerstaff was appointed director of the Communications Division in 1994 and served until 2007. By 1994, the MULES Training Conference, which began in 1984, reached its largest attendance of 375 people. Also in 1994, the first installation of new radio equipment began at troop F, Jefferson City. This new equipment resulted in the elimination of much of the intertroop interference and skip from other locations in the Western Hemisphere that had been dealt with over the years. The number of terminal agencies continued to grow, and by 1994, there were nearly 5,000 MULES terminal operators around the state.

Even with 10 training engineers, this necessitated a change in the MULES training program. The new training program became much more streamlined by combining the week-long inquiry and entry schools into one week school. This was possible due to the significant amount of material in the entry school that was a repeat of the inquiry school. In 1994, MARTS was in full operation offering residents a toll-free number (800-222-6400) to access recordings about road conditions around the state. In January 1995, the system handled over a half million calls.

In 1995, the first of a series of personal computer-controlled radio consoles was installed at Troop F, Jefferson City. This system, which was installed in all troop headquarters by mid-summer 1998, replaced the old mechanical control system, which had been used since the early 1950s. Along with this change, each of the radio rooms was completed gutted and remodeled. 1995 also saw the adoption of a validated selection process for Communications Division employees. These tests provided methods for testing many aspects of an applicant's suitability which were previously unable to be accomplished.

By mid-decade, a major change was under way at the troop headquarters. The front desk operation had always been staffed with enforcement personnel. To put more officers on the road, the desk operation was civilianized under the Field Operations Bureau and staffed with civilian employees who were designated telecommunicators. By 1996, it became obvious that the desk operation was more closely aligned with the Communications Division, and the operation and its personnel became part of the Communications Division. The added personnel increased the division's authorized strength from 126 to 183. By 1997, the title of telecommunicator had replaced that of communications specialist for the Patrol's unlicensed operators. The adoption of the desk operation provided greater flexibility in scheduling since personnel could be assigned to either the desk or the radio console.

As the century was nearing its end, the organization's accreditation called for an incident-based reporting system, which the Patrol's computerized radio log could not adequately handle. Once again, the organization considered the possibility of adopting an outside vendor's computer aided dispatch system. Several were evaluated and one was ultimately approved for use. The system was piloted for a couple of months at all troops, and in March 1999, it became the official log system for the Patrol.

As with many organizations around the world, there was concern within the Patrol surrounding the approach of the last year of the 20th century and the impact it would have on the Patrol's computers when calendars ticked over to January 1, 2000. It was pretty much a non-issue. However, behind the scenes, most of the Information Systems Division's efforts leading up to that date were devoted to making it a non-issue.

By 2001, several issues existed which made staffing Patrol communications centers problematic. To ease the situation, a plan was devised which would provide several advancement possibilities for communications personnel. Through attrition, staff of 100 licensed operators was reduced to 82. A new unlicensed position of radio telecommunicator was created with 47 positions coming from the reduction in licensed personnel and conversion of about half of the telecommunicator positions. Under the new staffing structure, telecommunicators would be assigned only to the desk operation. Radio telecommunicators were primarily assigned to the radio console but could also be assigned to the desk. The licensed staff, also primarily assigned to console work, could also be assigned desk and technical duties. Along with the position changes, advancement paths and plans were created that would allow personnel to obtain training and other certification and advance through the various ranks of the division.

The end of the 20th century and the start of the 21st saw mobile computers becoming an effective tool in law enforcement. By 2002, the Patrol had adopted the tool and began installing the devices in many patrol cars. By 2003, the number of installed units approached 600. Additionally, many county and municipal agencies were also using the in-car computers. These additions brought the number of MULES agencies to over 530 by mid-2003 and the number of operators to over 6,000. Because of the NCIC mandate for biennial recertification, the communications training staff were pushed to limits of their ability and time. In 2002, the Patrol entered a joint program with REJIS to implement an on-line testing program that would allow the thousands of terminal operators the option of recertifying online instead of attending classes. The system was operational in August 2003.

The Emergency Alert System (EAS) became a responsibility of the Communications Division in 2004. Prior to the Patrol's involvement, this system distributed only weather-related warnings. Utilizing equipment installed by Communications Division personnel, state government could directly activate AMBER alerts and other civil emergency messages, such as those related to homeland security. Weekly tests of the system would keep operators familiar with the equipment and procedures and verify the operation of the system. Since its implementation, a number of AMBER alerts have been broadcast on EAS. Each alert contributed to a rapid and successful recovery of the victims.

The Communications Division participated in operation "Show-Me Relief" stands out as a significant accomplishment in 2005. Division personnel worked hundreds of man-hours preparing equipment for an undefined mission to the Gulf Region (following the destruction of Hurricane Katrina). The Mobile Command Units were prepared for any conceivable mission and that preparation proved fitting for the tasks they encountered. Six division personnel were deployed to the Gulf to utilize their technical and operations skills in support of 50 troopers on the assignment. These personnel drove the MCU and a support van to and from the assignment and worked three- to a 12-hour shift while in the Gulf. While the work

was hard and the hours were long, each person indicated a willingness to return if needed.

The division partnered training efforts with the Missouri chapter of the Associated Public Safety Communication Officials (APCO), the nation's largest group of emergency service communicators, to host a statewide training conference in 2006. Over 400 personnel from throughout the state attended the MoAPCO/CJIS conference held in Jefferson City. In addition to radio personnel, representatives from several Patrol divisions assisted with the conference by giving presentations related to the CJIS network and other communications- related topics. The broad range of topics was well received by attendees.

Winters in Missouri can be brutal and winter 2007 was no exception. Much of the state was crippled by two separate ice storms. In January, the central and southwest portions of the state endured heavy ice, resulting in widespread power outages in some locations for several weeks. While in December, yet another ice storm marched upon the central and northwestern parts of the state. Once again, tree limbs downed power lines over much of the area. Troop H Headquarters was without power for 39 hours. While the rest of the town was black, Troop H radio continued operation despite losing heat and telephone lines.

Captain Kim E. Hull was appointed as director of Communications in 2007 and served in that capacity until 2013. The division implemented a pilot project utilizing IP-based telephones between Troop F and the State Emergency Management Agency (SEMA). The pilot was a success, and plans were started to put IP telephones in each troop headquarters. Video conferencing equipment was delivered and installed at all the troop headquarters and General Headquarters.

The year 2007 also brought a change to how MULES users were trained. The decision was made to transfer training responsibilities from the Communications Division to Criminal Records and Identification Division (CRID).

In 2007, the sale of the property where Troop C Headquarters had stood since 1969 tasked the division with designing, installing, and transitioning to a new communications center and transmitter site located in St. Charles County near Weldon Spring, MO.

The Patrol family was saddened by the death of Garland Winn. Garland was the last of the original "radiomen" and spent his entire career at Troop B, Macon. The year also brought the retirements of James C Biggerstaff, director of radio and Robert K Mouser, operations section chief. Both served the Communications Division for 30 years. With the retirement of Mr. Biggerstaff, the division saw the first commissioned director. Captain Kim E. Hull was appointed the director of communications on September 1. Projects Section Chief Roger D. Strope was appointed assistant director of Communications.

