

Fire Apparatus

4

Section I - Firefighting Fundamentals



History of Fire Apparatus

San Diego Fire-Rescue Apparatus Overview

San Diego Fire-Rescue Heavy Apparatus

San Diego Fire-Rescue Aircraft

San Diego Fire-Rescue Light Apparatus



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Objectives

- Understand the history of fire apparatus
- Understand the history of fire apparatus specific to the San Diego Fire-Rescue Department
- Understand the importance of NFPA Standard 1901
- Describe how apparatus are categorized within FIRESCOPE
- Explain the relationship that the Repair Facility has with Fleet Services and the SDFD
- Describe the steps involved for purchasing new apparatus
- Identify the three apparatus readiness levels for the SDFD
- Identify the safety features incorporated into fire apparatus
- Describe the components of a Type I Engine Company
- Describe the components of a Type III Engine Company
- Describe the components of a Truck Company
- Identify and describe the various “heavy” apparatus used by the SDFD
- Identify and describe the various “light” apparatus used by the SDFD
- Identify and describe the various lifeguard apparatus

History of Fire Apparatus



Figure 4-1 Steam Powered Pump

Fire apparatus have had a rich and storied tradition. They can be traced back to ancient civilizations as early as 200 B.C. They have been called glamorous, spectacular and even romantic. The most common name for identifying fire apparatus has been the “Engine,” however, hook and ladder, steamer, pumper, truck, wagon and hose cart have all been used. Advancements in fire apparatus have been influenced by war, sociological changes, experimentation, environmental issues, standards and regulations as well as our proud tradition.

Early American fire engines or machines consisted of wooden boxes that had no wheels. Firefighters, usually volunteers, carried these boxes to fires and used a small hand-operated piston pump mounted to a tub with a gooseneck-shaped metallic pipe extended above. Several firefighters would then operate the pump with levers that moved up and down. These long handles were called brakes and a complete cycle of up and down was called a stroke.

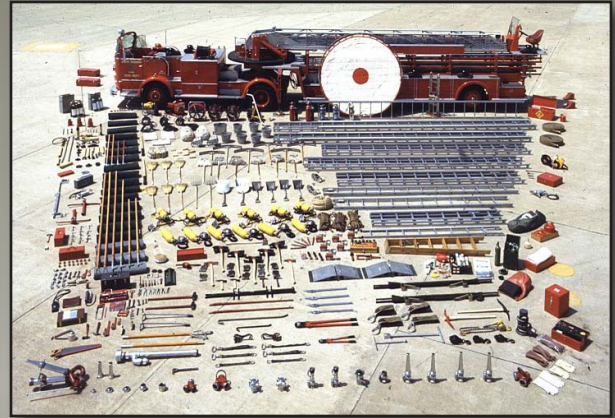
Wheels were later added to the sides of the tub as well as hose. Two-wheeled carts with large reels for the hose were called tenders or jumpers. All of these early devices were operated by hand, which were forerunners to the steam-powered pumps, known as “steamers,” Figure 4-1. As with other early fire equipment, “steamers” were generally pulled by horses. The introduction of four-wheeled ladder wagons, called trucks, were also created, eliminating the necessity of carrying ladders by hand while running to a fire.

Due to the growing use of chemical fire extinguishers, apparatus were designed to carry large soda-acid tanks. Over the years, these units were hand-drawn, horse-drawn and then motorized. These apparatus bore the name “chemical wagon” or “chemical engine” since a chemical reaction, rather than a pump discharged the extinguishing agent.

In the 1900’s the internal combustion engine ended the horse-drawn era. The conversion from horsepower to automotive power was easily made, although increased efficiency ended what many considered the most picturesque era in firefighting.



SDFD Vintage Apparatus



History of SDFD's Fire Apparatus

San Diego Fire-Rescue Department's history of fire apparatus paralleled the development of fire apparatus through out the country. In 1887, during the volunteer years, the department had two steam fire engines, a hose wagon, 3500 feet of hose and eleven horses. In 1917, the era of horse-drawn apparatus ended when the last team of fire horses was turned over to the City Yards. With the age of horse drawn fire apparatus coming to an end, SDFD became the first large city department on the west coast to be totally mechanized. Today, San Diego has over 350 Heavy and Light apparatus.

The following chapter is intended to give the reader a basic introduction to the types and functions of fire apparatus used by the San Diego Fire-Rescue Department.



