Tucson’s first paramedic vehicle started service in 1974.

Al Ring                                          Bob Ring
Emergency Medical Services

TFD’s Emergency Medical Services (EMS) began in the 1920s with portable specialized assisted breathing equipment and evolved in the 1950s to rescue units providing first aid, and then in the 1970s to paramedic units providing advanced medical care and transport to hospitals. Today, EMS responses make up over 90% of all TFD responses.

This is the story of how dedicated TFD personnel, in concert with Tucson’s far-seeing and persistent City Councils, always acting in the public interest, triumphed over many challenges to provide rapid, high quality pre-hospital care to the Tucson community.

1920s-1951: Assisted Breathing Equipment

In the early 1920s the Tucson Electric Light and Power Company donated to the TFD a “Pulmotor Resuscitator,” a mechanical device to pump oxygen into the lungs of patients in respiratory distress. In the 1930s the same company donated the Department’s first E & J Resuscitator, a 55-pound monster with breathing tubes and masks that provided supplemental oxygen to patients who were breathing on their own.

These portable assisted breathing devices were mostly used for drowning victims and to administer oxygen to newborn babies. According to TFD history records, “Emergency responses were normally made by throwing the resuscitator, a First Aid kit and a blanket into the Fire Chief or Assistant Chief’s car. When the cars were not available, Ladder 1 from Central Station was used.”

During World War II the TFD placed great emphasis on First Aid and Civil Defense training with many firefighters acting as First Aid instructors.

1951-1974: Rescue Units - First Aid

Following World War II, increased-power motor vehicles and new life-saving techniques and equipment - like cardiopulmonary resuscitation and defibrillation - provided an opportunity to greatly improve emergency first aid services in specialized mobile vehicles.

TFD records report that “In 1951 a Chevrolet panel truck was donated by the Oil Information Committee and the Tucson Auto Racing Association and was placed in service at Central Fire Station (142 S. 6th Avenue) as

This Chevy van was placed in service as Rescue 1 in 1951 at Central Station. (Courtesy of the TFD)

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1 The Company was a “friend” of the TFD because volunteer Fire Chief Frank Russell, following his retirement from the TFD, became an executive there.
Rescue 1. Much of the equipment carried was donated by civic organizations and interested citizens. Rescue 1 made its first run on April 18, 1951.” In its first 14 ½ months of operation, through June 31, 1952, Rescue 1 made 58 runs, about eight per cent of all TFD runs for all causes.

For more than 20 years, donations kept the TFD rescue fleet active and growing - with additional Chevy, Dodge, and Ford trucks and vans - replacing worn out vehicles when needed. By 1969 the TFD rescue program had expanded to five First Aid vehicles, assigned to fire stations across metropolitan Tucson.

The number of Rescue/First Aid runs increased at an astounding pace, reaching over 6,000 runs in FY 1974, totaling more than 60% of all TFD runs.

In 1961 Tucson opened a new Communications Center in Randolph Park for use by the city’s Public Works Department, Police Department, and Fire Department. Fire and rescue alerts were now routed to the Communications Center. All mobile fire equipment, including Rescue Units, were equipped with two-way radios and could be controlled by TFD dispatchers from the Center. Rescue Units responded to calls for help outside City limits within “reasonable distance.”
Each Rescue Unit was manned by a Captain and one or more firefighters. All firemen were qualified "First Aiders." The Rescue Units were equipped to handle a variety of emergencies including resuscitations, strokes, heart attacks, asthma, emphysema, drownings, childbirth and burns. Rescue personnel also assisted in removing accident victims from wrecked automobiles with on-truck equipment like cutting torches, Porto-Power tools, jacks, stretchers, and ropes.

Until 1974 the TFD depended entirely on private ambulance companies (A & A and Kord's\(^2\) in 1974) to transport patients to hospitals. TFD engine, ladder, or Rescue units routinely summoned private ambulances to transport patients.