Communications personnel participated in the statewide earthquake drill assisting with the setup and operation of two State Area Command Centers (SAC). SACs were established in Poplar Bluff and Meramec State Park. Communications between these points and the State Emergency Operations Center were tested.

New radio recruits attended another six-week radio academy held at the Training Academy on the campus of General Headquarters in Jefferson City. This session was the first time the Amateur Radio Technician Class curriculum was incorporated into the study material. Over 90 percent of the class passed the exam and left with their “Technician Ticket”.

Members of the Communications Division formed an amateur radio club. The Missouri United Law Enforcement Basic Amateur Radio Network Club was open to any employee of the Patrol. The club acquired a two-meter base station repeater and put it into operation at a site in Linn in the spring. The repeater was open to all amateur radio operators and operated on a frequency of 145.390 MHz, -600 kHz with a tone of 123.0 Hz.

Technical Shop Engineer Jerry L. Goans and Technical Field Engineer Thaddeus W. “Thad” Huff brought “Otto-The Talking Car” into the 21st century in 2007. Otto had been a big hit at the Missouri State Fair for years. After updating the electronics, Otto’s facelift was complete and ready for debut at the 2007 Missouri State Fair where he was once again a big hit.

The division continued to add to its fleet of mobile radios. Additional purchases of Kenwood low-band and high-band radios, along with Pyramid mobile vehicular repeaters allowed the division to continue to surplus a much older line of Midland equipment. The continued update of equipment helped the Communications Division be ready for the FCC’s mandate that operation on all radio frequencies below 512 MHz be converted to narrowband emissions by January 1, 2013. Also, the Patrol added a new low-band frequency designated for use between aircraft and the fleet on the ground. Members of the division replaced aging radio equipment at remote transmitter sites in Troops A and C. The GE Mastr series equipment was replaced with Daniels equipment utilizing 300-watt power amplifiers.

Another successful MO-APCO/CJIS Conference was held in Jefferson City at the Capital Plaza Hotel in September 2007. Breakout sessions included CJIS, telecommunicator, management, and technical tracks. The Communications Division provided a six-hour telecommunications track in weapons of mass destruction. The division held a session to assist other agencies understand the importance of keeping their FCC radio station authorization license up to date, the process of frequency coordination, how interference complaints are handled, and how the FCC’s narrowband mandate would affect their communications systems.

2008 proved to be a busy year for the Communications Division. Several division members were involved in the 6th Annual Trooper Michael L. Newton Memorial Toy Drive, while others participated in the annual Polar Bear Plunge benefiting Special Olympics.

In August, the division purchased 1,000 new Stalker radar units replacing an aging fleet over 13 years old. Satellite dishes and equipment were installed at the troops and at the State Emergency Operations Center to bolster backup voice and data communications networks. Additional satellite equipment and radio over IP devices were utilized to remotely control selected transmitter and fixed relay sites.

Radio Shop personnel outfitted seven new Harley Davidson motorcycles with complete radio and radar setups. A challenging project, considering the amount of equipment to be mounted in such a small area, but personnel accomplished the task! Technical field engineers completed the overhaul of the backup PECO power amplifiers for high power low-band radios located at each troop headquarters. All the backup exciters were now replaced with Daniels Electronics radio hardware. The completion of the project provided for a more reliable product, which is also more quickly returned to service when repairs were needed.

Once again, in 2008, Missouri had its share of natural disasters from floods to tornadoes. Communications personnel were called upon when the mighty Mississippi River escaped its banks from northern Missouri to the bootheel. Personnel manned the State Emergency Operations Center 24 hours a day for several days assisting SEMA and other federal, state, and local officials during this state of emergency. Troop personnel worked extra hours keeping up with the additional workload.

Troop personnel worked extra hours keeping up with the additional workload. The Statewide Mock Earthquake Drill was held in December, with Communications Division personnel manning the State Emergency Operations Center and two State Area Coordination Centers, each of which was designed to be an “office on wheels.” The drill helped everyone assess his or her communications capabilities and to prepare for the future, should the New Madrid Fault open and release its fury once again.

Communications personnel were an integral part of the Patrol’s bidding process for an updated Computer Aided Dispatch (CAD) System. The agency had been using the Logistic Systems First Call CAD for the past nine years. The bid process included a new mobile CAD client and a records management. The mobile client would be used by road officers to access MULES, CAD, and the new records management system.

After many months and trips to Clearwater, FL, the Patrol took delivery of a new Mobile Command and Communications Vehicle (MCCV) in September. The

$811,000 purchase was part of a five-vehicle request through a federal Homeland Security grant. A smaller MCCV, along with three rapid response vehicles, were acquired also, and put into service by local agencies across the state. A few state-of-the art pieces of equipment included video teleconferencing equipment, smartboard touch screens, and two workstations in the “command room”. In the communications/technical support area, there were two IP-based dispatch consoles that could access low-band, VHF, UHF, 700/800 MHz, SSB, aviation, and marine radios. An ACU2000 interconnect could patch disparate radios systems together to promote interoperability. Wireline, cellular, and satellite phone service were available. A satellite data network allowed for voice over IP, radio over IP, and streaming video. Remote computer access was available to observe the output of cameras, weather stations, and other equipment. The vehicle was equipped with cameras on all four corners, 42-foot telescopic mast for antennas/camera equipment, a galley, and restroom. The truck itself was equipped with four air conditioners, two slide outs, electric awning, jack stabilizers, three emergency equipment racks, emergency light package, and a 100-gallon fuel tank to supply the truck and the onboard 25 kW generator.

Two State Area Coordination Center kits were assembled during 2008. The purpose of these kits was to fulfill the Patrol’s emergency support function of communications between the area coordination centers and the State Emergency Management Agency. These could be deployed during natural disasters, major planned events, or acts of terrorism. The kits consist of a portable satellite system with telephone capability, computer routers, and a video teleconferencing unit. Also included were high-band and low-band radios mounted in a portable console, mobile tower trailer with antenna system, and amateur radio/antenna equipment. Other equipment to complement the kit included electrical distribution and lighting gear, radio repair and maintenance tools, a 12-foot drop gate cargo trailer, and a 10-kW generator.

The five-week Communications Academy held in 2008 for newly hired operators provided general information about public safety communications and MULES operations as well as specific Patrol communications policies, procedures, and techniques. This was the fifth Communications Recruit Class since the program restarted in 2003.

Communication personnel assisted with the 74th Annual APCO International Conference and Expo held in Kansas City, in August. Operators served as volunteers introducing speakers and assisted attendees in various venues. Thousands of communications professionals from around the world attended the event.

In June, the MULEBARN Amateur Radio Club participated in amateur field day, an annual event sponsored by the American Radio Relay League. The field day allowed amateurs to test their systems and help strengthen the amateur radio network should it be needed during an emergency. During the event, club

members erected a portable tower and operated equipment under a special call sign of WOS, which had been obtained by Corporal Kevin J. Hunter. WOS (a reference to the state-owned radio station located in the Capitol in the Patrol's early years) was used to tie the club's first official field day participation to early Patrol communications history. Members made 829 contacts while operating three different transceivers. The MULEBARN club was open to any Patrol employee interested in amateur radio.