Media 4-1 Vintage SDFD Fire Apparatus



San Diego Fire-Rescue Apparatus

It is the responsibility of each individual fire department to spec and purchase apparatus that will best serve the needs of the public as well as provide its fire-fighters with the highest quality equipment to perform successfully and safely. A department may only require a pick up truck with a small pump and water tank in the back, where as others may require a truck company that carries hose, water and has the ability to pump.

There are dozens of fire apparatus manufacturers in existence today. Coupled with the hundreds of customized options available, just about any imaginable fire apparatus can be created. Because of the many variables, minimum standards and categories have been created in an attempt to help manage emergency resources and apparatus.

NFPA Standard 1901

National Fire Protection Association (NFPA) Standard 1901 is the standard that has been created for automotive fire apparatus. This guideline defines the recommendations for new automotive fire apparatus designed to be used under emergency conditions to transport personnel and equipment for the suppression of fires and mitigation of other hazardous situations. NFPA 1901 is updated every 4 years.

The San Diego Fire-Rescue Department makes every practical attempt to spec and purchase fire apparatus according to the recommendations provided by NFPA 1901.

Categorizing Apparatus

FIRESCOPE, or FIrefighting RESources of California Organized for Potential Emergencies, developed minimum apparatus standards and categories for fire apparatus and resources. For example, a type I Engine Company defined by FIRESCOPE must have at minimum the following:

- Pump Capacity - 1000 GPM
- Water Tank - 400 Gallons
- 2 1/2" Hose or Larger - 1200 feet
- Hose 1 1/2" or larger - 400 feet
- Ground Ladders - 20ft Extension
- Personnel - 4 Firefighters

In addition to engine companies, FIRESCOPE sets minimum standards for other firefighting apparatus such as truck companies, water tenders, bulldozers, fire boats and firefighting aircraft. These minimum standards can be found



in section 12-1 of the FIRESCOPE Field Operations Guide (FOG) which are found in all fire stations and on all apparatus, [Link 4-1](#).

SDFD fire apparatus are spec'd and purchased in accordance with FIRESCOPE's typing and minimum standards.

Additionally, SDFD classifies fire apparatus as either "Heavy" (diesel powered apparatus) or "Light" (gas powered apparatus) for logistical and administrative purposes. "Heavy" fire apparatus are maintained by Fleet Services at the San Diego Fire-Rescue Department's Repair Facility and "Light" apparatus are maintained by the San Diego Police Department's Service Facility.

Fleet Services Division

The city of San Diego maintains its vehicle fleet through the Fleet Services Division of the General Services Department. Beginning in fiscal year 2008, the Police Department and Fire-Rescue Department fleets were combined with the Equipment Division to form the current Fleet Services Division. The Division is responsible for maintaining some 4,240 pieces of motive equipment.

The Fleet Services Division provides all City departments with motive equipment and a full range of fleet management services. These services include acquisition, fitting, maintenance and repair, the provision of parts and fuel, body repair, painting, metal fabrication, disposal services, and other motive equipment-related support services, such as machining, equipment rental, and operator training.

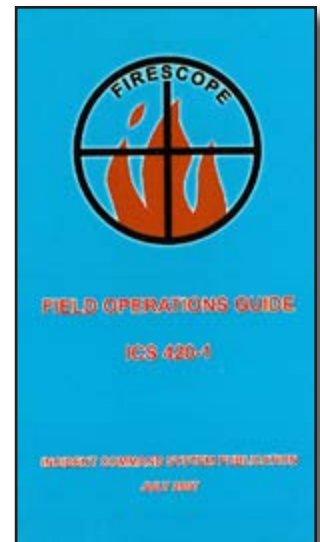
Fire Department Repair Facility

The SDFD Repair Facility is located adjacent to Fire Station 28 and is staffed and operated by S.D. City Employees who work for the Fleet Services Division. All "Heavy" fire apparatus are serviced and repaired at this location. Because mechanical issues can often be complex and expensive, a close relationship between Fire personnel and Fleet Services is required to keep apparatus in service.

Apparatus Purchasing

Apparatus purchasing is a collaborative effort between SDFD and Fleet Services. Below is a synopsis of the responsibilities for purchasing new fire apparatus:

- Apparatus specifications, development, bid and construction are overseen by SDFD Personnel.
- The purchase of the apparatus is done by Fleet Services and the new apparatus is delivered to Fleet Services to install all communication equipment, Code 3 lighting and other electrical components.
- SDFD then fabricates and installs all storage, equipment, and tools on the apparatus as well as labels, numbers, decals, reflectors, etc.