**1974-2016: Paramedic Units**

In the early 1970s, there were pilot programs in three U.S. cities - Los Angeles, Miami, and Seattle - to evaluate a higher degree of pre-hospital emergency care.\(^3\) This EMS service became known as paramedicine, performed by highly-trained paramedics, representing "the highest level of the practice of out of hospital medicine by non-physicians."

In May 1972 the UA Cardiac Medical Center proposed to the Tucson Mayor and Council that the community establish a mobile cardiac / trauma care system.

After completing a comprehensive study, looking to "improve Pima County emergency services" and recognizing "the fragmentary service currently available," the Tucson City Council announced on May 14, 1974 in the *Tucson Daily Citizen* that

> "The city today began setting up an emergency [county-wide] medical services system that includes a '911' emergency telephone number, a central dispatcher for emergency vehicles and two city-operated [TFD] mobile intensive-care units." [A & A and Kord’s ambulance services were each allocated a paramedic intensive care unit and a minimum of two emergency ambulance units.]

On September 29, 1974, the TFD put into service the first paramedic unit, Medic 1, purchased with funds donated by the public. This was the first advanced life support (ALS) vehicle in Arizona.

The intensive care unit was manned by seven TFD members who had just completed the first paramedic training program at St. Mary’s Hospital - a six-month course taught by four physicians who specialized in emergency care. The paramedics were trained to administer drugs and use medical equipment to sustain life in the vital moments after a heart attack or injury.

**1974-1994: Limited Paramedic Service.** For the next two decades, after the TFD introduced Medic 1, the Department struggled to realize the full potential of paramedic service. There were arguments about whether or not the TFD was authorized to transport patients to hospitals, the value of paramedic

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\(^2\) Kord’s ambulance service started in Tucson in 1964, the first such service in Arizona, later expanding to Phoenix, Safford, Nogales, and other parts of the state.

\(^3\) Perhaps inspired by the 1972 debut of the TV drama, “Emergency,” bringing the daring exploits of Los Angeles County firemen/medics into living rooms across the nation.
service, city and state regulations, coverage boundaries (City or County), response times, dispatch efficiency, and cost recovery. As best we can put the story together, here is a “blow-by-blow” chronology. Pertinent newspaper headlines in the accompanying figure highlight what was going on.

Medic 1 had barely warmed up its engine for its first run, when the City was hit with a lawsuit on October 4th from the two ambulance companies who claimed that Medic 1 was “entering the ambulance business in direct and unfair competition with them.” The suit asked that the City be prohibited from transferring the sick and injured to local hospitals.4

A court order issued on October 11 affirmed that Medic 1 paramedics could give medical care to the injured or ill, but prohibited the City from transporting patients. In addition TFD paramedics had to be certified in an examination by the Arizona Department of Health Services (ADHS) in Phoenix.

Meanwhile there was turmoil brewing about whether the Pima County medical emergency dispatch system (existing) or the Tucson medical dispatch system (planned) should be in control of central dispatch for the new county-city combined EMS system.

Enough TFD paramedics were certified by early December for Medic 1 to resume 24-hour call operations. However, because of the court case pending, Medic 1 was not allowed to transport patients to the hospital. The Tucson Daily Citizen reported on the problematic situation, “Except for unusual cases [under a physician’s orders], the private ambulances will transport a victim to the hospital after City paramedics stabilize the victim’s condition.”

This resulted in the (obviously inefficient) simultaneous dispatch of private ambulances on all City paramedic and rescue calls. TFD paramedics routinely transferred patients, their gear, and themselves to private ambulances for the ride to the hospital, while continuing to care for the patients.

Under these cumbersome operational ground rules, in its first seven months, through the end of June 1975, Medic 1 made 1,565 responses, including over 20% in the County, outside the metropolitan area.5

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4 As private carriers licensed by the Arizona Department of Health Services, ambulance companies were required to charge fees at rates set by the Department. At the time, the City provided EMS services (through the TFD) without a fee.