At 6 a.m., on October 14, 2008, operators signed off for the last time as Kirkwood, KAA203, from the Troop C Headquarters located at Interstate 64 and Mason Rd in St Louis County, where it had been located for over 41 years. Immediately after, Troop C Weldon Spring (still KAA203) lit up the airways broadcasting to all officers and municipalities. The move to the new Troop C Headquarters was complete and it was business as usual. The new headquarters now located at the corner of I-64 and Missouri Highway 94 in Saint Charles County houses, among other things, a state of art communications center that boasts more space and additional operating positions. New console furniture better suits the needs of the operators at the six workstations. A wall of large screen monitors keeps track of officers' locations, building security, and local/state/national news and weather. Troop C was now the first troop headquarters to utilize a voice over IP telephone system allowing for greater flexibility and efficiency by using the Patrol's data network to make and receive telephone calls. The new Troop C was the first Patrol headquarters to utilize a tower site and transmitters NOT located on the same property as the building.

A new 340-foot communications tower was built on Missouri Department of Conservation property a couple miles southwest of the new headquarters building. All data and voice passing between headquarters and the tower site was now transported via a microwave radio link. Reports indicated the system was nearly flawless upon switchover. Congratulations to everyone, including the dedicated members of the Communications Division, for all their hard work getting "Weldon Spring" on the air. (Although, there were and still may be a few "slips" identifying the troop as "Kirkwood" rather than "Weldon Spring", it was smooth running).

The Communications Division started off 2009 very busy, just like it ended 2008. Division personnel scrambled to address last minute details of the long-planned inauguration of Governor Jeremiah "Jay" Nixon. To facilitate interoperable communications and serve all agencies involved, members of the division set up three separate VHF base stations throughout Missouri's Capitol building utilizing nationwide interoperable frequencies. Using IP routing equipment, all three base stations were connected to the House of Representatives computer network to allow for multi-casting. Each member of the detail was assigned a specific frequency depending on where they were stationed. Networking the base stations allowed officers to hear all radio traffic regardless of their assigned location or function. The Patrol's Mobile Command and Communications Vehicle (MCCV) was stationed on the grounds to coordinate all radio traffic and was able

to access the interoperable network via a UHF radio also connected to the network. The MCCV assigned to Sikeston Department of Public Safety was positioned on the grounds and handled communications for officers outside the building on the MTAC frequency. All other rapid response vehicles provided security video feeds and satellite communication to the command post located in the basement of the Capitol. The command post was tasked with monitoring communications along with video feeds sent via satellite from the rapid response vehicles and fixed locations throughout the downtown area and along the parade route. Many commented the communications during this event was the most coordinated and seamless they had seen in many years. Congratulations to all who brought this project together as many fought the elements of snow and sub-zero windchill.

Winter wasn't over and as in recent years, an ice storm struck the southeast Missouri area in late January. Communications personnel manned the Emergency Operations Center at SEMA and sent resources to the affected areas providing manpower and resource support. The Sikeston MCCV was deployed and later the Patrol's Mobile Command Unit was utilized and served as a coordination center for SEMA employees for the distribution of generators. Personnel from GHQ, troops, and radio shop were called upon during the incident.

On March 3, the Patrol mourned the death of Communications Operator III Taylor C. Hunt, Troop I. Taylor's career with the Patrol started at Troop C in 1999. His jovial personality, big smile, and professional work ethic are truly missed by his Patrol family.

In addition to being built for commercial vehicle enforcement troopers (CVET), Chevrolet Tahoe's were built for "tall" road officers. This eliminated the need to modify the Ford Crown Victorias. Radio shop personnel assisted the Information Systems Division during the months of November and December with the "Air Card" to "GoBook" conversions. While in the field, technicians swapped out antennas and removed modems. Docking stations were removed and modified to accommodate dual pass usage.

Also, during 2009, the division implemented a 16-hour Communications Training Officer (CTO) "Train-the-Trainer" Course which was held in March. Another successful communications academy session was held in June allowing new and recently hired operators to be part of a crash course on console life at the Patrol. Operators from across the state attended in-service training in Jefferson City, continued training at the troop level, completed computer classes and supervision school, worked side-by-side with technicians at the radio shop, and either obtained or upgraded their amateur radios' licenses. Other operators shared their skills by conducting MULES and APCO classes, instructed at the academy and serving as CTOs. The Communications Division continued to provide support in the form of instructors and logistics during the annual Missouri APCO/MULES/CJIS Conference.

Troop D Communications Operator II Gerald Leigh became Staff Sergeant Gerald Leigh when he was activated for military duty with the United States Marine Corps Reserve.

During the heat of summer, the division assisted the Patrol's SWAT teams and several federal agencies while they served a search warrant in McDonald County in southwest Missouri. Personnel involved were told they were taking part in a training exercise, and not until many had arrived at the staging area where they advised otherwise. After many meetings and planning sessions, the search warrant was served, and one person was taken into custody for questioning regarding terrorist activities. He was eventually linked to other suspects in the country where similar search warrants were being served at the same time. The Communications Division utilized GHQ, radio shop, and troop personnel to man the MCCV and MCU which were stationed at predetermined locations in the area. In addition to those duties, they assisted officers with transportation, ATV support, and helped to deliver food and water. State Area Coordination Centers, MCCV, MCU, pickups, and cargo vans helped form the parade of equipment from Jefferson City to Bentonville, AR, where staging took place the day before the warrant was served. Other than a few flat tires on the way back and some officers overheating during the detail, everyone returned safely.

During the year, the state awarded contracts for the criminal history database and MULES (CPI), CAD (X-Wave), MCD (FATPOT) and RMS (Niche).

Some of the equipment updates in 2009 included the installation of a microwave downlink from the Patrol helicopter to the MCCV or portable viewer. This allowed for real-time video being shot from the air to be observed in the MCCV and then fed to a server at GHQ where selected personnel could monitor the action in the field. AGILE mesh cameras extending the range of MCCV surveillance were installed along with updating MCU equipment to provide satellite connectivity providing data, telephone service, and onboard video surveillance.

Field engineers continued to make improvements to the Patrol's low-band radio system, adding additional remote transmitters and new fixed relays and updating base station equipment. VHF base stations still need to be purchased to meet the January 1, 2013, FCC mandate to narrowband frequencies in both VHF and UHF bands. More IP-based and 4.9 GHz solutions continued to be utilized to minimize downtime experienced with digital circuits. Troop F implemented multi-casting with the high-power transmitter located at headquarters and a fill transmitter located in Mexico, MO. After the proper FCC licensing was obtained, Troop F started "multi-casting" both transmitters. This allowed all officers in the troop to be aware that an operator is "on the air". Prior to this implementation, if Troop F was transmitting on the Mexico radio, officers in the southern part of the troop didn't know they were busy resulting in officers calls for service to go unheard.

GHQ personnel continued to work diligently procuring equipment, sites, and FCC licenses to successfully implement a Patrol-owned microwave network. When completed, this would provide microwave connectivity across the state and successfully connect Troop A, Troop F, GHQ, and Troop C. Plans were being made as to how this "large pipe" would be utilized to further enhance special projects and day-to-day operation of the Patrol.