[Link 4-1 FOG Guide](#)



Apparatus Readiness Levels and Numbering

The SDFD keeps its fleet of apparatus in one of three readiness levels, front line, ready reserve, and stripped reserve status. Front line fire apparatus are assigned to a permanent fire station and are generally the newest apparatus in the fleet. Front line fire apparatus are assigned a number which corresponds to the station that permanently staffs that apparatus. For example, Engine 8 is assigned to Fire Station 8. The one exception to this rule is the Battalion Chiefs' vehicles which are numbered by battalion, not by the housing station. Unit numbering is placed on all four sides of the apparatus as well as the top so that it may be visible from the air.



Link 4-2 Bulletin 09-139,
Reserve Apparatus

Ready reserve fire apparatus are generally older fire apparatus that still have usable life but have been replaced by newer front line apparatus. Ready reserve apparatus are used in the event of mechanical failure of a front line apparatus or large scale incidents where more resources are needed. These apparatus are called "ready reserves" because they have a full compliment of hose, equipment and tools left on board at all times so that it may be placed in to service quickly.

Ready reserve apparatus are assigned to various fire stations and fire facilities throughout the city. These apparatus are assigned a nine-hundred series number in order to designate it as a reserve. For example, E-901, E-902 etc. The last two digits no longer reference the station to which the apparatus is assigned in order to allow for more flexibility with reserve apparatus. [Link 4-2](#).

Stripped reserve apparatus are similar to ready reserve apparatus in all respects except for not having a full compliment of equipment and tools remaining on board. The four apparatus assigned to the Fire Academy are examples of stripped reserve apparatus. Stripped reserve apparatus are assigned an eight-hundred series number, E-801, E-802 etc.

The SDFD has created an apparatus replacement program which gives fire apparatus a 17 year service life expectancy. There is no set time limit for how long an apparatus remains in front line or reserve status. Factors such as mileage, mechanical issues, wear and tear, and age are all factors in determining when an apparatus is moved from front line to reserve status. The San Diego Fire Department's goal is to have 2 reserve fire apparatus for every 3 frontline apparatus.

Apparatus Safety Features

As technology improves, so do safety features on fire apparatus. A significant number of firefighter injuries and fatalities come as a result of responding to and returning from emergencies each year on fire apparatus. For this reason, improvements in safety systems are continuously evolving and many new NFPA recommendations have been created.

The best way to protect yourself from injury or death on a fire apparatus is to wear your seat belt. This is California State Law and SDFD Policy. Captains and Engineers are legally liable for any injury that fire personnel may sustain



not wearing their seat belt. Getting dressed en route to an incident is specifically prohibited per the SDFD Policy. All new fire apparatus are equipped with seat belt alarms per NFPA 1901. If the apparatus parking brake is released and the sensor in the seat detects weight with an unbuckled seat belt, an alarm will sound. It is strictly prohibited to tamper or over-ride these alarm systems.

Below is a short list of the many safety systems that are now placed on our apparatus as a result of NFPA 1901 Standards and SDFD recommendations.

- **Hose bed Covers with Securing Straps** - Designed to prevent hose from falling off the apparatus while in motion. (NFPA 1901)
- **Air Bags** - Side impact air bags.
- **Roll Stability** - The apparatus will automatically lose power when it senses the potential for a rollover.
- **Equipment & Cabinet Alarms** - When equipment such as the ladder rack or deck gun is not stowed, or a cabinet door is left open, an alarm will sound to notify the driver.
- **NFPA Striping** - Chevron style reflective striping placed on the back of all apparatus to increase visibility on highways, Figure 4-2. (NFPA 1901).
- **Video Display Recorder “Black Box”** - The VDR is a computer module that records all alarms and functions of the apparatus. This device keeps a second-by-second record of the vehicle speed, acceleration and deceleration, engine speed, throttle position, anti lock braking system events, master warning light switch position, date and time and other conditions on a running 48-hour loop. (NFPA 1901)
- **Governed Engine Speeds** - Engine Companies are governed to a maximum speed of 68 mph while Truck Companies are governed to 60 mph. (NFPA 1901)
- **EPA Regulations** – Current regulations require diesel engines to be equipped with a diesel particulate filter (DPF) and have a regeneration process to burn off unburned particulates.



Figure 4-2 NFPA Striping

The key to apparatus safety systems is finding the balance between functionality and safety. Although many safety systems may seem cumbersome and inconvenient, they are designed to keep you and the public safe and may one day save your life. Safety systems for fire apparatus is a relatively new field. As recent as the 1990's, SDFD had apparatus that required firefighters to ride on the tail board.



If you have ideas or suggestions to improve apparatus safety and functionality, you are encouraged to get involved and submit your ideas to the SDFD Apparatus Design Committee or Occupational Health and Safety Committee.