5 In the same period, the five TFD Rescue vehicles made a total of 6,939 runs.
These newspaper headlines over a 20-year period outline the TFD’s challenge to realize the full potential of paramedic service. (Courtesy of the Arizona Daily Star and Tucson Citizen)
On August 13, 1975 a Superior Court judge rejected the ambulance companies' claims of violation of their rights and ruled that Medic 1 could legally transport patients to hospitals. Since the ambulance companies were appealing this decision, Tucson’s City Manager Joel Valdez decided that although the City has won its case, “we will continue to dispatch private ambulances with Medic 1 and will transport patients only when necessary.”

The City of Tucson aggressively pursued control of EMS services. On September 1, 1975 Medical dispatch was transferred from County to City control. In March 1976 the TFD, recognizing its increasing role in EMS operations, added a medical section to its organization, headed by a Battalion Chief.

Later that year, in October, 1976 the City of Tucson instituted a central Medical Emergency Dispatching System (MEDS) to include both Pima County and metropolitan Tucson. MEDS was housed in the City’s Communications Center in Randolph Park and utilized a “911” single point of contact number to manage emergency dispatch for all Pima county fire departments and private ambulance services. TFD’s Medic 1 continued to operate under the “limited transport” agreement with the two ambulance companies.

By the mid-1970s the TFD had implemented an EMS capability to transmit EKGs by radio to hospitals while in route.

With the number of EMS calls continuing to skyrocket, in January 1977, the City Council authorized the TFD to operate “five additional Medic 1-type trucks.” Apparently making a “super deal,” the TFD purchased eight paramedic vehicles for service beginning July 1, 1977, immediately placing three of these units on reserve, and bringing the fleet of operational TFD paramedic trucks to six.

Also on July 1, 1977, because of the increase of City calls and the County not helping to fund the EMS program, the TFD ceased responding to County calls. Continuing to try to reduce costs and improve

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6 The struggle to determine how to provide EMS services to Pima County resulted in the October 1977 “nightmare” scenario of TFD paramedics responding to a horrible automobile crash in north Tucson, only to find when they arrived that the accident was just outside City limits. Since the nearest private ambulance was still in route, the two TFD paramedics disregarded regulations and provided life-saving assistance, for which they received a year’s probation. It wasn’t until March 1978 that the Arizona Legislature passed a bill allowing Pima County to contract with the City of Tucson to provide emergency paramedic services outside the City limits.
availability and response times in the City, the TFD by January 1981 had cancelled three of its five fire and paramedic mutual-aid agreements - with South Tucson, Flowing Wells, and Hughes Aircraft Company, retaining agreements with Davis-Monthan AFB and the Tucson Airport Authority.

In the spring and summer of 1981, Tucson’s newspapers were full of articles describing the ongoing passionate debate about the value of TFD paramedic services and the best way to improve service in Tucson and shorten response times. The key question was whether to expand City Fire Department or private ambulance services. Tucson voters overwhelmingly expressed their opinion in a special election in November 1981 that mandated the expansion of the City’s EMS program and authorized the purchase of two additional TFD paramedic units.

During 1983 these two additional paramedic units were activated, bringing the total number of TFD paramedic vehicles (accounting for replacements and reserves) responding within the City limits to seven. The TFD strategically prepositioned the units at fire stations throughout the City to ensure maximum coverage with minimal response time.

Trying to improve inefficient “handoff” operations, in early 1985 the TFD began to transport patients more frequently in ALS situations (defined as time critical). Despite objections from the ADHS and the ambulance companies, on December 21, 1986 Tucson’s Mayor and Council discontinued the simultaneous dispatch policy and revised the EMS dispatch protocol to require that the nearest TFD or private paramedic unit be dispatched to a medical emergency and that TFD units could transport patients to hospitals on orders of a doctor or when the on-site TFD paramedics determined that transport was necessary. Settling an opposing lawsuit by Kord’s ambulance company, in June 1988 the State Court of Appeals upheld Tucson’s actions by ruling that the City of Tucson was not running an illegal ambulance service.

In 1988 the TFD successfully demonstrated the transmission of high quality EKGs via cellular telephone (free of radio signal interference) from paramedic vehicles in route to the hospital. (This groundbreaking prehospital care program continues today.)