GHQ and radio shop personnel continued to meet with Motorola, the Missouri Department of Public Safety, and other state users regarding the statewide, interoperable, VHF, P25 compliant, trunked radio network. After many hours of meetings, conference calls, and research, the group moved closer to finalizing the site selection. The structural analysis for each Patrol-owned tower included in the radio system was concluded. Although each study provided good results, some sites would need to be replaced or modified to handle the additional loading requirements of the new radio system.

Continued adjustments to the Voice Over Internet Protocol (VoIP) telephone system at Troop C Headquarters took place through the end of the year. The division also continued working on new projects, such as replacing the telephone system with a VoIP telephone system for the GHQ complex. Several personnel took part in communications and electronics training and conferences offered throughout the country. Very good information was brought back to the division and successfully utilized or implemented to improve operations and assist with support the division provides to the Patrol.

On September 15, 2010, the Communications Division commenced providing radio communications to the Missouri State Water Patrol. During the months preceding, personnel worked diligently preparing for this addition. Technicians visited Water Patrol transmitter sites to evaluate immediate and future needs. Radio Shop personnel prepared for technical maintenance of the new fleet and GHQ personnel assisted with the move, installation, and testing of console and dispatching infrastructure along with telephone circuits. At this time, Troop F Headquarters became responsible for dispatching Water Patrol officers statewide. Local control of remote transmitter sites were accomplished via a complex network of MPLS circuits. Some dispatching personnel from the Water Patrol moved to the Communications Division and were assigned to Troop F Headquarters to assist with the increased radio traffic. The division also assumed all responsibility of maintaining Water Patrol radio station licenses.

Also, during 2010, the division started the rollout of an IP telephone system commencing at General Headquarters. This ongoing project necessitated the assignment of a network manager whose duties included ongoing maintenance, programming, and providing user training.

As progress on the statewide VHF trunked radio system continued to move forward, division personnel spent many months along with other state agencies, participating in fleet mapping meetings and workshops. The primary mission of

the group was to meet with and develop a "plan" for the users of the new radio system to interoperate. This included creating talk group assignments for agencies and their users, deciding on programming options for the mobile and portable radios that were expected to be utilized, and developing standard operating procedures and emergency storm plans that guided the agency users on proper use of the new system. After months of hard work and discussing the many aspects of the design, a complete fleet map was finalized.

Communications technicians also assisted Motorola with the installation of the first new "master-site" at the Weldon Spring transmitter site. The master site would provide network direction and connect to all remote transmitter sites put into place as the radio system was continually built out.

Toward the end of 2010, the Communications Division was closing in on being able to turn up the first leg of a microwave network. Upgrades to microwave radios, antennas, and tower sites, and the installation of new equipment eventually allowed the Patrol to pass traffic on a data network from Troop C Headquarters to General Headquarters. Division personnel continued in the months ahead to complete another leg, from GHQ to Troop A Headquarters.

Also, during 2010, the division continued upgrades to emergency communications. State Area Coordination Centers (SACCs) were continually being upgraded to provide users in the field access to the Patrol telephone and data network via satellite communications. SAACs could now support up to 50 users with IP telephone communications, access to the Patrol data network, open Internet, local telephone service if available, integrate cellular capability, and radio communications via low-band, high-band, and HF radios.

Training continued to be an important aspect of the division. During 2010, division personnel provided In-service, SACC Readiness, CTO, Train-the-Trainer, and Water Patrol Integration training. A five-week Communications Academy, inter-agency exercises utilizing emergency communications vehicles, and providing presenters at the Missouri APCO Conference were among the many training activities.

The Missouri Criminal Justice Modernization Project (MCJMP) was in full swing in 2010. There were many pieces to this project including a new MULES and Criminal History, Mobile Computing Devices used by officers in their vehicles, a Records Management System, and a new Computer Aided Dispatch. The biggest impact to the Communications Division was the CAD System, which was provided by XWave. This replaced the present CAD system that had been in place since 1999.

Other upgrades performed by technicians through the year included replacement of all low-band fill transmitters and UHF receivers at each troop headquarters, new repeaters at select locations throughout the state, cooling upgrades to all the high-power low-band transmitters, new Voice Over Internet Protocol links from

remote sites to troop headquarters, and the installation of printers in all enforcement vehicles.

The Missouri State Water Patrol merged into the Missouri State Highway Patrol in 2011. Centralized dispatch of Water Patrol officers from Troop F Headquarters was decentralized to the nine troop headquarters around the state and the Radio Shop installed low-band radios and mobile computing devices in former Water Patrol vehicles and select vessels to enhance communications capabilities during marine and road operations.

Rollout of the IP telephone system at General Headquarters continued as the division prepared to begin installing the system at all troop headquarters in early 2012. The statewide VHF trunked radio system continued to move forward with the installation of critical equipment and systems. Radio rooms at troop headquarters in the southern half of the state were updated for installation of Motorola consoles.

The division also accepted delivery of the new rapid response vehicle (RRV) in 2011. The communications package installed in a Chevrolet Suburban vehicle provided an effective method to get close to a disaster area and link back through satellite to the mobile command and communications vehicle as well as other command posts.

During 2011, division personnel provided in-service training for 148 operators, conducted SACC readiness exercises, a CTO (train-the-trainer) course, and completed a five-week Communications Operator Academy for newly hired personnel at all troops.

In September 2011, the Patrol's command staff integrated the Communications Division and the Information Systems Division together to create the Information and Communications Technology Division (ICTD). Captain Kim E. Hull was appointed as the first director of the new division with Lieutenant Vernon C. Dougan being appointed the first assistant director.

In addition to the above appointments, six new section directors were appointed: Applications and Processes — Section Director Clifford R. "Cliff" Gronauer; Administrative Support — Section Director Larry G. Lueckenhoff; Device and Network Support — Section Director Bradley W. “Brad" Coffey; Field Technical Support — Section Director Shannon L. McGowan; Operations — Section Director J. Corey Chaney; and Radio and Microwave — Section Director Roger D. Strope.

On October 19, 2011, the Missouri Criminal Justice Modernization Project (MCJMP) team accepted a Governor's Award for Quality and Productivity in the area of technology from Governor Jay Nixon. The MCJMP team consisted of five smaller teams working to upgrade operational systems to enhance delivery of enforcement services and streamline operational effectiveness. Modernization

began in 2007, with the search for companies to build the systems designed by the MCJMP teams. The modernization centered on five areas: computer-aided dispatch, mobile computing, computerized criminal history, records management, and replacement of the state message switch.

Also, during 2011, the Missouri State Water Patrol and the Missouri State Highway Patrol merged into a single organization. The Water Patrol merging into the Patrol resulted in the consolidation of dispatching centers. Initially, Troop F Communications handled the dispatching needs of Water Patrol officers. However, this responsibility was decentralized, and all nine troop headquarters now handle marine operations. The communications personnel installed low-band radios and mobile computing devices in former Water Patrol vehicles and select vessels to enhance communications capabilities during marine and road operations.