Apparatus Training & Information

In order to safely and legally operate SDFD apparatus, an apparatus task book must be completed for each type of apparatus prior to a certification being issued. A dedicated position in the SDFD Training Division, called the Driver Training Officer, is responsible for providing information and apparatus training, issuing and maintaining apparatus certifications, as well as developing and administering the Engineer Preparatory Course and Engineer promotional exams.



Link 4-3 Driver Training
& Apparatus Information
(Target Safety)

All available driver/operator training and apparatus specific information can be located on Target Safety under the “Driver Training and Apparatus Information” link from the home page, [Link 4-3](#) . Information, manuals, videos, task books, DMV paperwork, and Engineer Prep coursework can all be found in this online file center.



San Diego Fire-Rescue Heavy Apparatus

Type I - Engine Company (Triple Combination Pump)



The Type I - Triple Combination Pump, or Engine Company, as it is most commonly referred to, is the backbone of the municipal fire service. To qualify as a Triple Combination Pump, the apparatus must contain three basic components; Hose, Water, and Pump. As described previously in this chapter, an apparatus is designated by a “Type” per the requirements of FIRESCOPE’s apparatus and resource guidelines.

Below is a brief summary of San Diego Fire-Rescue’s Type I Engine Companies which meets or exceeds the minimum guidelines set forth by FIRESCOPE.

Fire Hose

- 4 Inch – 900’ Minimum
- 2 ½ Inch – 800’ Minimum
- 1 ¾ Inch – 450’ Minimum
- 1 Inch – 200’ (2 x 100 rolls)

Water Tank

- 500 Gallons

Pump Capacity

- 1500 GPM

Ground Ladders

- (1) 24’ Ground Extension Ladder



- (1) 14' Roof Ladder
- (1) 10' Pole Ladder

Four Engine Company Crew Members

- **Captain #1** – The officer in charge of the Engine Company
- **Engineer #2** – Drives apparatus, operates pump, maintains apparatus and equipment
- **Firefighter #3 (Linebreaker)** – Sits behind Engineer, breaks supply line, operates nozzle
- **Firefighter #4 (Drop Off)** – Sits behind Captain, connects to hydrant, backs up Linebreaker

Engine Company Duties - RECEO VS

An engine company's primary duties are to perform search and rescue operations as well as to pump water and extinguish a fire. The acronym RECEO VS is used for to assist engine company personnel in prioritizing their operations at a fire.

- Establish Command
- Rescue
- Exposures
- Confinement
- Extinguishment
- Overhaul
- Ventilation (Assist Truck)
- Salvage



Front Line Engine Companies

Pierce Arrow XT-S



SDFD's newest Engines manufactured from 2007-2009. Carries 500 gallons of water, 40 gallons of foam through a Hale pump and regulated with the Total Pressure Manager (TPM).

KME



Carries 500 gallons of water, 40 gallons of foam through a Hale pump and regulated with the Total Pressure Manager (TPM). Two different generations of the KME can be distinguishable by interior cab configuration.

Pierce Dash



Carries 500 gallons of water, 40 gallons of foam through a Waterous pump and regulated through the Waterous Pressure Relief System with Pressure Governor. Is distinguishable from the Pierce Arrow XT as the hose reel is located in the rear of this apparatus.

OES 304



OES 304 is an HME Type I Engine provided to the SDFD by Cal-EMA. SDFD is allowed to use this engine for its own operations under the condition that when called upon by the State, we must provide staffing and respond. It has an 800 gallon water tank, 1250 gpm pump and carries 1250' of 3" hose, 1800' of 1 1/2" hose, 500' of 1" hose, and 20 gallons of foam.



Ready Reserve Engine Companies

Saulsbury



Carries 550 gallons of water, 20 gallons of foam through a Waterous pump. The turning radius of this apparatus is hampered because of the intake plumbing that runs from the front bumper to the pump.

Quality



Carries 500 gallons of water and no foam tank, instead utilizes an external foam eductor.

Stripped Reserve Engine Company

Pierce Lance



Carries 500 gallons of water and no foam tank. Only two of these apparatus were purchased by SDFD and is distinguishable from other apparatus by the large front bumper containing hose.

Pierce Arrow



Carries 500 gallons of water and no foam tank, these apparatus are used for training purposes at the Fire Academy. These apparatus are placed in to service only if all Ready Reserve Apparatus resources have been exhausted.