With the TFD taking on an increasing role in EMS service in Tucson, the 1990 update to Pima County’s official emergency dispatching directions, MEDS, directed that “A TFD unit will be dispatched on all emergency medical calls within the City limits.” TFD paramedics transported patients whose lives were in danger (ALS) to hospitals. For less serious cases (BLS), the nearest private ambulance was dispatched to supplement TFD EMS operations when required.

On July 1, 1992, because of a repeated critical shortage of private sector transport units within the City, the TFD awarded a five-year “sole provider” contract to Rural Metro\(^7\) to be the only ambulance company to be dispatched on 911 emergency calls. Kord’s Ambulance service did not bid on the contract and in fact advertised in Tucson newspapers that the public should call Kord’s rather than 911.

\(^7\) Rural Metro emerged in 1962 to provide private fire protection in Tucson and then ambulance service in 1985. In mid-1992 Rural Metro operated nine ambulances and with this contract, agreed to add three more.
Finally, in September, 1993 the ADHS granted the TFD a license to operate an ambulance service in Arizona, officially making the TFD the sole provider for EMS ALS response and transport services in metropolitan Tucson.

On November 14, 1994, at the suggestion of City Manager Michael Brown, to raise additional money in difficult economic times, the City Council ordered the TFD to start charging fees for ALS paramedic transport services.

By the end of 1994, the TFD was operating 16 fire stations in the City, with over half of them employing paramedic companies. The number and proportion of EMS runs (life-critical ALS and less serious BLS responses) had continued to increase steadily since 1974, reaching an amazing 50,000 runs annually, representing about 85% of all TFD runs for all causes in 1994.8

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8 In the 1980s the TFD added two missions that are not counted in EMS statistics. In 1981 the Department added Hazardous Materials (HazMat) capability to its expertise. And in 1986 the TFD organized a Technical Rescue Team to handle difficult rescues like trench, water, technical rope, confined space, structural collapse, and extrication of victims from automobiles, aircraft, trains, busses, etc. A handful of specialized HazMat and Heavy Rescue vehicles have been purchased over the years to support these missions.
1995-2016: Full Paramedic Service. During this period, the number of fire stations increased from 16 to 22, with the number of paramedic units expanding to 18. The number and percentage of EMS runs also continued to grow - both life critical ALS services and less critical BLS services. (See below) The TFD remained Tucson’s sole provider of ALS response and transport services. The Fire Department kept awarding contracts to ambulance companies to provide BLS responses as needed. When the number of EMS calls threatened to “swamp” the system, around 2000, the TFD began adding paramedics and appropriate equipment to firefighting apparatus, which in turn began to make BLS responses when requested and available. Putting an emphasis on improving EMS operations, the TFD introduced specialized equipment, applied advanced technology to transmit critical data to hospitals while in route, took over operation of the City Communications Center, and began a Quality Assurance Program to improve documentation of medical incidents.

From 1995 to 2009 the TFD purchased 49 ambulances, all trucks (as opposed to vans). The last two ambulances, purchased in 2009, were larger vehicles with both medical and rescue capability.9

These representative paramedic vehicles were purchased by the TFD from 1996-2009.

(Courtesy of the TFD)

9 Since 2009, the TFD has made no purchases of firefighting apparatus or paramedic vehicles due to severe budget constraints.
In an effort to save money and free up fire crews for more serious calls, the TFD started an Alpha Truck program in 2007. Pick-up trucks, manned by two emergency medical technicians (EMTs), were purchased to respond to less-serious medical situations. Besides medical care, the EMTs had special training to help people get information about social services assistance. The underlying goal of this continuing successful program is to provide resources to help repeat 911 callers connect with senior programs, homeless shelters, outpatient clinics, and other social services that will keep them from overusing ambulances and emergency rooms for non-emergency calls.

Also in 2007, with a grant from the U.S. Department of Transportation and matching funds from the City, the TFD introduced a (first in the country) ER Link program that enabled live video transmission from paramedic vehicles in route to the regional trauma center at University Medical Center, attached to the University of Arizona, so as to better prepare the hospital for patients. In 2011 when the grant expired, Tucson was unable to secure another grant or find City funds to maintain the program in the very difficult budget environment. So unfortunately, the ER Link program was discontinued.

