

# SAN DIEGO FIRE-RESCUE DEPARTMENT

## **FIRE ACADEMY SPIEL BOOK**



TRAINING & EDUCATION DIVISION

**“QUALITY AND CONSISTENCY THROUGH ON-GOING  
TRAINING, EDUCATION, AND SAFETY”**

**SEPTEMBER 2023**



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## **SPIEL #1: SELF-CONTAINED BREATHING APPARATUS**

1. **Description:** Scott Air-Pax X3 Pro Self-Contained Breathing Apparatus
2. **Usage:** Protects user from:
  - a. High heat
  - b. Smoke
  - c. Toxic gases
  - d. Deficiency in atmospheric oxygen
3. **Specifications:**
  - a. **Back Frame and Harness Assembly**
    - i. Solid, lightweight, one-piece, polycarbonate and plastic frame
    - ii. Will allow connection to 30, 45, and 60-minute cylinders
    - iii. Made of heavy braided webbing with no screws or bolts
    - iv. Quick release buckles
    - v. Double locking latch and Kevlar retention strap
    - vi. Dual Emergency Breathing Support System (EBSS)
    - vii. Battery pack contains 6 “AA” batteries
    - viii. Snap-change cylinder connection
    - ix. Drag Rescue Loop (DRL)
  - b. **Air Cylinder and Valve Assembly**
    - i. Lightweight, composite cylinder made of an aluminum alloy inner shell and a total overwrap of carbon fiber, fiber glass, and an epoxy resin
    - ii. 45-minute bottles hold 1,800 liters of air
    - iii. 99.9% certified Grade-D breathable air
    - iv. Working Pressure = 4,500 psi (*pounds per square inch*)
    - v. Cylinder Rupture Pressure = 13,500 psi
    - vi. Frangible Disc Burst Pressure = 7,500 psi
    - vii. Quick connect fitting
    - viii. Dual window pressure gauge with an elastomeric bumper
    - ix. Ratchet cylinder valve hand wheel
    - x. Straight CGA inlet for charging cylinders (covered)
    - xi. Do not open bottles unless attached to a regulator or pressure reducer
    - xii. Information Found On Tank:
      1. D.O.T. #
      2. Last hydrostatic test date
      3. Manufacturer date
      4. Serial number
    - xiii. Maintenance:
      1. Hydrostatic testing is done every 5 years or when subjected to:
        - a. Extreme heat
        - b. Dents or gouges
        - c. Deformation
        - d. Any suspected damage
      2. Checked daily and before and after each use
  - c. **Sensor Module Assembly**
    - i. Mounted on back frame (adjacent to Pressure Reducer)
    - ii. Powered by 6 “AA” batteries, also located on back frame
    - iii. Alerts of a downed firefighter

- iv. Mounted LEDs and sounders
- v. Automatic activation upon system pressurization
- vi. Activation:
  - 1. Green flashing LEDs
  - 2. Activation chirp
- vii. Pre-Alarm:
  - 1. Motionless for 20 seconds
  - 2. Red flashing LEDs
  - 3. To reset, move BA or press yellow reset button on side of control console once
- viii. Full-Alarm:
  - 1. 10-12 seconds after pre-alarm
  - 2. Red flashing LEDs
  - 3. To reset, press yellow reset button on side of control console twice
- ix. Turning Off:
  - 1. Close ratchet cylinder valve hand wheel
  - 2. Bleed air from system
  - 3. Press yellow reset button on side of control console twice
  - 4. Listen for de-activation chirp
- x. Low Battery:
  - 1. Orange flashing LEDs accompanied by a chirp every two seconds
- d. Pressure Reducer Assembly**
  - i. Primary Reducing Valve**
    - 1. Mounted on back frame (adjacent to Sensor Module)
    - 2. Reduces pressure from 4,500 psi to between 85-110 psi
  - ii. Secondary Reducing Valve**
    - 1. Functions if primary reducer fails
    - 2. Activates vibralert
  - iii. Automatic Transfer Valve**
    - 1. Activated if the secondary is in use
    - 2. Transfers air from the primary to the secondary reducers
  - iv. Low Cylinder Transfer Valve**
    - 1. Activated at 33% of full-rated cylinder pressure (1,500 psi) or if secondary is in use
    - 2. Activates vibralert
- e. Remote Gauge Assembly**
  - i. Mechanical gauge reads within 250 psi of primary cylinder gauge
  - ii. Measures empty, 10, 20, 30, and full
  - iii. Red = 1/3 full, Green = Full cylinder
  - iv. Red Button is the manual alarm
    - 1. Will work even when system is not pressurized as long as batteries are good
  - v. Yellow button is used to reset BA
- f. Mask-Mounted Regulator Assembly**
  - i. Supplies and maintains air to the face piece
  - ii. Attached to low-pressure hose

- iii. Positive pressure
- iv. Regulator starts upon inhalation
- v. Red Purge Valve
  - 1. Allows air to bypass if regulator fails
  - 2. Defogs mask via the spray bar
- vi. Houses vibralert
- vii. Do not flush or submerge regulator in water
- g. Face Piece Assembly**
  - i. Kevlar head harness with flame resistant straps
  - ii. High-temperature, polycarbonate lens with abrasion resistant and anti-fog coatings
  - iii. Fit Test is performed yearly at Station 36
  - iv. Cleaning:
    - 1. Use mild soap and water
    - 2. To disinfect, use hypochlorite solution or 2 tablespoons of bleach and 1 gallon of water
- h. Visualert Heads-Up-Display (HUD)**
  - i. Keeps user informed of air and battery status
  - ii. Located on regulator and can be seen through face piece
- i. Dual Emergency Breathing Support System (EBSS) / Buddy Breathing Hose**
  - i. Allows user to connect to another user without having to disconnect the regulator supply hose
  - ii. 2 1/2 feet long
- j. Universal Air Connection (UAC)**
  - i. Allows for air to be supplied to a down or trapped firefighter
  - ii. Located on the firefighter's left side of pressure reducer ("left for life")
  - iii. For emergency use only
  - iv. Works with RIC Bags on Trucks, USAR 2, and USAR 41
  - v. Always keep fitting covered

## **SPIEL #2: THERMAL IMAGING CAMERA**

1. **Description:** Model FLIR K65; Detects thermal energy radiated from surrounding objects and converts them into a visual image
2. **Usage:**
  - a. Search and rescue
  - b. Size-up and scene assessment
  - c. Locate seat of fire and extension
  - d. Identify potential flashover
  - e. Determine entry and ventilation points
  - f. Overhaul
  - g. Hazmat incidents
3. **Specifications:**
  - a. Weighs 2.4 pounds
  - b. Powered by rechargeable Lithium Ion batteries
  - c. 4-hour operating time
  - d. 2x digital zoom
  - e. **Image Modes:**
    - i. Basic
    - ii. Black and White
    - iii. Fire
    - iv. Search and Rescue
    - v. Heat Detection
4. **Additional Equipment:**
  - a. Retractable lanyard
  - b. Apparatus charging system
  - c. Additional batteries
  - d. Star screwdriver
5. **Safety Precautions:**
  - a. Do not rely solely rely on the Thermal Imaging Camera as the sole means of navigation or deviate from Standard Operating Practices during use.
  - b. Thermal energy is not transmitted through glass or water and may be reflective off of smooth surfaces.
  - c. Intrinsically safe.
  - d. Clean with mild soap and water and wipe down with soft terry cloth towel.