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In 2012, Patrol telephone infrastructure was moved from the traditional Public Switch Telephone Network (PSDN or as better known, the telephone company) to Voice Over IP (Internet Protocol). At significant cost savings, telephone calls were routed over the Internet through the Patrol's computer network allowing for additional functionality and monitoring.

In 2012, the Patrol and Motorola signed off on a major component of the MOSWIN radio project that standardized the workstations and hardware configuration used at each troop.

On May 1, 2013, Captain Kim E. Hull retired, and Captain Vernon C. Dougan was appointed director of the Information & Communication Technology Division (ICTD). Lieutenant Leslie D. Thurston was appointed assistant director. In 2013, management support for ICTD was reorganized from five assistant directors to four:

Assistant Director (Communications) ─ Roger D. Strope
Assistant Director (Infrastructure & Customer Support) ─ Steven C. White
Assistant Director (Application Development) ─ Larry G. Lueckenhoff
Assistant Director (Project Management & Mobile Device) ─ Lt. Leslie D. Thurston

In 2013, Phase 2 of the MOSWIN Project involving the radio conversion saw the transition of all nine of the Patrol's troops and all vehicles in the Patrol's fleet switched over to the new interoperable VHF system to promote greater reliability.

Continuation training on MOSWIN was prepared in late 2013 and presented in 2014 through the Patrol's document management system for all end-users and communications personnel. A short-block training video provided a refresher on learned MOSWIN training shortfalls for end-user application and system capabilities. A second video provided initial training on the newly installed Digital Vehicle Repeater System (DVRS) and upgrades to MOSWIN programming.

In 2014, the Information and Communication Technology Division completed a web-based application of the state's two-finger Fast ID technology and the FBI's Repository of Individuals of Special Concerns (RISC) database. This interface provided access to the FBI's database of sex offenders, federal fugitives, and the terrorist watch list, with a single two-finger submission from a mobile identification device.

Just in time for the 2014 Missouri State Fair, Rave Alert was implemented as the Patrol's emergency notification system providing messaging through email, text, and voice to Patrol specialists and to citizen subscribers. Also in 2014, updates to the AMBER Alert national portal, subscriber-based equipment, and software interfaces were implemented to improve the Patrol's ability to coordinate and release approved AMBER Alerts within the state.

In early 2015, the Communications Operations & Training Section in conjunction with the IT specialists from the Enterprise Development section began the implementation of a network-based form for Quality Assurance - Quality Improvement (QA/QI) program. Standards were established for QA/QI Reviewers to use when answering programmed questions regarding specific incidents. Chiefs and assistant chiefs were given access to the online form and were provided with a single incident per communications operator for review each month. Following minor changes to both the policy and forms product, the QA/QI program went live in late 2015.

Communications operators from all troops were added as radio help during Stop & Approach Law Enforcement Academy courses held for both outside agencies and Patrol recruits starting in 2015. Communications operators performed radio duties to provide a greater sense of realism during the training exercises. Operators were also able to "ride-along" with field instructors to gain a better understanding of how troopers handle traffic stops. Hands-on MOSWIN training

and a Patrol vehicle equipment overview were added for recruits during their downtime at Stop & Approach.

The Communications Training unit conducted one three-week Academy in February 2015. A two-week Academy was conducted for operators hired prior to September 2015, and again for operators hired before February 2016. The shorter format was instituted to provide more flexibility to hire communications operators throughout the year. The shortened format allowed for completion of a basic communications course, CAD operator course, cultural awareness, and practical application of skills. All trainees hired in fall 2015 and spring 2016 attended a follow-up one-week Academy which focused on training and assessment of skills.

Between January 1, 2015, and June 2016, the Radio Shop built 802 vehicles, reassigned 502 vehicles, stripped equipment from 801 vehicles, and provided services for 1375 end-users.

In March 2015, Communications Operator III Kendra L. Shell, Troop E, was selected as the Missouri Public Safety Communications George Major Trainer of the Year. Kendra was honored in front of her peers at the Missouri Public Safety Communications Conference awards banquet held at St. Louis Union Station.

In early 2016, the emergency response vehicle technical team updated the IPICS Server on the Mobile Command and Communications Vehicle (MCCV). The IPICS system provides channel functions for all on-board communications equipment. The upgrade allows for use on Windows 7 (not cloud-based). The team also upgraded the larger televisions onboard the MCCV to high definition for better picture quality and added a HD video switcher. These upgrades provided the capability to send any image or video from a smart phone or tablet to the onboard HD screens. All upgrades were completed by July 2016.

In March 2016, Troop E Chief Operator Dawn M. Moore was selected as the Missouri Public Safety Communications Supervisor of the Year award winner. That same year, Communications Operator Robert P. “Bob” Larimer, Troop D, was selected as the recipient of the George Major Trainer of the Year award. Chief Moore and Operator Larimer were honored in front of their peers at the Missouri Public Safety Communications Conference awards banquet held in Columbia.

Following the retirement of Assistant Director Roger Strope, J. Corey Chaney was appointed as ICTD assistant director for Communications on March 20, 2016. Troop C Chief Operator Lori K. Bielawski was promoted to Communications Operation & Training Section chief on May 15, 2016.

Effective October 1, 2016, the Communications Division was re-created and separated from the Information and Communications Technology Division. The remaining information technology aspect of the division was then merged into the

Criminal Justice Information Services Division (CJIS). Thus, ICTD ceased to exist. Captain Vernon C. Dougan was named director of the re-established Communications Division. Lt. Thurston and Section Chief Jonathan C. Chaney were named assistant directors.

Organizational Structure:

User Support (Radio Shop) Section Chief — Shannon L. McGowan
Operations & Training Section Chief — Lori K. Bielawski
Infrastructure Support Section Chief — Bradley W. Coffey

Statewide personnel authorizations of the Communications Division included 154 communications operators, 16 communications technicians, and 12 communications field engineers. The GHQ staff included the CAD program manager, chief training operator, mobile device support technician, and one clerk IV.

Troops D and I field engineers removed and replaced all control station, scanner, HAM, and ODN antennas to support the roof & HVAC replacement at the Troop I Headquarters in 2016. During the Troop D HVAC replacement, engineers relocated Troop D radio room to another area within the building, supplying three dispatch positions for two months. During the reinstallation following renovations, engineers performed a substantial cleanup of the radio room to remove old or unused wiring. Engineers also changed the Phillipsburg repeater frequency at site and at Rolla to alleviate interference from Miller County Ambulance District. Engineers changed UHF frequencies on all Troop D low band repeaters, moving from the 456 MHz channels to 460 MHz channels to alleviate interference from multiple users in the business band land mobile radio (LMR) industry in the area. Troops D and I engineers completed 19 MOSWIN tower site preventive maintenance inspections in November/December 2016 and 13 low band tower site preventive maintenance inspections in March 2016. Finally, the engineers converted all MOSWIN circuits to new CenturyLink circuits; upgraded transmit and receive relays at the five 250-W, low band base stations in Troop D; and completed the statewide MOSWIN update to v7.16. These maintenance actions are indicative of the work being done by all field engineers throughout the state.