In 2011, after numerous complaints about the General Services Department’s operation of the City’s emergency 911 Communications Center, the
TFD took over the day-to-day management of the Center. Tucson Fire Communication is the “primary answering point for 911 calls” originating with the City of Tucson and the secondary answering point for eight additional Fire and EMS agencies in the Tucson region. TFD also operates the Southern Arizona Medical Emergency Dispatch System which facilitates communications between field personnel, area hospitals and medical helicopters.

In an effort to improve Fire and EMS response times, in an environment of ever-increasing call loads (see below), the TFD started a pilot program in February 2016 for Tucson Collaborative Community Care, or “TC-3,” to connect people in need with the appropriate community resources, steering them away from over-reliance (for inappropriate reasons) on limited Fire/EMS resources. The TFD is sharing its TC-3 vision with other City departments, private sector agencies, and volunteer and retiree groups - and expects to partner with them. The Department is developing a “curriculum to better professionalize” the program and assure that all TC-3 members are properly trained.

In March 2016 the TFD announced a Quality Assurance Program to identify areas of excellence and needed administrative improvements in documentation of medical incidents. Findings will allow the TFD to address any problems in reporting and training.

The organization of TFD paramedic and EMS services administration has evolved over the years to the point in mid-2016 where Medical and Safety are combined in a Section managed by Deputy Chief Sharon McDonough.10

In mid-2016, the TFD operated with 23 engine companies, seven ladder companies, three ladder tenders, one quint (combination pumper and ladder) company; 18 paramedic units; four technical rescue vehicles; one haz/mat vehicle, and one Air, Power and Light Truck vehicle. The accompanying figure shows how these apparatus were distributed in four battalions across the Tucson metropolitan area and the number of calls made by each unit during FY2016 from July 1, 2015 to June 30, 2016.

Training of EMS personnel is a joint effort. All TFD recruits are trained “in house” to the EMT basic level. In the past, paramedic training has been provided at authorized local hospitals, but today is accomplished at Pima Community College’s Public Safety & Emergency Services Institute. After earning an Associate of Applied Science Degree, graduates who intend to promote to the TFD position of paramedic then take a two-week course to be certified at the in-house Public Safety Academy.

The TFD is on the leading edge of emergency medical care. Amazingly, all uniformed members11 of the TFD are certified as basic EMTs. Two hundred and seventy four firefighters have qualified as paramedics; one hundred and forty seven of them are currently assigned to paramedic units. Moreover, all fire-suppression engines carry EMS equipment and seven fire-suppression companies are staffed and equipped as paramedic assessment units.

10 Deputy Chief Sharon McDonough was hired by the TFD in 1990 and has served as Firefighter/EMT, Paramedic, Captain, Battalion Chief and Deputy Fire Chief. During her 11-year tenure as a Chief Officer, she has overseen Fire Operations, Safety, and the 911 Communications Center. She currently oversees Medical Administration and is the Privacy Officer for the Department. She is the lead officer on the TFD TC-3 program.
11 There were 633 budgeted firefighter positions in the TFD FY2016 Annual Report.
In mid-2016, this is how the TFD organized and deployed its service units. The 18 paramedic units are distributed across metropolitan Tucson to maximize coverage and minimize response times.

(Courtesy of the TFD)
EMS Response History

Historically, the number of EMS responses per year has been dependent on the size and population of Tucson, the number of fire stations, and the number of paramedic units. The table below documents the growth of EMS responses from 1952, when first aid responses began, to mid-2016.