**SPIEL #3: ELECTRIC RAMFAN – EFC50x**

1. **Description:** 115/230 volt, 1/2 horsepower, high velocity flow, stackable, ramfan turbo ventilator
2. **Usage:** Ventilation
3. **Specifications:**
  - a. 19 x 18 x 12” diameter fan with 21 cast aluminum turbo blades
  - b. Weight: 49 pounds
  - c. Free flow = 3,200 cfm (*cubic feet per minute*)
  - d. Duct flow = 1,935 cfm
  - e. Non-sparking Lexan polycarbonate housing
  - f. Uses 12-inch or 16-inch duct for confined space
  - g. Motor is intrinsically safe for confined space use:
    - i. Class I, Group D = Gas and vapors
    - ii. Class II, Groups E, F, G = Combustible dust
4. **Additional Equipment:**
  - a. Source of power
  - b. Extension cord
  - c. Electrical adapters
5. **Safety Precautions:**
  - a. Wear full protective safety gear and eye protection
  - b. Keeps hands away from grill
  - c. Keep curtains and other objects away from intake side of blower
  - d. Only use department generator or properly tested house current





**SPIEL #4: GAS RAMFAN – GX200**

1. **Description:** 1-cylinder, 4-stroke, Honda 2.1 horsepower, 5 position, rapid tilt, gasoline powered ramfan turbo ventilator
2. **Usage:** Ventilation
3. **Specifications:**
  - a. 16-inch diameter fan with 7 cast aluminum turbo blades
  - b. Weight: 48 pounds
  - c. Air Flow = 12,800 cfm
  - d. Unleaded fuel only
  - e. Oil alert protection system
  - f. Full-width locking handle
  - g. Heavy duty wheels with rock guard for use in rough terrain
  - h. Run time = 1 hour 40 minutes
4. **Additional Equipment:**
  - a. Unleaded fuel and filter funnel
  - b. Deodorizer: "Smoke-O"
5. **Safety Precautions:**
  - a. Wear full protective safety gear and eye protection
  - b. Keeps hands away from grill
  - c. Keep curtains and other objects away from intake side of blower
  - d. Position ejector so that it will not obstruct ingress or egress of personnel
  - e. Do not move while in operation
  - f. Wear hearing protection when near in close proximity to ejector



**SPIEL #5: PORTABLE GENERATOR – HONDA EB6500X**

1. **Description:** 1-cylinder, 4-stroke, Honda 13.0 horsepower, gasoline powered generator
2. **Usage:** Provide electrical power to equipment
3. **Specifications:**
  - a. 120/240-volt AC current
  - b. 6,500-watt output
  - c. 4 three-prong outlets
  - d. 1 three-prong outlet
  - e. 1 four-prong outlet
  - f. Switch to turn electricity on and off
  - g. Run time = 9.8 hours
4. **Additional Equipment:**
  - a. Unleaded fuel and filter funnel
  - b. Extension cord
  - c. Electrical adaptors
5. **Safety Precautions:**
  - a. Never ground generator
  - b. 20-amp fuse for overload
  - c. Never start or stop motor with equipment attached



## **SPIEL #6: LADDERS**

1. **Description:** 24, 28, 35, and 40-foot ground extension ladders, 12, 14, and 16-foot roof ladders, and 20-foot wall ladders
2. **Usage:** Ingress and egress above and below ground
3. **Specifications:**
  - a. Beam
  - b. Bed
  - c. Bottom/butt
  - d. Fly
  - e. Guides
  - f. Halyard
  - g. Heat sensors
  - h. Hooks
  - i. Locks
  - j. Pulleys
  - k. Rungs
  - l. Spurs
  - m. Stops
  - n. Top
  - o. Truss
  - p. Truss blocks/ rung plates
4. **Safety Precautions:**
  - a. Wear helmet
  - b. Watch hand placement when extending and retracting fly
  - c. Lift ladder with legs, not back
  - d. Tie excess halyard off to prevent tripping
  - e. Tie beam off to solid surface to stabilize ladder
  - f. Watch for under and above ground sources of electricity
5. **Maintenance:**
  - a. **Every Saturday and after each use, inspect ladders for:**
    - i. Loose bolts or rivets
    - ii. Damaged hardware
    - iii. Damage to structural components
    - iv. Heat sensor label discoloration
    - v. Worn halyard
  - b. **Cleaning:**
    - i. Clean with clear water (dry with chamois)
    - ii. Lube pulley and locks with light weight oil (as needed)
    - iii. Lube guides with paraffin wax

**SPIEL #7: CHAINSAW**

1. **Description:** 1-cylinder, 2-stroke, gasoline powered chainsaw
2. **Usage:** Ventilation, forcible entry, rescue
3. **Specifications:**
  - a. 3.72 cubic inch engine
  - b. 12,000 rpm (*rotations per minute*) max. speed
  - c. 20" x .063" guide bar with RDR chain or 24" x .050" guide bar with RSF brush chain
  - d. Hand guard with chain brake
  - e. 50:1 fuel/oil mixture
  - f. 30 wt. oil for chain lubrication
  - g. Weight: 19 pounds
4. **Accessories:**
  - a. Slot screwdriver/ socket tool (scrench)
5. **Additional Equipment:**
  - a. TruFuel 50:1 mix
  - b. Spare chain
6. **Safety Precautions:**
  - a. Wear work gloves, safety gear, and eye protection while working on saw and full PPE for ventilation operations
  - b. Never lug or bind chain
  - c. Change chain when any teeth are missing
  - d. Avoid cutting with tip to prevent kick-back
  - e. Set the chain brake when traveling with a running saw and when in close proximity to other personnel