Type III Engine Company (Brush Rig)



Type III - Engine Companies are commonly referred to as Brush Rigs, and are used primarily for wildland firefighting purposes. They are designed to perform such functions as off-road driving, mobile pumping (pump water while driving), and carry larger quantities of water. Type III apparatus are cross-staffed by personnel from an Engine or Truck company when requested or may be staffed full-time during extreme fire/weather conditions.

Below is a brief summary of San Diego Fire-Rescue's Type III Engine Companies which meets or exceeds the minimum guidelines set forth by FIRESCOPE.

Fire Hose

- 1 ½ Inch – 2000 feet
- 1 Inch – 400 feet

Water Tank

- 500 gallons

Pump Capacity

- 500 GPM

FIRESCOPE Type III Minimum Requirements

- Fire Hose
 - 2 ½" - N/A
 - 1 ½" - 1000 FT
 - 1" – 800 FT
- Water Tank - 300 Gal
- Pump Capacity - 120 GPM
- Ground Ladders - N/A



San Diego Fire-Rescue Type III Engines

Pierce Hawk



The Pierce Hawk Brush Apparatus is a 4 wheel drive Type III apparatus. It carries 600 gallons of water and has a 500 gpm PTO driven pump as well as a 150 gpm auxiliary pump. This rig has 400' of 1" hose, 2000' of 1 1/2" hose, 200' of 1 3/4" hose in a transverse bed and two reel lines of 150 feet.

Ferrara/International



2001 Ferrara/International Model 4900 Brush Apparatus. It carries 600 gallons of water and uses a 500 gpm waterous pump. This apparatus is 2 wheel drive and carries 2000' of 1 1/2" hose and 400' of 1" hose.

Ultra XT



The Ultra XT Brush Apparatus is a 6 wheel drive, independent suspension Type III Brush Apparatus. It has the ability to lock its axles and adjust tire pressure from the cab for increased traction, has a remote control bumper turret, compressed air foam system (CAFS) and carries 2250 gallons of water and 40 gallons of class A foam.

2007 International - OES 8631



OES 8631 is a Type III Engine provided to the SDFD by Cal-EMA. SDFD is allowed to use this engine for its own operations under the condition that when called upon by the State, we must provide staffing and respond.



Truck Company



Traditional SDFD Truck Companies do not carry hose, water or have pumping capabilities. A Truck Company is tasked with rescue, raising ladders, ventilation, forcible entry, securing utilities among many other essential duties which support Engine Companies during the extinguishment of structure fires and emergency incidents. A truck company can be thought of as a giant mobile tool box with specialized equipment, ground ladders and a large aerial ladder with the ability to flow water from.

Below is a brief summary of San Diego Fire-Rescue's Truck Companies which meets or exceeds the minimum guidelines set forth by FIRESCOPE.

Ladders

- Aerial ladder capability
- Ground ladders - minimum of 115 ft (FIRESCOPE)

Rescue

- Amkus: spreaders, cutter, rams, power unit
- Air bags, air chisel
- Cribbing, rope, chains
- Rescue saw
- Recipro saw (electric and battery powered)
- Rapid Intervention Crew bag

Ventilation

- Chain saw and rescue saw



- Axe, pike pole and rubbish hook
- Electric and gas powered fans

Extinguishers

- Water – 2 ½ gallon pressurized
- Dry chemical – 20A/120BC
- CO₂ – 20 or 25 pound

Electrical

- Generators – on-board and portable
- Lights, cords and adaptors

Salvage / Overhaul

- Salvage covers, debris carriers, hall runners, vis queen
- Water vacuum, squeegees, mops, buckets, shovels

Truck Company Crew Members

- Captain #1 – The officer in charge of the Truck Company
- Engineer #2 – Drives, operates aerial ladder, maintains apparatus and equipment
- Firefighter #3 – Sits behind Engineer, assists with connecting hose to truck company for ladder pipe operation.
- Firefighter #4 – Sits behind Captain, operates ladder pipe & tiller on tractor trailer

Truck Company Duties & Priorities

Below are the basic duties and priorities of a truck company on a structure fire. It is also important to be flexible and have the ability to adapt these priorities as the incident dictates, Figure 4-3.