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Both life-critical ALS and less serious BLS responses are shown. For comparison, the table also shows the total number of TFD responses for any purpose over the years. Note the dramatically increasing percentage of EMS runs when compared to the total of all TFD runs. For emphasis, these data are plotted below.\(^\text{12}\)

\(^{12}\) In FY1975, the year that paramedic service began in Tucson, there were 1565 paramedic (Medic 1) responses and 6939 Rescue (first aid) responses.
The TFD responded to an astounding 82,267 EMS calls in FY2016! The “Top 10” medical incident types are plotted in the figure below from the FY2016 TFD Annual Report. 99.6 percent of all responses were accomplished within 20 minutes; 93.8 percent within ten minutes. For the 10,724 ALS time-critical incidents (cardiac arrest, heat attack, stroke, trauma and injury), average paramedic response time was 5 minutes, 36 seconds.
Of the total 82,267 EMS responses in FY2016, only 41 per cent resulted in true on-scene interventions and/or advanced life support transport to a hospital. The balance of the calls would have been more appropriately served with non-emergency resources. As TFD Deputy Chief Sharon McDonough put it in a recent issue of Fire Chief Magazine,

“Statistical evidence tells us that in our city the percentage of non-emergent EMS calls is rising and at a precariously faster rate every year. Due in large part to a fragmented health care system that is increasingly difficult to navigate, the EMS system has become over-taxed and with limited transport destination options; local emergency rooms are sharing the heat.

“As a result the entire system suffers - response times to our big four (cardiac arrests, heart attacks, stroke, and trauma) are increasing and crews are suffering from burnout.

“For most of us, a disproportionate part of this problem can be attributed to the frequent 911-user population within our communities. In 2014, 50 of Tucson’s frequent users accounted for 1400 calls, with most culminating in an ambulance ride to an emergency department.

“They call 911 reporting an emergency, we send big red, we provide an ambulance ride to an emergency department, they receive the most expensive care of the medical system and are released home with some paperwork telling them to follow up with a primary-care doctor.

“Only they don’t, and the next day they call 911.”

This is the continuing challenge to maintaining quality EMS service in Tucson and highlights the importance of the TFD Alpha Truck and TC-3 programs.

Critical Issues for the Future

On the last page of the TFD FY2016 Annual Report, Fire Chief Jim Critchley identifies two critical issues for TFD future EMS services.

The first issue is the “desperate need” for funding to replace the aging EMS fleet13. No paramedic vehicles have been purchased since 2009. The current average age of the 30-vehicle EMS fleet is 11 years, with 87% of the units with over 100,000 miles on the odometer and 37% with over 150,000 miles.

The second issue stated is to “enhance our emergency response capability.” In addition to improving call processing efficiency at the Communication Center and utilizing technology like cell phones to network response units, Chief Critchley put his finger on the severe problem of being swamped with non-emergency calls. He stated strongly,

13 The fire fighting pumper and ladder fleets face a similar crisis.
“Our goal is to improve appropriate responses by getting the right sized response with the right resource at the right time to every call for help. We will continue to review the data to improve community outcomes.”

**Primary Sources**


   - Annual & Other Reports: 1950s-2010s
   - Apparatus: 1950-2009
   - Chronological History: 1950-2016
   - EMS & Paramedics
Great Tucson Fire Foundation

Thank you for taking an interest in Tucson Fire Department history —

This is one of many sections that contain information, documents, letters, newspaper articles, pictures, etc. They have been collected and arranged in chronological order or by a subject. These items were collected, organized and entered into a computerized database by Dave Ridings Retired Assistant Chief Tucson Fire Department, Al Ring friend of the department, Greater Tucson Fire Foundation and with the help of many friends and fellow firefighters.

All graphics have been improved to make the resolution as good as possible, but the reader should remember that many came from copies of old newspaper articles. This also applies to other items such as documents, letters, etc.

Credit to the source of the documents, photos, etc. is provided whenever it was available. We realize that many items are not identified and regret that we weren’t able to provide this information. As far as the newspaper articles that are not identified, 99% of them would have to be from one of three possible sources. The Arizona Daily Star, The Tucson Citizen and the Tucson Daily Citizen, for which we want to give a special thanks.

Please use this information as a reference tool only. If the reader uses any of the information for any purpose other than a reference tool, they should get permission from the source.

Should the reader have additional information on the above subject we would appreciate you sharing it with us. Please see the names and contact information on the 1st TFD Archives page right below this paragraph.