## **SPIEL #8: RESCUE SAW**

1. **Description:** 1-cylinder, 2-stroke, gasoline powered rescue saw
2. **Usage:** Ventilation, forcible entry, rescue
3. **Specifications:**
  - a. 5,000 rpm max. speed
  - b. 14-inch diamond tip combination blade carried on saw
  - c. 50:1 fuel/oil mixture
  - d. Equipped with adjustable blade guard
4. **Accessories:**
  - a. Extra Carbide tip blade, wood and masonry blade
5. **Additional Equipment:**
  - a. Slot screwdriver/ socket tool (scrench)
  - b. Star tool
  - c. TruFuel 50:1 mix
6. **Safety Precautions:**
  - a. Wear full protective safety gear and eye protection
  - b. Never lug or bind blade
  - c. Never adjust blade guard while blade is spinning
  - d. Ensure the RPM rating on blade is higher than the saw's RPM rating
  - e. Check for proper blade direction
  - f. Clear area of unnecessary personnel when starting saw
  - g. Check and clear area of flammable objects
  - h. Be cautious of sparks and the possibility of blade disintegration



### **SPIEL #9: RECIPROCATING SAW**

1. **Description:** Milwaukee 28-volt, Lithium Ion, M28 Sawzall Reciprocating Saw. Uses high-powered motor to deliver faster cutting and performance
2. **Usage:** Vehicle extrication, overhaul, ventilation, forcible entry
3. **Specifications:**
  - a. Lithium Ion batteries
  - b. Keyless blade change
  - c. 1 1/18" stroke length
  - d. 3,000 strokes per minute
4. **Accessories:**
  - a. Demolition blade carried on saw
5. **Additional Equipment:**
  - a. Battery charger
  - b. Extra batteries
  - c. Extra blades
6. **Safety Precautions:**
  - a. Wear full protective safety gear and eye protection
  - b. Adjust blade depth guide if needed



**SPIEL #10: AIRBAGS**

1. **Description:** Maxi-Force Master Force Control Kit Air Bag Systems are a multi-application inflation system
2. **Usage:** Lifting and displacement of heavy rigid objects
3. **Specifications:**
  - a. **Piston-Type High Pressure Regulator:**
    - i. Reduces inlet pressure from 4,500 psi to 215 psi
    - ii. Relief valve is factory set at 165 psi
  - b. **Dual (Dead Man) Safety Relief and Control:**
    - i. Single input/ dual output
  - c. **Interconnecting Hoses:**
    - i. Five 16' sections of hose
    - ii. Color coded and interchangeable
  - d. **Airbags**
    - i. Made of neoprene; reinforced with three layers of Kevlar fabric
    - ii. Sizes range from 6x6 to 36x36 inches
    - iii. **Common Bag Specifications:**

<u>Model</u>	<u>Size</u>	<u>Capacity</u>	<u>Height</u>
KPI-5	10x10"	5.4 tons	5.4"
KPI-12	15x15"	13.7 tons	8.2"
KPI-17	15x21"	19 tons	8.9"

4. **Additional Equipment:**
  - a. Cribbing
  - b. Crowbar
  - c. Scott Adaptor Tool for Quick Connect SCBA fitting
5. **Safety Precautions:**
  - a. Wear full protective safety gear and eye protection
  - b. Never stack more than two bags



## **SPIEL #11: AMKUS**

1. **Description:** High-powered, self-contained, hydraulic, spreading, pushing, pulling, and cutting device. It operates without flames or sparks, is handheld, and is completely portable.
2. **Usage:** Vehicle extrication, forcible entry
3. **Specifications:**
  - a. **Power Unit:**
    - i. Weight: 100 lbs with hose, hydraulic oil, and fuel
    - ii. 1-cylinder, 4-stroke, 3.5-4.5 horsepower engine
    - iii. Two 20' sections of hydraulic hose
    - iv. Hydraulic pump operates at 10,500 psi and delivers a constant flow of non-toxic mineral base fluid to the rescue tool
  - b. **Spreader Tool:**
    - i. Weight: 44 lbs with hose, oil, and tips
    - ii. 20,000 lbs pressure/force at the tips
    - iii. 24" spreading distance
    - iv. Aluminum alloy arms with titanium tips
  - c. **Cutter Tool:**
    - i. Weight: 46 lbs with hose, oil, and tips
    - ii. 200,807 lbs cutting force
    - iii. 360° rotating handle
  - d. **Rescue Rams:**
    - i. 30,000 lbs pushing
    - ii. 15,000 lbs pulling
    - iii. 20" Ram: extends from 14" to 20", weighs 23 lbs
    - iv. 40" Ram: extends from 24" to 40", weighs 33 lbs
    - v. 60" Ram: extends from 34" to 60", weighs 43 lbs
4. **Additional Equipment:**
  - a. Grab hooks and chains
  - b. Shackle hooks
  - c. Re-enforcement plate
  - d. Unleaded fuel and filter funnel
5. **Safety Precautions:**
  - a. Wear full protective safety gear and eye protection
  - b. Use as a one-person operation
  - c. Never reach inside of the spreaders or cutters while in operation
  - d. Keep area clear of debris, which may become projectiles
  - e. Never stand between tool and vehicle
  - f. Stabilize vehicle prior to operation
  - g. Ensure scene safety



## **SPIEL #12: GENESIS**

1. **Description:** Genesis E-Force 14-C Rescue Tool
2. **Usage:** Rapid intervention for medium to heavy rescue, forcible entry
3. **Specifications:**
  - a. 76-watt, 28-volt, battery operated, combination rescue tool
  - b. Weight: 41.6 lbs
  - c. Maximum spreading distance: 14.2”
  - d. Maximum spreading force: 176,000 lbs
  - e. Maximum cutting force: 110,380 lbs
  - f. Maximum pulling force: 10,900 lbs
  - g. Operating Pressure: 10,500 psi
4. **Accessories:**
  - a. Spare batteries
  - b. Battery charger
5. **Additional Equipment:**
  - a. Pry tool
  - b. Cribbing
  - c. Debris Carrier
  - d. For vehicle rescue, bring same equipment as AMKUS
  - e. For other situations, bring equipment as needed
6. **Safety Precautions**
  - a. Wear full protective safety gear and eye protection
  - b. Never reach inside of tool while in operation
  - c. Never stand between tool and vehicle
  - d. Stabilize object prior to operation
  - e. Ensure scene safety and minimize hazards