- Rescue
- Raising Ladders – aerial and ground
- Ventilation
- Forcible Entry
- Securing Utilities
- Salvage
- Overhaul
- Assist Engine Co's
- Establish water towers

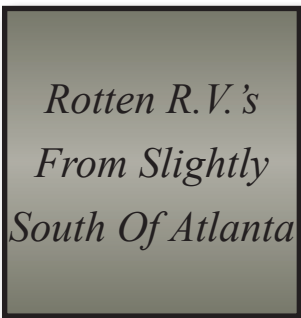


Figure 4-3 Truck Co. Duties Acronym



Service Aerials

105' Pierce Service Aerial



Pierce Service Aerial with a full compliment of truck tools, equipment, generator and ground ladders. Has a 105' heavy duty aerial ladder with a pre-plumbed ladder pipe that is rated to utilize the "Lyfe Pulley Rope Rescue System." (See *Ropes & Knots Chapter*)

75' Saulsbury Service Aerial



A lighter weight and smaller aerial apparatus, it contains most all the standard truck equipment but in less quantities due to the lack of storage space. The aerial ladder is 75' long and can only support 500lbs of weight (2 FF's) without water flowing.



Tractor Trailers

Crimson 103' Tractor Trailer



A 2006 Crimson Tractor Trailer with full compliment of truck tools, equipment, generator and ground ladders. Has a 103' aerial ladder with a pre-plumbed ladder pipe. Housed at Station 1, a firefighter staffs the tiller position which requires a 12-hour training certification.

Spartan 90' Tractor Trailer



A 1994 LTI on a Spartan Chassis with a full compliment of truck tools, equipment, generator and ground ladders. Has a 90' Aerial Ladder with a pre-plumbed ladder pipe. The advantage of a tractor trailer is its ability to maneuver in tight areas. Requires a 12-hour tiller training certification.



Snorkel & Ladder Tower

Articulating Boom (Snorkel)



The Snorkel Truck is identifiable by the two section, 75' articulating boom, basket, and pre-plumbed waterway. The advantage to the Snorkel is its ability to maneuver the aerial in tight spaces and provide a solid working platform for master streams. The disadvantage to the Snorkel is its lack of a ladder to the basket when extended. The SDFD Snorkel has been retired.

Ladder Tower



The Ladder Tower Truck is identifiable by the large heavy duty ladder with a basket at the end. Able to support 1000 lbs and flow water through a pre-plumbed waterway, the Ladder Tower is a heavy and slow truck. The last SDFD Ladder Tower has been retired, but several mutual aid agencies still use this type of Truck.



Quints



As previously mentioned, a Triple Combination Pump must have hose, water, and a pump. When you add two more components, ground ladders and an aerial ladder, you have the five elements that make up a Quint. Essentially, a Quint is an Engine Company and Truck Company combined into one apparatus.

FIRESCOPE does not specifically set minimum standards for a quint, however, most SDFD quints have the following:

- Pump Capacity - 1000 GPM
- Water Tank - 300 Gallons
- Fire Hose -
 - Minimum of 800 feet of 2 1/2" or larger
 - Minimum of 400 feet of 1 3/4"
- Ground Ladders - Minimum of 85'
 - 2 Extension Ladders
 - 1 Roof Ladder
 - 1 Attic Ladder
- Aerial Device - Aerial ladder or elevating platform with a permanently installed waterway.



Additional Heavy Apparatus

Rescue 4



A 2004 Heavy Rescue KME housed at Station 4. Used for various rescues such as vehicle, swift-water, confined space, trench, structure collapse, vertical and other miscellaneous rescues. Has a pre plumbed hydraulic power unit capable of running Amkus and Hurst power tools. Also has an on-board air compressor for air actuated tools.



US&R-41



A 2009 Pierce Arrow XT, Heavy Rescue housed at Station 41. Meets the FIRESCOPE standards for a Type I Heavy Rescue Unit. Carries a similar compliment of rescue equipment as Rescue 4.

Haz Mat



A 2004 KME used to investigate and mitigate Hazardous Materials incidents, including weapons of mass destruction (WMD) city and countywide. Includes a computer lab in the front cab and a chemistry lab in rear. Also carries Level A & B suits along with other specialized equipment to monitor and detect hazardous materials.



Light & Air



A 2004 International used to provide additional lighting (mast and portable) and SCBA bottles for various incidents. Has the ability to refill air bottles on scene via a cascade and compressor system as well as fill air bottles remotely via hose reels.



Additional Heavy Apparatus

Bomb Squad



A 2005 Pierce Rescue Body that is cross-staffed by Certified Bomb Technicians at Station 1. Carries a variety of tools to investigate and mitigate various explosive incidents including Drager Breathing Apparatus, Bomb Suits and a Bomb Disposal Robot.

Oshkosh P19 - Crash/Rescue



1989 Oshkosh all wheel drive rescue. Carries 1000 gallons of water pumped by a Hale 950 GPM pump. Carries 130 gallons of Class B Foam and 500 lbs of Halon. Has a 250 GPM bumper turret and a 500 GPM roof turret.