In 2016, the Communications Division Training Section developed a MOSWIN refresher training checklist and, in conjunction with the Patrol's Training Division and Field Operations Bureau, implemented peer-to-peer refresher on MOSWIN radio operations to be completed in early 2017. During the fourth quarter of 2016, each troop section, zone, or division selected a MOSWIN instructor who attended a train-the-trainer course presented by qualified communications operators at the troop level. The course covered the checklist requirements and training documentation in accordance with Patrol and POST guidelines. The overall objective: to improve user abilities to rezone radios and select talk groups, while increasing understanding of how trunked radio systems work and interoperability options within the state.

In early January 2017, division and troop radio personnel supported the communications requirements for Governor Eric Greiten's inauguration by providing technical support for the mobile command and communications vehicles and six communications operators.

Later that month, the State Emergency Operations Center activated in support of emergency services during Ice Storm Jupiter. Representatives from the Communications Division and the DPS Interoperability Section manned the communications emergency support function 24/7 for several days during severe winter weather conditions which forced numerous road closures and caused power outages across the state.

Technicians from the Radio Shop deployed in support of the Legends of Golf tournament in April 2017, with the MCCV and MOSWIN mobile tower site.

Severe flooding throughout much of southern Missouri in late April prompted a significant Patrol response to support evacuation as well as search and rescue in hard-hit areas. The flooding caused major damage to more than 1,200 homes spread across more than 40 counties and at least $58 million in damage to roads, bridges, and other public infrastructure. The state emergency operations center as well as county EOCs were activated, and Patrol communications personnel were essential to the flooding operations in local regions and for statewide coordination.

The division completed two statewide and two special hiring processes for communications personnel during 2017. Operations and Training conducted a three-week Communications Operator Academy in July, graduating 14 new operators. The three-week Communications Academy continued to provide the best possible education opportunity for newly hired operators when combined with on-the-job training and evaluation at troop.

In August 2017, communications technicians deployed with radio equipment to support the Bull Float at Onondaga State Park and demonstrated the MCCV during the state SEMA conference at the Lake of the Ozarks.

Operations and Training conducted Supervisor In-Service training in November 2017 covering a variety of subjects including MOSWIN and other radio technologies, the Patrol's remote camera programs, standards and core values, CJIS hot topics, and operational protocols. During chief operator meetings and training workshops, it was decided to make in-service attendance a requirement for the next three-year continuing education cycle. This was the second year for a supervisor in-service separate from communications operators. The format and concept had many advantages and received good feedback from supervisors. The division planned to host one separate in-service for supervisors each calendar year during the 2018-2020 training cycle.

Communications Division engineers continued to provide statewide technical support and essential services on equipment installations, preventive maintenance inspections, and repairs on the Missouri Statewide Interoperability Network infrastructure. Seventeen new MOSWIN tower sites were installed in 2017, which increased the support requirements for Patrol engineers to 106 tower sites throughout the state.

The breath alcohol instrument technician provided service on 85 instruments, completed 150 simulator certifications, and trained more than 50 Type II operators during 2017.

Niagara University and the Missouri Developmental Disabilities Council partnered together to provide First Responder Disability Awareness Training project for all disciplines of emergency services including communications. Several Patrol communications instructors attended the train-the-trainer course held at the Patrol's Law Enforcement Academy in December 2017. Thus, they were qualified to provide an eight-hour awareness block to Patrol operators and other agency communications personnel.

In 2018, the Communications Division Infrastructure Section made several upgrades to MOSWIN sites across the state. Field engineers focused on improving the reliability of the backup generators and bringing the equipment up to local building code requirements. New mini split-level air conditioning units were installed to supplement existing wall mounted HVAC systems and to significantly reduce maintenance costs. Field engineers made cellular device firmware updates to ensure critical radio backup network connectivity was in service if commercial data connectivity fails.

In conjunction with DPS and Motorola technicians, Patrol field engineers completed reprogramming to ensure the smooth integration of infrastructure additions from Kansas City, the Mid-America Region Radio System, Cass and Pettis counties, and all other radio systems in 2018. Engineers added multiple outdoor cabinet 700 MHz trunking sites statewide in conjunction with DPS. Patrol engineers also completed the first channel add at a VHF site without Motorola's assistance.

In the fall 2018, the Communications Division began using an online testing system by Select Associate Screening System called Assess. Assess is a validated screening process for candidates in public safety communications positions. Utilizing the Assess test enabled the division to reduce the duration of the hiring process by four to six weeks. Candidates who successfully completed the Criticall and Assess tests immediately proceeded to an interview board. Being able to complete the testing and interview phases of the hiring process in one day received positive feedback from communications operator trainee candidates, the troops, Human Resources, and the division.

In 2018, the Communications Division Operations and Training Section hosted two 120-hour Communications Academies for newly hired operators, two 20-hour Communications Training Operator/Training Evaluator courses to train selected operators to perform these functions, two 16-hour Operator In-Service courses, and one 16-hour Supervisor In-Service course. The section provided 16-hour blocks on Patrol Radio Operations to the 105th and 106th recruit classes and coordinated communications equipment and personnel to support the recruit class's stop and approach training events. The Communications Division also coordinated radio personnel to support six pursuit training courses at the Emergency Vehicle Operating Course in 2018.

As founding members of the Missouri Professional Training Partnership, the staff directly supported 142 continuing education hours for outside agency personnel both at Patrol facilities and other agency facilities within the central region of the state.

The Communications Division Operations Section Mobile Device team migrated 400 devices off Mobile Iron over into MAAS360 and installed the Apple DEP program in the process. All Verizon users migrated to public safety plans. Additionally, the section moved all Patrol AT&T phones to FirstNet and set up a public FirstNet portal for critical personnel. Finally, in 2018 and early 2019, the section rolled out WAVE to all troop staff and gaming officers on several boats. WAVE allows users to access the MOSWIN radio network from their mobile device.

To enhance the command and communication capabilities of Patrol personnel, the Communications Division converted a total of 247 devices to the FirstNet network in 2019. FirstNet provides public safety personnel with a more robust and interoperable cellular network for routine duties and priority service during emergency operations.

In 2019, members of the Troop D Special Weapons and Tactics team and assigned field engineers designed and built a communications vehicle to update and replace existing team response vehicles. The communications vehicle allows two operators to work an incident and is equipped with a mobile computer and cellular modem allowing operators to remote into the CAD system at troop headquarters. The communications vehicle is equipped with a 20-foot mast and a tactical 700 Megahertz repeater to extend the range of on-site radio communications. An ACU-1000 links a variety of radio equipment and provides an intercom between the vehicle and troop headquarters. All communications can be patched directly into the MOSWIN dispatch console at troop. The new design was planned to be a model for the Troop A and F SWAT vehicles.

Communications Division completed three Communications Operator Trainee Academies in 2019. The course had undergone several years of revision and consolidation and, in December 2019, was decreased to two weeks in residence paired with several mandatory distance learning tools. The distance learning

tools provided the same critical initial training as previous academies but now took place at the troop level.