### **SPIEL #13: RESCUE 42 STRUTS**

1. **Description:** Rescue 42 struts and straps
2. **Usage:** Stabilization of vehicles, heavy machinery, and structures. Can also be used for lifting and stabilizing objects
3. **Specifications:**
  - a. Telescoping composite struts
    - i. 2 long struts – 3-8'
    - ii. 2 short struts – 2-5'
    - iii. Struts have rust and chemical resistant coating
  - b. Strap factory rating = 10,000 lbs
  - c. SDFD working rating = 3,335 lbs (3:1 safety ratio)
  - d. For struts rating, refer to chart on struts
4. **Accessories:**
  - a. 4 red ratcheting straps (27')
  - b. A-Frame head
  - c. Combi-head
  - d. Screw jack-head
  - e. Cinch ring
  - f. Chains
  - g. Hook cluster
  - h. Spike foot
5. **Additional Equipment:**
  - a. Battery pack
  - b. Cribbing
6. **Safety Precautions:**
  - a. Wear full protective safety gear and eye protection
  - b. Ensure metal pins in baseplate are set and only composite pins are being used for struts prior to operation
  - c. After operation, loosen straps slowly with handles released. If unable to release handle, a screwdriver may be used to release drum
  - d. Keep struts between 45-70 degrees (45° preferred)
  - e. Do not extend past orange marking
7. **Maintenance:**
  - a. Clean with mild soap and water
  - b. Inspect for cracks, dents, splintering, or bowing before and after each use



### **SPIEL #14: PERSONAL ESCAPE SYSTEM (PES)**

1. **Description:** A five-piece kit containing a belt, tether, hook, rope, and descent control device. PES is an integral part of structural PPE.
2. **Usage:** Used for emergency escape from upper floors
3. **Specifications:**
  - a. Extreme-Rescue belt, Class I harness, equipped with additional D-ring
  - b. Safe-D carabiner with a 3-stage self-locking design and captive eye pin that prevents side loading
  - c. Sterling Lightning GT hook with gated hitching slot and attached pull-strap
  - d. Escape Rope: 50' of 7.5mm Technora sheath with nylon core
    - i. Breaking Strength = 3,900 lbs
    - ii. Heat Resistant to 930°F
  - e. Halo descent control device with auto-stopping feature
  - f. System weight: 2 lbs, 14 oz
4. **Additional Equipment:**
  - a. Portable radio
  - b. Forcible entry/exit tool
5. **Safety Precautions:**
  - a. Wear full PPE and SCBA
  - b. Call a mayday to notify personnel of your situation
  - c. Ensure hook is properly placed and set prior to exiting window
  - d. Ensure two raps through hitching slot on remote anchor
  - e. Ensure PES is properly inspected and repacked after each use



## **SPIEL #15: ROPES, KNOTS, WEBBING, AND HARDWARE**

1. **Description:** Various length and dimensions of rope, webbing, and hardware; used for life, utility, and training
2. **Usage:** Set up rescue systems
3. **Specifications:**
  - a. **Rope:**
    - i. **1/2" Nylon Static Kernmantle Rope**
      1. Lengths of 10-600'
      2. Factory rating (*breaking strength*) = 9,600 lbs
      3. SDFD working rating = 640 lbs (15:1 working ratio)
      4. Strengths: Kern (core) = 75%, Mantle (sheath) = 25%
      5. SDFD Classifications:
        - a. Lifeline: 0-5 years
        - b. Training Line: 5-10 years
        - c. Utility Line: 10-15 years
    - ii. **1/2" Polypropylene Rope**
      1. Used for water rescue
      2. Located on USAR 2 and USAR 41
      3. Factory rating = 4,000 lbs
      4. SDFD working rating = 250 lbs (15:1 working ratio)
    - iii. **8mm Prusik Cord**
      1. 1/3-1/2 diameter of rope
      2. Lifeline: 0-5 years
      3. Uses:
        - a. Breaking cam
        - b. Pulling/hauling cam
        - c. Gain saver
    - iv. **Rope Identification Markings:**
      1. SDFD (agency name)
      2. Length
      3. Use
      4. Company
      5. Identification Number
      6. Date placed into service
    - v. **Proper Care of Ropes:**
      1. Pad ropes
      2. Wash ropes as needed
      3. Inspect ropes
      4. Avoid sharp bends
      5. Do not stand or step on ropes
      6. Do not leave in sunlight for extended time
      7. Do not expose to chemicals
      8. Do not expose to hydrocarbons (including exhaust)
      9. Do not overload
  - b. **Knots:**
    - i. **Knot Characteristics:**
      1. Easily tied and untied

2. Easily identified
3. Minimum strength loss

**ii. Knots and Hitches:**

1. Family of 8's:
  - a. Stopper
  - b. Bend
  - c. Follow-through
  - d. On-a-bight
  - e. Double Loop
2. Other Knots:
  - a. Overhand bend
  - b. Overhand safety
  - c. Bowline
  - d. Running bowline
  - e. Half hitch
  - f. Clove hitch
  - g. 3-wrap prusik
  - h. Trucker's hitch

**c. Webbing:**

**i. 1" Nylon Tubular Webbing**

1. Constructed of monofilament nylon
2. Factory rating = 4,000 lbs
3. SDFD working rating = 800 lbs (5:1 working ratio)
4. Lifeline: 0-5 years
5. Uses:
  - a. Harnesses
  - b. Anchors
  - c. Stokes basket tie-in
6. Webbing Identification
  - a. Green = 5' (anchors)
  - b. Yellow = 12' (chest harnesses, anchors)
  - c. Blue = 15' (seat harnesses, swami belt, anchors)
  - d. Red = 16' (personal use)
  - e. Orange = 20' (Stokes tie-in, anchors)

**ii. Hardware:**

1. Alloy Carabiner:
  - a. Factory rating = 6,900 lbs
  - b. SDFD working rating = 460 lbs (15:1 working ratio)
  - c. Personal use only
2. Steel Carabiner
  - a. General use (used in systems)
  - b. Minimum rating of 40 kN (Kilonewton) (8,992.36 lbs)
3. Steel Ring
  - a. Minimum rating of 44.5 kN (10,004 lbs)
4. Pulley:
  - a. 2" or 4" diameter
  - b. Minimum rating of 36 kN (8,093.12 lbs)

5. 8-Plate:
  - a. Steel or Aluminum
  - b. Minimum rating of 22 kN (4,945.8 lbs)
  - c. Place out-of-service when 15% of original diameter is worn away
6. Anchor Plate:
  - a. Steel or aluminum
  - b. Minimum rating of 36 kN (8,093.12 lbs)
7. Edge Protection:
  - a. Edge roller and guard
  - b. Aluminum wheels and frame. Frames connect together in series
    - i. Can be made of canvas or plastic
  - c. Also used for fire hose



**METRO COMMAND CENTER**

<b><u>STATION</u></b>	<b><u>STREET</u></b>	<b><u>CROSS STREET</u></b>
Emergency Command & Data Center (ECDC)	Kearny Villa Rd.	Aero Dr.