Housed at stations 28 & 43. Responds to incidents at Montgomery and Brown Field

Oshkosh Striker - Crash/Rescue



- **Rescue 1** - 2003 E-One T-1500
 - Carries 1585g. water, 200g foam, and 500 lbs. Purple K.
 - Staffed with ARFF Capt and ARFF Engineer.
- **Rescue 2 & 5**- 2009 Oshkosh Striker 3000
 - Carries 3000g. water, 420g. foam, and 450 lbs Purple K.
 - Equipped with Snuzzle: A telescoping and articulating boom and piercing nozzle system with joystick controls
 - Staffed with ARFF Engineer and 2 ARFF Firefighters.
- **Rescue 3** - 1999 Oshkosh TI-3000
 - Carries 3000g. water, 420g. foam, and 450 lbs. Purple K.
 - Equipped with Snuzzle.
 - Kept in Reserve Status



Additional Heavy Apparatus

Water Tender



A 2010 KME 4-wheel drive water tender capable of carrying 2950 gallons of water for refilling apparatus. It also has side spray, rear spray and a front bumper turret. Housed at Stations 28 and 40.

Fuel Tender



Carries 5000 gallons Type A Jet Fuel on a Kenworth Chassis. Requires Class B driving license with no restrictions and Hazmat endorsement. It is used during training and operations of SDFD Helicopters.

US&R Box Trucks



The US&R Box Trucks are mobilized for US&R team deployments. Used to haul equipment and supplies necessary to carry out a self sustained rescue operation.

California Task Force 8 has three of these box trucks.

US&R Tractor Trailers



The US&R Tractor Trailers are mobilized for US&R team deployments. Used to haul equipment and supplies necessary to carry out a self sustained rescue operation.

California Task Force 8 has three of these tractor trailers.



Additional Heavy Apparatus

Environmental Response Team



A Hazmat follow vehicle used to pick up waste dumped illegally in alleys, streets and other City Property. Carries various absorbents such as gravel and kitty litter. Registered with Environmental Health to transport Hazardous Materials.

Mass Decon Truck



Mass Casualty Decontamination Truck is activated for large scale hazardous materials or CBRN incidents involving multiple patients. Equipped with portable showers, Tyvek suits, kiddie pools, privacy drapes and other items used for decontamination purposes. Housed at Fire Station 31.

Foam Tender 28



Foam 28 carries 400 Gals of Class A foam, 800 Gals of Class B foam, and a Compressed Air Foam System(CAFS). The main purpose of Foam 28 is to provide protection for the gasoline tank farm located in Mission Valley and at Montgomery Field, however it can be used for large structure fires and wildland hoselays.



San Diego Fire-Rescue Aircraft

Copter 1 - Bell 212



- Twin Engine Type II Medium Lift Aircraft (FIRESCOPE)
- Utilized county wide for Firefighting, Rescues and Medical Transport
- Manufactured in 1984 and overhauled in 2005
- Staffed by 3 personnel, Pilot, Crew Chief, and Flight Medic. Can carry up to 8 personnel
- 375 gallon water tank, refillable in less than 25 seconds in as little as 18” of water
- 250 feet of hoist cable with a 600lb capability
- Night Vision Goggles, infrared camera and “Night Sun” allow for night operations
- Identifiable by its 2 rotor blades

Copter 2 - Bell 412



- Twin Engine Type II Medium Lift Aircraft (FIRESCOPE)
- Utilized county wide for Firefighting, Rescues and Medical Transport
- Manufactured in 2008
- Staffed by 3 personnel, Pilot, Crew Chief, and Flight Medic. Can carry up to 8 personnel
- 375 gallon water tank, refillable in less than 25 seconds in as little as 18” of water
- 250 feet of hoist cable with a 600lb capability
- Night Vision Goggles, infrared camera and “Night Sun” allow for night operations
- Identifiable by its 4 rotor blades



San Diego Fire-Rescue Light Apparatus

Battalion Chief Vehicle



S.U.V.'s or Pick-up trucks housed at Battalion Headquarters. Used as a mobile command post during emergencies. Carries various equipment for Training and Operations such as spare BA bottles, RIC bag, Thermal Image Camera, tools, maps, BLS medical equipment and ice chest.

Utility Vehicles



Various Pick-up trucks and S.U.V.'s used as support vehicles in daily operations. It also can be used as a back up Battalion Chief apparatus.