In fall 2019, Motorola LEX-11 devices, a smart phone with integrated portable radio features, were deployed to troopers assigned to the Gaming Division. These devices utilize long-term evolution high speed data through the WAVE application to interface with land mobile radio technology enabling troopers to communicate on MOSWIN from the casino floor to troop radio rooms. In recognition of this innovative solution to expanding radio capabilities, the division was awarded the 2020 Association of Public Safety Communications Officials Technology Leadership Award for Large Agency. This international award recognizes communications centers that use technological advancements to benefit their center, employees, and customers. The mobile device technician fielded 85 mobile devices; 80 of which were assigned to the Gaming Division.

In response to the COVID-19 pandemic in spring 2020, radio rooms practiced social distancing and other safety protocols to maintain continuous operation. Washable keyboards were purchased by the division to enable more thorough cleaning of this vital piece of equipment in the radio room.

Communications Division personnel coordinated with the Missouri Statewide Interoperability coordinator (SWIC) to conduct a Department of Homeland Security All-Hazards Incident Tactical Dispatcher training course at the Patrol's Academy in February 2020. One SWAT assigned operator from each Patrol team attended. These operators, in conjunction with the Communications' Training Section, developed a Patrol Tactical Dispatcher course. Starting in October 2020, and running through March 2021, instructor-led WebEx training modules were conducted for assigned SWAT operators. The course covered the basics of tactical incident hazards, communications, and readiness, and required the completion of hands-on equipment training at troop level.

Communications Division (CommD) field engineers inspecting the 1972-model back-up low-band transmitters at troop headquarters found the wiring in many of the older model transmitters had become brittle with age. Any breaks in the high voltage wiring insulation could be dangerous to personnel and severely damage additional communications equipment mounted in troop radio equipment sheds. During 2020, CommD field technicians installed new 250-watt solid state low-band transmitters to provide more reliable equipment that is easier to maintain.

A new radio tower was completed at the Missouri Department of Conservation's James A. Reed Memorial Wildlife area in Lee's Summit to accommodate Troop A MOSWIN and low-band communications in April 2020. A crane and multiple demolition crews were brought in on July 8, 2020, to begin the process of dismantling the old tower at Troop A headquarters. By Friday, July 10, 2020, the radio tower had been taken down safely.

Due to the COVID-19 pandemic, CommD moved the hiring processes in 2020 to an online format. 174 applicants were tested online, and interview boards were conducted via WebEx teleconferencing platform. Both CommD administration and applicants gave positive feedback regarding the new online testing and interview formats.

The Troop D SWAT communications vehicle initiative, which began in 2019, met with enthusiastic approval from the other SWAT team leaders, prompting the build-out of two additional vehicles: one for Troop A and one for Troop F SWAT teams. This included the purchase of new Kenwood VHF radios capable of DMR, NXDN, and P25 digital modulation protocols. A custom plate was added to mount the 19-inch radio rack cabinet securing radios and control heads in the backseat area. The team upgraded the ACU-1000 to an ACU-2000, which improved the overall communications interoperability with non-Patrol public safety agencies. A custom fold-over mount was developed by a local manufacturer to allow fiberglass military-style masts and antennas to be raised by a single person. The mast configuration expands the range of communications when using tactical simplex (conventional) channels. Training for Troop F SWAT operators was completed during the week of August 10, 2020, and Troop A training was completed on August 27, 2020.

Several 2020 operator in-service dates were canceled due to the pandemic, but the division completed mandatory initial training classes and several refresher blocks for communications training operator/communications training evaluators and conducted a Communications Operator Academy in December 2020.

Beginning January 2021 and continuing into 2022, communications technicians assigned to the User Support Section (Radio Shop) began the process of installing advanced encryption standard multi-key encryption into all mobile and portable radios. The installation provided the capability to secure Patrol radio transmissions and was necessary in order to maintain interoperability with numerous agencies who have already begun to secure their operational talk paths. The portable radio technician installed AES into 620 radios, and the mobile radio technician installed 700 radios in 2021.

The Communications Operations and Training section tested 61 operator applicants online and conducted academic training for nine operators hired in 2021. Tactical dispatcher training was completed for all communications operators assigned to SWAT teams and half of those assigned completed formal evaluations to be certified in positions. The program was expanded in late 2021 to include training for interested operators who are not assigned to SWAT teams. A total of 22 academic training hours were completed in tactical dispatcher. The division completed 78 hours of in-service courses using online WebEx instructor-led training sessions and each troop completed four hours of hands-on emergency equipment training during the year.

The Patrol purchased six new BMW motorcycles in spring 2021 requiring communications technicians at the Radio Shop to plan new installations with Next-Generation Motorola APX 8500 radios, radar equipment, and new computer docking ports. Technicians also installed technology to provide body cameras linked to the mobile computing device (MCD) system to allow officers to capture video on and around the motorcycle. Additionally, officer helmets were equipped with Bluetooth microphone/speaker audio capability to significantly improve the ease and quality of voice communications.

Field engineers installed the first co-located VHF & 700 MHz MOSWIN site at Troop I Headquarters in Rolla, with six VHF channels on the original site and six 700 MHz channels on a completely separate site. Troop D and I field engineers established two 700 MHz MOSWIN sites at Shell Knob, MO, and Buffalo, MO, in 2021. Engineers began the installation of HD Communications Corporation 250-watt, low-band amplifiers at every troop headquarters to replace the aging PECO systems, which were placed in service in 1972. Field technicians also began testing new Kenwood NX-5600 100-W, low-band mobile radios by installing them and using them in their service vehicles.

Nine aircraft radio systems were replaced in Spring 2021, upgrading to the next-generation Technisonic TDFM-9100 aircraft radio. This upgrade was essential to both improve aircraft communications and to allow for AES encryption.

Communications personnel began installing new Kenwood NX-5700 VHF multi-digital mode format high-band radios in patrol cars in August 2021. The new radios allowed officers to communicate with agencies using DMR (digital mobile radio) and NXDN (Kenwood NexEdge & Icom iDas) digital communications for the first time. These radios were also used for analog FM communications and can be configured to communicate with agencies using P25 conventional repeaters. The radios replaced the legacy Kenwood TK-790s, which the Patrol began installing in 1999 and the Kenwood TK-5710 P-25 mobile radios. The upgrade ensured Patrol radios would interface with updated systems around the state maintaining radio interoperability.

In fall 2021, communications technicians assigned to the Radio Shop repurposed equipment no longer being used on one of the mobile tactical assets to design and build another highly mobile data satellite system. These systems were used to supply voice and data communications from remote areas during emergencies using small portable satellites and auxiliary control equipment.

Field engineers continuously maintained radio and radio tower systems to include repairing and replacing HVAC units at MOSWIN sites. Engineers replaced older strobe tower lighting systems at Freistatt, MO, Granby, MO, and Nevada, MO, with new ITL LED tower lighting systems. A new ice bridge from MOSWIN site to tower was installed to protect coax cables. LED shop lighting systems were installed at Goodhope, MO, and Milo/Nevada, MO. Engineers also completed maintenance and repair on several power generators.

Senior Chief Field Technician Warren Reynolds retired the last day of December 2021, after 35 years of service.