**STORE ROOM 42**

<b><u>STATION</u></b>	<b><u>STREET</u></b>	<b><u>CROSS STREET</u></b>
Logistics	Kearny Villa Rd.	Aero Dr.

**AIR OPERATIONS**

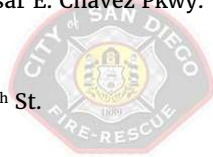
<b><u>STATION</u></b>	<b><u>UNITS</u></b>	<b><u>STREET</u></b>	<b><u>CROSS STREET</u></b>
Air Operations <i>Montgomery Field</i>	Copter 1, Copter 2, Copter 3	Ponderosa Ave.	Balboa Ave.

<b><u>STATION</u></b>	<b><u>STREET</u></b>	<b><u>CROSS STREET</u></b>
Falck Headquarters	Greencraig Ln.	Lightwave Ave.



## BATTALION 1 – DOWNTOWN SAN DIEGO

<u>STATION</u>	<u>UNITS</u>	<u>STREET</u>	<u>CROSS STREET</u>	<u>DISTRICT</u>
Airport	R1, R2, R3, R5 (ARFF)	Pacific Highway	Washington St.	Lindbergh Field
FS 1	E1, E201, T1, LA1, MAST, CU1, XR-1, XR-2, U81 (EDT)	First Ave.	B St.	Downtown
FS 2	E2, B1, USAR2 (TRT, ROPE REPAIR)	W. Cedar St.	Pacific Highway	Mid- City
FS 3	E3 (ARFF)	W. Kalmia St.	State St.	Little Italy
FS 4	E4	8 <sup>th</sup> Ave.	J St.	Gaslamp
FS 7	E7	Cesar E. Chavez Pkwy.	National Ave.	Barrio Logan
FS 11	E11, T11	25 <sup>th</sup> St.	Broadway	Golden Hil





## BATTALION 2 – CENTRAL SAN DIEGO

<u>STATION</u>	<u>UNITS</u>	<u>STREET</u>	<u>CROSS STREET</u>	<u>DISTRICT</u>
FS 5	E5, B2, OES6307	9 <sup>th</sup> Ave.	University Ave.	Hillcrest
FS 8	E8 (ARFF)	Goldfinch St.	Washington St.	Mission Hills
FS 14	E14, T14, BR14, SC1	32 <sup>nd</sup> St.	Lincoln Ave.	North Park
FS 18	E18, OES304	Felton St.	Adams Ave.	Normal Heights
FS 23	E23, U82 (ALLIED EQUIP)	Comstock St.	Linda Vista Rd.	Linda Vista
FS 28	E28, T28, WT28, FM28 (PUMP TESTING) (ARFF)	Kearny Villa Rd.	Aero Dr.	Kearny Mesa
FS 36	E36 (SCBA)	Chateau Dr.	Mt. Abernathy Ave.	East Clairemont



## BATTALION 3 - BEACHES

<u>STATION</u>	<u>UNITS</u>	<u>STREET</u>	<u>CROSS STREET</u>	<u>DISTRICT</u>
FS 15	E15, U83	Voltaire St.	Ebers St.	Ocean Beach
FS 20	E20, T20, U20 (HOSE REPAIR)	Kemper St.	Midway Dr.	Sports Arena
FS 21	E21, T21	Grand Ave.	Mission Blvd.	Pacific Beach
FS 22	E22	Catalina Blvd.	Savoy St.	Point Loma
FS 25	E25, B3	Chicago St.	Napier St.	Bay Park
FS 27	E27	Clairemont Dr.	Cole St.	West Clairemont



## BATTALION 4 – MID/EAST SAN DIEGO

<u>STATION</u>	<u>UNITS</u>	<u>STREET</u>	<u>CROSS STREET</u>	<u>DISTRICT</u>
FS 10	E10, T10, BR10, CU10 (PAT)	62 <sup>nd</sup> St.	Acorn St.	SDSU
FS 17	E17	Chamoune Ave.	Orange Ave.	City Heights
FS 26	E26 (EMS SOUTH)	54 <sup>th</sup> St.	Krenning St.	Chollas/ Redwood Village
FS 31	E31, M99, U84	Camino Rico	College Ave.	Del Cerro
FS 34	E34, BR34	Cowles Mountain Blvd.	Navajo Rd.	Cowles Mountain
FS 39	E39	La Cuenta Dr.	Tierrasanta Blvd.	Tierrasanta
FS 45	E45, T45, B4, HM1, HM2, ERT, OES61 (HAZMAT)	Friars Rd.	Mission Village Dr.	West Mission Valley



## BATTALION 5 – NORTHWEST SAN DIEGO

<u>STATION</u>	<u>UNITS</u>	<u>STREET</u>	<u>CROSS STREET</u>	<u>DISTRICT</u>
FS 9	E9 (EMS NORTH) (FORMS)	La Jolla Pkwy.	Torrey Pines Rd.	La Jolla Shores
FS 13	E13	Nautilus St.	Fay Ave.	La Jolla Village
FS 16	E16 (PRE-FIRE PLANNING)	Via Casa Alta	La Jolla Scenic Dr.	Mt. Soledad
FS 24	E24, BR24	Hartfield Ave.	Del Mar Heights Rd.	Del Mar
FS 35	E35, T35, BR35, U85	Eastgate Mall	Genesee Ave.	North University City
FS 41	E41, USAR 41 (TRT)	Carroll Canyon Rd.	Scranton Rd.	Sorrento Valley
FS 47	E47	Edgewood Bend Ct.	Carmel Valley Rd.	Pacific Highlands
FS 50	E50, B5	Shoreline Dr.	Nobel Dr.	South University City
FS 52	E52, T52 (Electric Apparatus) **Expected to open in 2024	North Torrey Pines Rd.	Genesee Ave.	Torrey Pines/ UCSD



**BATTALION 6 – SOUTH SAN DIEGO/ BORDER**

<u>STATION</u>	<u>UNITS</u>	<u>STREET</u>	<u>CROSS STREET</u>	<u>DISTRICT</u>
FS 6	E6	Twining Ave.	Palm Ave.	West Otay Mesa
FS 12	E12, T12, BR12, B6, U86	Imperial Ave.	Willie James Jones Ave.	Lincoln Park
FS 19	E19, WT19 (HOSE TESTING)	Oceanview Blvd.	35 <sup>th</sup> St.	Southcrest
FS 29	E29, T29, BR29, U29	W. San Ysidro Blvd.	Cottonwood Rd.	San Ysidro
FS 30	E30	Coronado Ave.	Hollister St.	Palm City/ Nestor
FS 32	E32	Briarwood Rd.	Paradise Valley Rd.	Paradise Hills
FS 43	E43, BR43 (ARFF)	La Media Rd.	Otay Mesa Rd.	East Otay Mesa
FS 51	E51 (PAT)	Skyline Dr.	Sychar Rd.	Skyline
Squad 55	SQ55	Imperial Ave.	61 <sup>st</sup> St.	Skyline