Chemical Vehicle



Pick-up trucks housed at Station 1 and 10 which can be used for vehicle fires in parking structures, small fuel and chemical spills, and other incidents where access may be an issue. Contains various hand tools, hose packs, extinguishers and buckets of absorbents.

Support Vehicles



Various apparatus used for straight day and support staff such as Training, EMS, Fire Prevention, and the ranks of Deputy Chief and higher.



Additional Light Apparatus - Fire

Air Operations



Used primarily as a support vehicle for Helicopter operations and personnel. Equipped with Air Quick System.

Ambulance



Diesel powered ambulances, also referred to as a “Medic Unit.” Used for the transportation of patients to hospitals by both City and Rural/Metro employees. These ambulances are owned and maintained by the SDMSE.

Foam Trailer



Designed to be towed by Utility Apparatus, it carries 500 gallons of Class A Concentrate Foam. Utilizes a low volume, viscous pump for refilling fire apparatus during large scale incidents. Also carries a portable generator and fixed halogen lights.

Comm-1



A self-contained mobile communications unit and dispatch center. A county wide resource staffed by SDFD personnel, utilized on greater alarm fires, large scale events and natural disasters. Equipped with spare portable radios (VHF & 800mhz), satellite phones, Wi-Fi capabilities and a CAD connection.





Additional Light Apparatus - Fire

Mobile Canteen



Donated to SDFD, used to provide basic support services during extended operations such as drinks, snacks, food, coffee, shade and seating for rehab purposes. Staffed by volunteers from the Fire House Museum.

Swift Water Rescue



Type I River Rescue unit provided to the SDFD by CalEMA. Unit is staffed by SD Lifeguard Personnel and activated during heavy rain or flooding and when requested by the state to provide mutual aid. Housed at NTC US&R Cache.



Additional Light Apparatus - Lifeguards

Patrol



S.U.V.'s used primarily for Sergeant/Supervisors. Carries an essential compliment of lifeguard equipment including Rescue Board, Stokes Basket, Backboard, Search Lines, Trauma Pack and Emergency Dive Equipment. Patrol vehicle at Mission Beach, Ocean Beach and La Jolla additionally carries full compliment of cliff rescue equipment.

R-44



An apparatus referred to as “MERV” – Multi Emergency Response Vehicle. It is based at Lifeguard Headquarters in Quivira basin. Used for Cliff, River, Swift Water and Dive rescues. Carries essential lifeguard equipment and also has a 25ft articulating boom capable of supporting a 600lb load.

Personal Water Craft



A Personal Water Craft with a rescue sled and Peterson tube used at Ocean Beach, Mission Beach, Pacific Beach, La Jolla Shores and Blacks Beach. Operated by a two person crew and requires a 20 hour certification. Can also be used to stabilize boats (carries tow rope) in emergencies until additional apparatus arrive.

Fire/Rescue Boat



Boston Whaler hull, powered by a 4-stroke outboard engine. The 30' and 35' boats have firefighting capability and are responsible for patrol, rescue and other emergency responses in Mission Bay and beaches from Pt. Loma to Torrey Pines and up to 3 miles offshore.



Summary

The information presented in this chapter was designed to give the firefighter a basic foundation and understanding of the many fire and support apparatus utilized by the SDFD. As a firefighter, it is important to be able to identify and understand the capabilities of all fire apparatus utilized by their department. Fire apparatus have evolved into very sophisticated and complex machines. It is every firefighter's responsibility to thoroughly understand the basic functions of all fire apparatus and to be able to effectively operate all of its associated equipment.

As you progress throughout your career, you will be required to build upon this basic knowledge level of fire apparatus. It will be only through hard work, dedication, and training that you will be able to safely operate, drive, and maintain these unique pieces of equipment.



Media & Link Index



Vintage SDFD Fire Apparatus



75' Service Aerial - Saulsbury



Rescue 4



Haz-Mat Apparatus



Comm 1 Trailer



FOG Guide - FIRESCOPE Apparatus Typing



Operations Manual Standard Instruction 06, Section V - Apparatus & Equipment Procedures



Bulletin 09-139 - SDFD Reserve Apparatus



Driver Training & Apparatus Information - Target Safety

NOTE - If after clicking the link it takes you to the Target Safety log-in page, you must log in, then click the link in this document again.



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1. Battalion Chief Kevin Ester, San Diego Fire-Rescue Department, January 2011
2. SDFD Fire Academy Power-Point Presentation, "SDFD Mobile Fire Apparatus" 2009
3. San Diego Vehicle Fleet Maintenance, Leonard C. Gilroy, AICP, Anthony Randazzo and Adam B. Summers
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