In 2023, new technologies centered around the implementation of a new call handling solution were introduced to each of the troop communications centers. The week of December 4, 2023, saw troop communications centers cut over from a CISCO-based VOIP phone to the Vesta call handling solution. This solution was designed to allow local 9-1-1 centers to transfer callers along with their 9-1-1 data such as automatic location information and their phone number to troop headquarters. Implemented along with this phone solution were additional 9-1-1 caller location services through RapidSOS and the ability to text 9-1-1 callers through INdigitial's Texty solution.

The Infrastructure Support Unit was heavily involved in the planning and rollout of this project, spending several hours at each troop installing new computers and additional monitors, and to ensure neat and efficient cable management. In addition, the unit researched, procured, and installed a keyboard and mouse "blackbox" that allowed operators to interact with three separate computers using one keyboard and mouse.

In June 2023, the User Support Unit began installing the new i-PRO ICV4 in-car and body camera system in patrol vehicles. Technicians assisted local contractor Turn-Key with three different camera retrofit rollouts of 120 vehicles each. Technicians also conducted equipment retrofit installations on 44 Patrol vessels. Throughout the year, technicians designed equipment layout and wiring plans for transit-style vans being assigned to Major Crash Investigation Unit team members. In addition to this, Patrol technicians conducted equipment installation for Department of Public Safety (DPS) agencies such as Capitol Police, the DPS director's office and the State Emergency Management Agency.

Eight radar speed indicator trailers were overhauled with new sensors, batteries, and displays to make them mission ready. During the months of May and June 2023, the Rapid Response Vehicle was deployed to St. Francois County 9-1-1 to assist with tactical dispatch.

Chief Technician Shane W. Clouse and Chief Technician Travis S. Bauer were deployed to Kansas City, MO, to reprogram portable radios for troopers assigned to the Kansas City Chief's Superbowl Parade details in 2023 and 2024. Chief Clouse was deployed to Kansas City in April 2023 to reprogram portable radios for troopers in support of the NFL Draft detail.

The tower sites at Troop D Headquarters in Springfield, MO, and the Troop D Service Center in Carthage, MO, were replaced with new 320-foot towers. Infrastructure Support Unit technicians assisted with bringing eight additional MOSWIN sites online across the state and began to upgrade tower strobes to new Infrared and LED systems. ISU technicians supported a Motorola system upgrade and implemented radio and phone recorders at troop headquarters and

MOSWIN core sites. They also upgraded DVR technology at tower sites across the state.

ISU technicians assisted the User Support Unit in troubleshooting Cradlepoint devices in patrol vehicles that were being utilized to support the Patrol's new in-car and body worn camera system to ensure adequate cellular coverage. ISU technicians also planned and tested utilizing Cradlepoint devices as a backup means of communications for the Missouri Alert notification system. They researched and implemented a way for media stations to monitor alerts through an encoded and integrated SiriusXM device.

2024 saw several upgrades to the Communications Division including the selection and design process of a new Computer Aided Dispatch system. A small team of Operators worked with the Operations and Training Section Chief, CAD Administrator, Training Coordinator and the vendor, Tyler Technologies, to design and test the new CAD system, which was scheduled to go live in September. Switchover was postponed until February 2025.

During 2024 the Communications Division worked with the Human Resources Division to conduct monthly hiring processes for Troops which had vacancies. Overall, there were 347 applicants for Communications Operator positions. A total of 180 applicants were tested for vacant positions throughout the state. A total of 14 new hires attended the two-week division-sponsored training academy in Jefferson City.

2024 began a new three-year counting period for statutorily mandated continuing education training for Communications Operators. As part of the process of preparing for go-live of the new CAD system, all Communications operators reported to Jefferson City during the months of August and September to attend 12 hours of training provided by Tyler Technologies. Communications operators earned over 4,829 hours of training throughout the year.

Communications technicians assigned to the Infrastructure Support Unit worked with contractors and DPS-MOSWIN to facilitate the construction of new radio towers at both the Troop D Headquarters in Springfield and Troop D Service Center in Carthage. Chief Technician Eric W. Presser responded to the Mountain View tower site following a tornado strike which damaged the site and worked with DPS-MOSWIN to coordinate a deployable asset to ensure radio coverage with minimal downtime. Four new communication technician FTE positions were granted to the division in 2024 with positions being assigned at Troop A, Troop I, Troop E and Troop F.

Communications technicians assigned to the User Support Unit researched and attended training on new Motorola radios along with the systems needed to support programming and management of the radios. The Communications technicians at the Radio Shop retrofitted the Patrol's fleet of watercraft with a new body worn and affixed video system. Communications technicians worked

with the St. Louis Police Department to ensure the Patrol was able to communicate with St. Louis officers even when on an encrypted resource. Communications technicians responded to St. Louis and assisted in ensuring seamless communications between agencies during the St. Louis Mardi Gras event. Communications technicians also assisted preparing a contingent of troopers responding to the Republican National Convention in Milwaukee, WI.

In 2025, the Patrol expanded its vehicle fleet with the addition of a reimagined classic, the 2026 Ford Mustang. The User Support Unit successfully navigated the significant challenges of radio installation caused by the extremely limited interior and storage space of this vehicle. To do this, communications technicians researched the durability of 3-D printed hardware. After extensive research, a 3-D printer was purchased which allows the radio shop to design custom mounts for this new vehicle.

The User Support Unit tested and evaluated the Motorola APXNext portable radio. This new radio includes new features such as the ability to perform remote programming of radios, GPS and mapping features, network redundancy utilizing Wi-Fi and Cellular network to MOSWIN, and built-in voice command capabilities. Rollout of this new radio to road troopers began in mid-December.

Communications technicians with the User Support Unit deployed the Mobile Command and Communications Vehicle (MCCV) to the Troop B, Macon, to support the communications center while the building was without power for an extended time during a generator installation. In August, communications operators and technicians also utilized the MCCV during a multi-agency training exercise in Cape Girardeau.

The Infrastructure Support Unit worked throughout 2025 on upgrading MOSWIN backhaul infrastructure from copper-based Multiprotocol Label Switching (MPLS) to fiber ethernet. Low band tower sites using copper MPLS backhaul were upgraded to FirstNet cellular connections using cellular modems.

In February, the Operations and Training section, along with the Cybersecurity and Technology Division and the Field Operations Bureau, implemented new Computer Aided Dispatch (CAD), Mobile, and Mobility (cell phone) software for use by radio operators and troopers throughout the state. The Division updated the Communications Operator Training (COT) Program and modernized training documentation to an online platform.

A total of 203 applicants were tested for vacant positions throughout the state. A total of 15 new hires attended the two-week division-sponsored training academy in Jefferson City. Part of the 2024-2026 continuing education counting period, communications operators earned over 2,853 hours of continuing education training during 2025.

The Division researched and began the process of implementing CommsCoach by GovWorx, a Quality Assurance (QA) software utilizing Artificial Intelligence technologies to evaluate phone calls to ensure standard operating procedures are met. Utilizing this new technology allows for a larger number of calls to be evaluated to better identify and analyze trends and create training to address issues that have been identified.