**BATTALION 7 – NORTH/ NORTHEAST SAN DIEGO**

<u>STATION</u>	<u>UNITS</u>	<u>STREET</u>	<u>CROSS STREET</u>	<u>DISTRICT</u>
FS 33	E33, OES6301	Bernardo Center Dr.	Rancho Bernardo Rd.	Rancho Bernardo
FS 37	E37, BR37	Spring Canyon Rd.	Blue Cypress Dr.	Scripps Ranch
FS 38	E38	New Salem St.	Camino Ruiz	Mira Mesa
FS 40	E40, T40, BR40, WT40 LA40, U40 (LADDER REPAIR) (WOODEN TOOL REPAIR)	Salmon River Rd.	Paseo Montalban	Rancho Penasquitos
FS 42	E42	World Trade Dr.	Highland Ranch Rd.	Carmel Mountain
FS 44	E44, T44, BR44, B7, U87 (PAT)	Black Mountain Rd.	Maya Linda Rd.	East Mira Mesa
FS 46	E46	Lazanja Dr.	Camino Del Sur	Santa Luz
Squad 57	SQ57	San Pasqual Valley Rd.	Academy Rd.	San Pasqual



## **City of San Diego**

### **Mission Statement:**

“To serve the community of San Diego by providing the highest level of emergency/rescue services, hazard prevention, and safety education ensuring the protection of life, property, and the environment.”

### **Community Information:**

1.4 million residents (8<sup>th</sup> largest city in US)  
3.286 million residents in San Diego County  
372.42 square miles  
17 miles of coastline, 3 extended offshore  
11 Beaches  
4,600 acres around Mission Bay Park  
2,494 unsheltered homeless  
Mayor: Todd Gloria  
3 Airports (Montgomery, Lindbergh, Brownfield)

### **Freeways:**

North & South: 5, 15, 805, 125, 163  
East & West: 8, 52, 54, 56, 75, 94, 905

### **Pride:**

Professionalism  
Respect  
Integrity  
Dedication  
Excellence

## **San Diego Fire Department**

**Founded:** August 5<sup>th</sup>, 1889

**Employees:** 1,256 (949 Uniformed)

**49 Stations** (+1 coming in 2024)

**2 Quick Response Squads**

**Engines:** 50 (+3 more coming)

**Trucks:** 13 (+1 coming in 2024)

**Brush Rigs:** 11

**OES Equipment:** 2 Type III (5, 33), 1 Type I (18),

1 Hazmat (45)

**Cal OES Region 6**

**USAR California Task Force 8**

1 of 8 Type 1 USAR teams in California

**Utility:** 10

**7 Battalions**

**3 Helicopters:** Copter 1, 2, 3

**Ambulance Provider:** Falck (HQ: Greencraig & Lightwave)

**2 Downtown Mod Units:** Staffed by SDFD

**STAR Medic:** M99 at FS31

**19 Hospitals**

## **Regional Contract Cities (RCS):**

National City, Imperial Beach, Poway, Chula Vista, Coronado

\*ECDC is Secondary Answering Point for SD + RCS

## **San Diego Fire Organizational Chart (Feb. 2023)**

**600 B. St, Suite 300**

**619-533-4300**

**Chief:** Chief Colin Stowell

**Executive Assistant:** Yolanda Kelly

**Emergency Operations Asst. Chief:** Dave Gerboth

**EMS Deputy Chief:** Jodie Pierce

**Lifeguard Chief:** James Gartland

**Special Ops Chief:** Steve Lozano

**A Shift Commander:** Dan Eddy

**B Shift Commander:** Robert Allen

**C Shift Commander:** Brian Raines

**Business Operations Asst. Chief:** John Wood

**Community Risk Reduction:** Tony Tosca

**ECDC Chief:** Roger Fisher

**Logistics Chief:** James Gaboury

**Employee Services:** Robert Logan

**Fiscal Services:** Michelle Yamamoto

**Communications Department:** Monica Munoz

**Training Chief:** Willy Melendez

**NTC: 2580 Kincaid Rd.**

## **Specialty Stations**

**FS 1:** Bomb Squad, MAST (Inv 67, Inv 69)

**FS 2:** TRT/ USAR, Rope Repair

**FS 3:** ARFF

**FS 8:** ARFF

**FS 9:** EMS (North), Forms

**FS 10:** Post Academy Training

**FS 16:** Pre-Fire Planning

**FS 19:** Hose Testing (*done by 20's personnel*)

**FS 20:** Hose Repair

**FS 23:** Allied Equipment (Power Tools)

**FS 26:** EMS (South)

**FS 28:** Pump Testing, Storeroom 42, Mobile Canteen (MC)

**FS 36:** SCBA

**FS 40:** Ladders, Wooden Hand Tools

**FS 41:** TRT/ USAR

**FS 44:** Post Academy Training

**FS 45:** Hazmat, ERT

**FS 51:** Post Academy Training

**Airport:** ARFF (Rescue 1, 2, 3, 5)



### Engine Specs

**50 Engines + 3 on the way** (E52, E204 and E217)  
**975' of 4" hose** (900' + 50' + 25')

Bulk Bed 900' with 4" - 2 1/2" Reducer

**806' of 2 1/2" hose** (650' + 150' + 6')

Bulk Bed 650' with 2 1/2" gated wye

**650' of 1 3/4" hose** (450' + 200)

3 Pre-Connects + 2 High-Rise Packs

**500 Gal @ 1,500 GPM**

**Ladders:** 24' Ground Extension Ladder, 14' Roof Ladder, 10' Attic Ladder

**Other:** 6' NY Hook, 6' and 10' Pike Pole

**Extinguishers:** 2.5 Gallon Pressurized Water, 20A/120BC Dry Chem

### Cross-Lays (Pre-Connects/ Mattydales)

**Cross-Lay #1:** 100', closest to cab, Nozzle (30, 60, 95, 125 GPM), Fold at 2L

**Cross-Lay #2:** 150', middle row, Nozzle (95, 125, 150, 200 GPM), Fold at 2L, 4R

**Cross-Lay #3:** 200', farthest from cab, Nozzle (95, 125, 150, 200 GPM), Fold at 3L, 5R

### Quick Attack

**150' of 2 1/2" hose**

**2 1/2" Select-O-Flow Nozzle:** 150, 175, 200 GPM)

### Mounted Fog Select-O-Flow

500, 750, 1000, 1250 BPM

### High Rise Hose Pack A

100' of 1 3/4" synthetic double jacket hose  
Phantom High Rise Nozzle (30, 95, 125, 150, 200 GPM) with 7/8" slug tip 160 GPM at 50 PSI  
1 1/2" Shut Off Butt  
2 1/2" - 1 1/2" Gated Wye  
6' whip of 2 1/2"  
Wrapped in a Cleveland Roll with Nylon Straps

### High Rise Hose Pack B

100' of 1 3/4" synthetic double jacket hose  
Phantom High Rise Nozzle with 7/8" slug tip  
160 GPM at 50 PSI  
1 1/2" Shut Off Butt  
2 1/2" - 1 1/2" Reducer  
Wrapped in a Cleveland Roll with Nylon Straps

### Red Booster Line

175' of 3/4" Redline  
Mounted on top of apparatus  
1" Select-o-Flow Pistol Grip: 20, 40, 60, 100 PSI

### Dry Hose Weights

1" Single Jacket 50 ft - 9 lbs  
1 1/2" Single Jacket 100' - 15 lbs  
1 3/4" Double Jacket 50' - 23 lbs  
2 1/2" Double Jacket 50' - 32 lbs  
3" Triple Jacket 50' - 36 lbs  
4" Double Jacket 100' - 86 lbs

### High Pressure Hose

**E1, E201, E3, E4:** Triple Jacket Hose, Green,  
600 PSI Service Pressure, 50' Sections  
of 3" (Total 400')

**E35:** Triple Jacket Hose, Blue, 600 PSI Service  
Pressure, 50' Sections of 2 1/2" (Total 400')

### Hose Markings

Manufacturer Name & Date

Apparatus Number

NFPA 1962

SDFD

Service Test Pressure

### Coupling Markings

Manufacturer Name & Trademark

Inventory Number (SDFD FS#) (female)

SDFD Bar Code (male)

Higbee Indicator Notch

Hose Life: 12-15 years, 7 year average

### Stacked Tips/Playpipe

1" - 50 psi - 210 gpm

1 1/8" - 50 psi - 270 gpm (high-rise)

1 1/4" - 50/80 psi - 330/400 gpm

1 3/8" - 80 psi - 500 gpm

1 1/2" - 80 psi - 600 gpm

1 3/4" - 80 psi - 800 gpm

2" - 80 psi - 1100 gpm

### Discharges

(3) 1 3/4" - All are pre-connects

(4) 2 1/2" - Engineer's Side, Capt's side, Back of  
Engine

(1) 3" - On top with mounted deck gun

(2) 4" - Capt's side

### Intakes

(2) 2 1/2" - Engineers side, Capt's side

(2) 4" - Back of Engineer's side, Middle of Engineer's  
side

### Wildland Hose Pack (I-Zone) (On Engine)

(3) sections of 1 1/2" 100ft, 300 ft total 3/8" straight  
smooth bore, 50 psi, 30gpm (2) water thieves, hose  
clamp

### Wildland Hose Pack (Green Bag) (On Engine)

(2) 100' 1"

(1) 1" Shut off butt

(1) 1" x 3/8" wildland tip nozzle (3) 1" Adapters (NS x  
pipe thread) (3) 1" Adapters (pipe thread x NS)

### Engine Responsibilities

Establish Command

Rescues

Exposures

Confinement

Extinguish

Overhaul

Ventilation

Salvage



**PSI:**

- Handline Smooth Bores** – 50 psi
- High Rise Phantom Nozzles** – 75 psi
- Master Stream** – 80 psi
- Fog Nozzles** – 100 psi
- Foam Application** – 100 psi

**Hydrant Information**

Located no more than 600' apart  
 Minimum of 18 inches above ground  
 No vehicle parked within 15 feet, no obstructions within 3 feet  
 Residential Hydrant Discharges = (1) 2 1/2" and (1) 4"  
 Commercial Hydrant Discharges = (1) 2 1/2" and (2) 4"  
 Road Reflectors = blue, in middle of roadway  
 SD uses wet barrel  
 Control valves are places on transmission line 1/2 to 1 mile apart

**SCBA Fill Stations**

- B1** – 1's(LA1)
  - B2** – 5's (18's, 36's)
  - B3** – 25's(NTC)
  - B4** – 45's(10's)
  - B5** – 35's(35's)
  - B6** – 12's (12's, 29's)
  - B7** – 44's (LA40, 44's, 37's)
- DO NOT FILL at a rate greater than 500 psi/min**

**Accountability Tags:**

- Engine – Red**
- Truck – Black**
- Chiefs/ICS – Purple**
- Specialty – Green**
- EMS – Blue**

**Apparatus Seats (Radios)**

- 2(green)**
- 3(yellow)**
- 1(red)**
- 4(blue)**



**Radio Channels**

- 7A** – Admin
  - 7B** – Dispatch (Samantha Voice)
  - 7C** – Falck Dispatch
  - 7D** – BLS
  - 7E / 7F** – Command / Tac for EMS
  - 7H / 7I** – Command / Tac for Traffic Accidents
- 
- 8A / 8B** – Primary Fire Channels for South of 8
  - 8D / 8E** – Secondary Fire Channels for South of 8
  - 8G / 8H** – Third Fire Channels for South of 8
- 
- 9A / 9B** – Primary Fire Channels for North of 8
  - 9D / 9E** – Secondary Fire Channels for North of 8
  - 9G / 9H** – Third Fire Channels for North of 8

**Single Engine Responses**

Electrical Short, Extinguished Fire, Fence Fire, Fuel Spill (under 25 gal), Illegal Burn, Odor of Chemical, Odor of Natural Gas, Odor of Smoke, Pole Fire, Ringing Alarm, Rubbish Fire, Smoke Check, Transformer, Unattended Food Lock Out, Wires Down, Tree Fire, Water Removal/Flood  
*SDFD does not do lift-assists or public-assists, will be triaged as fall*

**Pump & Truck Responses**

Elevator Rescue, Fuel in Bilge (boat), Oven Fire, Ringing Alarm High Rise, Shed/Outbuilding Fire

**Structure Fire Residential 1st Alarm**

4 Engines, 1 Truck, 1 ALS, 2 BC

**Structure Fire Residential 2nd Alarm**

8 Engines, 2 Trucks, 1 ALS, 4 BC, LA, SC1, MAST, MC

**Structure Fire Commercial/ Apts. 1st Alarm**

4 Engines, 2 Trucks, 1 ALS, 2 BC

**Structure Fire Commercial/ Apts. 2nd Alarm**

8 Engines, 4 Trucks, 1 ALS, 4 BC, LA, FOAM, MAST, CPTR, SC1, MC

**Structure Fire High-Rise / Hospital 1st Alarm**

5 Engines, 2 Trucks, 1 ALS, 2 BC, 1 USAR

**Structure Fire High-Rise / Hospital 2nd Alarm**

10 Engines, 4 Trucks, 1 ALS, 4 BC, 1 USAR, E9/26, CPTR, LA, SC1, MAST, MC1

**Vegetation Initial Attack**

2 Engines

**Vegetation First Alarm**

2 Engines, 2 Brush Rigs, 4 BC, CPTR, WT (+2 engines from initial attack)

**Vehicle Fire (Off-Freeway)**

1 Engine

**Vehicle Fire (Freeway)**

2 Engines

**Traffic Accidents (Off-Freeway)**

1 Engine or Truck, 1 ALS

**Traffic Accidents (Freeway)**

2 Engines or Truck, 1 ALS

**Rescues**

- Vehicle** – 2 Engines, 1 Truck, 1 BC, USAR, 1 ALS
- Cliff** – 2 Engines, 1 Truck, 1 BC, USAR, 1 ALS, LG
- Structure Collapse** – 2 Engines, 1 Truck, 1 BC, USAR, 1 ALS
- Confined Space** – 2 Engines, 1 Truck, 1 BC, USAR, 1 ALS

### Truck Specs

13 Trucks (1, 11, 14, 28, 20, 21, 10, 45, 35, 12, 29, 40, 44) (T52 on the way)

### Truck Responsibilities

Ladders  
Overhaul  
Utilities  
Ventilation  
Entry  
Rescue  
Salvage

### Ladder Minimums

#### 115' of Ladders

28', 35', and 40' Extensions  
12', 14', and 16' Roof  
6' Pole  
75'-105' Aerial

### Ladder Weights (Duo Safety Ladders)

10' – 16lbs  
14' – 28lbs  
20' – 45lbs  
24' – 72lbs  
28' – 87lbs  
35' – 122lbs  
40' – 213lbs (with poles)  
20 gnarls on each rung

### Extinguishers

(1) 2.5 gallon of Pressurized Water (40' reach for 60 sec)  
(1) 20A/120BC Dry Chem (20' reach for 20 sec)  
(1) 10BC CO<sup>2</sup> (10' for 30 sec)  
1A = 1.25 Gallons of Water  
1B = 2.5 Square Feet of Flammable Objects

### Truck Extinguishing Compliment

500 GPM Pump  
500 Gallons  
500' of 2 1/2"  
300' of 1 3/4"

### Truck Tools

Amkus, Air Bags, Air Chisel, Axe, Cribbing, Chains, Chainsaws, RamFans, Rescue Saws, Recipro Saw, RIC Bag, Rope, Rubbish Hook, Pike Pole)

### 4-Gas Monitor

O<sub>2</sub> – 19.5% low & 23.5% high  
H<sub>2</sub>S (Hydrogen Sulfide) – 10ppm low & 15ppm high  
CO (Carbon Monoxide) – 25 ppm low & 100 ppm high  
LEL – 10% low & 20% high

### Salvage Covers

Sizes: 12x14', 14x18', 12x18'  
Throws: Balloon, Rolling, Enveloping, Tunnels  
Half Runners: 3'x18'  
Debris Carrier: 5x18', made of canvas

### Rope Bags

Yellow: Utility  
Orange: Lifeline  
Red: High Rise Escape  
Black: Vic Pic Pack  
Figure 8 keeps 80% strength  
Bowline keeps 60% strength  
1 KN = 225 LBS OF FORCE

### GRABLIVES

Gauge  
Radio  
Activate Pass  
Breath (BOA- Breathe, Organize, Act)  
Low  
Illuminate  
Volume  
Exit  
Shield Airway

### SLICERS

Size-Up  
Locate the fire  
Isolate flow path  
Cool from a safe distance  
Extinguish  
Rescue  
Salvage

### Brush Rig Specs

11 Brush Rigs (14, 10, 34, 24, 35, 12, 29, 43, 37, 40, 44)

#### Minimums:

1 1/2" – 2000'  
1" – 400'  
Water Tank – 500 Gallons  
Pump – 500 GPM

Brush Ultra XT: BR14, BR29

### Other SDFD Apparatus

(3) Water Tenders: 19, 28, 40  
(2) Light & Air: 1, 40  
(2) Chemical Units: 1, 10

All Crash Rescues were eliminated from service in 2023

### OES Type I – Urban Search and Rescue Fire Engine

OES 304 at FS 18  
750 gallons of water

### OES Type III – Wildland Fire Engine (Brush Rig)

OES 6307 at FS 5  
OES 6301 at FS 33  
500 gallons of water

### Air Ops

Copter 1: Bell 212HP, 2 Blade Motor, 375 Gallons  
Copter 2: Bell 412EP, 4 Blade Motor, 330 Gallons  
Copter 3: Sikorsky S-70i Firehawk – 4 Blade Motor, 1000 Gallons (refill tank in 45 sec)



**Fire Classifications**

- Class A** – Ordinary Combustibles
- Class B** – Flammable Liquids
- Class C** – Live Electrical Equipment
- Class D** – Combustible Metals
- Class K** – Commercial Cooking Equipment

**Hazmat Classifications**

*“Every Good Fire Fighter On Pension Receives Cash Money”*

- Class 1** – Explosives
- Class 2** – Gases
- Class 3** – Flammable Liquids
- Class 4** – Flammable Solids
- Class 5** – Oxidizers
- Class 6** – Poisons/ Toxins
- Class 7** – Radioactive
- Class 8** – Corrosives
- Class 9** – Misc.

**ERG Page Colors**

- White** – Basic info and instructions
- Yellow** – ID number index, numerical order (UN)
- Blue** – Material listed alphabetically
- Orange** – Safety precautions
- Green** – Initial isolation and protective actions

**NEPA:**

- 13** – Sprinklers
- 14** – Standard for Installation of Standpipe and Hose Systems
- 101** – Life Safety Codes
- 921** – Guide for Explosion Investigation
- 1500** – Standard on FD – OSHA (2 in 2 out)
- 1901** – Apparatus
- 1931** – Standard for Manufacturing Design of FD Ground Ladders
- 1962** – Standard on Hose Markings
- 1971** – PPE
- 1982** – Ropes
- 1983** – Harnesses

**Notes:**

