

TRUCK COMPANY OPERATIONS

INTRODUCTION

Aggressive and well-planned truck company operations are a vital component of any successful firefighting equation. Effective truck operations combined with judicious engine company operations can be the difference between life or death and moderate or major damage at a structure fire.

Truck companies are fire apparatus carrying a full complement of ground ladders, tools, specialized equipment, and an aerial device usually between 75' and 100' in length. Primarily equipped to perform multiple specialized fireground operations truck company responsibilities include search and rescue; forcible entry; placement of ladders; ventilation; salvage; overhaul; securing of utilities; assisting engine companies in checking for horizontal/vertical fire extension; and putting elevated heavy streams into operation. Note that these duties do not focus on the application of water, but are support functions which ensure that water reaches the seat of the fire in a safe and expedient manner. An otherwise efficient engine company will have its effectiveness severely curtailed if it is unable to advance an attack line into a structure due to extreme heat and smoke conditions. Interior attacks must be well coordinated with ventilation crews on the roof; truck company salvage teams should be standing by, ready to cover or remove furnishings threatened by fire or firefighting operations. The responsibilities of the truck company at a structure fire are such that engine companies are often diverted (when available) to assist in these support activities. With this in mind, it is important that all operations personnel, whether regularly assigned to a truck or not, keep their truck company skills sharp and review safe operating procedures for all truck equipment.

OBJECTIVES

- Describe the basic responsibilities of a truck company.

- Describe the advantages common to all types of aerial devices.
- Discuss truck equipment and function.
- Explain factors influencing truck placement at incidents.
- Describe the basics of truck stabilization.
- Identify the hazards associated with aerial operations around electrical wires.
- Discuss ladderpipe operation and explain considerations for heavy stream application.

TYPES OF APPARATUS

There are four types of aerial devices in use by the San Diego Fire Department:

- Service aerial
- Tractor-trailer
- Ladder tower
- Snorkel

Service aerial and tractor-trailer devices consist of a straight 3- or 4-section ladder in lengths of 75' - 100'. While the service ladder has a shorter chassis and takes up less space, the tractor-trailer is more maneuverable in traffic and on the fireground, and also provides a more stable base when the ladder is extended. These ladders can be quickly put into operation and used to effect rescues, get ventilation crews and their equipment onto a roof, extend firefighting lines through upper story windows, and provide moderate-flow elevated streams. SDFD employs 90' to 100' tractor-trailer and service ladder apparatus with ladderpipe capabilities ranging from 600 to 1100 gpm, according to manufacturers' specifications.

A ladder tower consists of a heavy-duty 4-section telescoping ladder and a passenger-carrying platform. These devices can be used for rescue, but are most effective when used in defensive operations. The primary disadvantages of these apparatus

are their size and weight; some ladder towers can weigh in at over 30 tons. Their length can be a severe handicap when attempting to access tight, crowded scenes. The SDFD currently has several 100' ladder platforms, equipped with monitor nozzles capable of delivering up to 1500 gpm.

Elevating platforms, also called aerial platforms, are generally referred to as "Snorkels", though this is actually a trade name created by one manufacturer. These apparatus consist of hydraulically-operated articulating booms with a passenger platform or basket. In addition to a 1000 gpm master stream appliance, the basket is equipped with its own breathable air supply and connections for personal SCBAs, axes, electrical receptacles for operating lights or power tools, floodlights, hoses and 1 1/2" connections. The platform also is equipped on the underside with a protective curtain and spray nozzle. Other useful functions are: as portable elevators for transporting firefighting personnel; as a base for supervisory personnel or chief officers who wish to oversee or carry out reconnaissance; and as a standpipe connection to readily supply water for hose lines on the upper floors of a building. One disadvantage is the limited reach of the articulating booms. SDFD aerial platforms have a vertical reach of 75' and a horizontal reach of 33'.

There are many advantages common to all aerial devices:

- Quickly place firefighters on a roof for rapid ventilation operations.
- Provide a means of egress for persons trapped in a burning building.
- Convenient means of removing glass from windows on upper floors of buildings to release heat and gases.
- Furnish a direct path into fire areas for ingress and egress, as well as the stretching of hose lines.
- Master streams can be applied directly to the fire.
- A properly positioned aerial device can cover two sides of a building.

TYPES OF TRUCK COMPANY EQUIPMENT

Ladders are the most versatile pieces of equipment on the fireground. They can be used in all phases of firefighting operations and are limited only by safety considerations and resourcefulness. In order to get credit as a truck company an apparatus must carry the following complement of ladders:

- Aerial device
- 2 - 40' or 35' ground extension ladders
- 2 - 28' ground extension ladders
- 2 - 20' wall ladders
- 1 - 16' roof ladder
- 1 - 14' roof ladder
- 1 - 10' pole ladder
- 1 - 6' step ladder

Large capacity generators providing up to 10,000 watts are standard on truck companies. They are used to run electric power tools, floodlights, smoke ejectors, etc.; extension cords as well as grounding cords are also carried. A portable generator (1500-2500 watts) is also used when power is needed away from the apparatus.

Ventilation equipment includes gasoline-powered and electric smoke ejectors for mechanical movement of heat, smoke, and gases; chain saws for opening up roofs; axes, pike poles, and roof hooks to complete the job. Visqueen is used to cover roof openings to keep out the elements.

Forcible entry equipment consists of pry and crow bars, axes, halligan bars, and sledge hammers. Rescue and chain saws are also used to force entry in more complicated instances.

Salvage equipment consists of water vacuums, squeegees, and mops to remove

water; saw dust to construct improvised, temporary diking; salvage covers are used to cover and protect threatened furnishings, and to hold/channel water from firefighting operations; hall runners are placed to protect carpeting and floors; submersible pumps are available to pump out flooded areas.

Utilities are secured to protect firefighting personnel from injury and property from further damage. This is accomplished by the use of a service shut-off key, which is used to shut off water and natural gas supplies to structures; a hydrant shut-off key is also carried, but is used only in emergency situations where it is impractical to wait for Water Utilities personnel. A Hot Stick with associated safety gear is carried for cutting electrical lines, but these are used only when no other means has succeeded in securing service.

Vehicle rescue equipment consists of a gasoline-powered hydraulic pump to provide power to jaws/spreaders for prying open doors, pulling steering columns; cutters for cutting posts and removing roofs; and rams for pushing seats and dashboards to facilitate extrication of victims; air bags and cribbing to displace and stabilize heavy objects; Come-Alongs and a pneumatic chisel are included in the truck inventory. A variety of hand tools are also available.

Other technical rescue equipment carried on the truck is used for high-angle or cliff rescue. This consists of a number of kernmantle ropes, anchors, hardware (carabiners, pulleys, 8-plates), prusiks, and a Stokes litter.

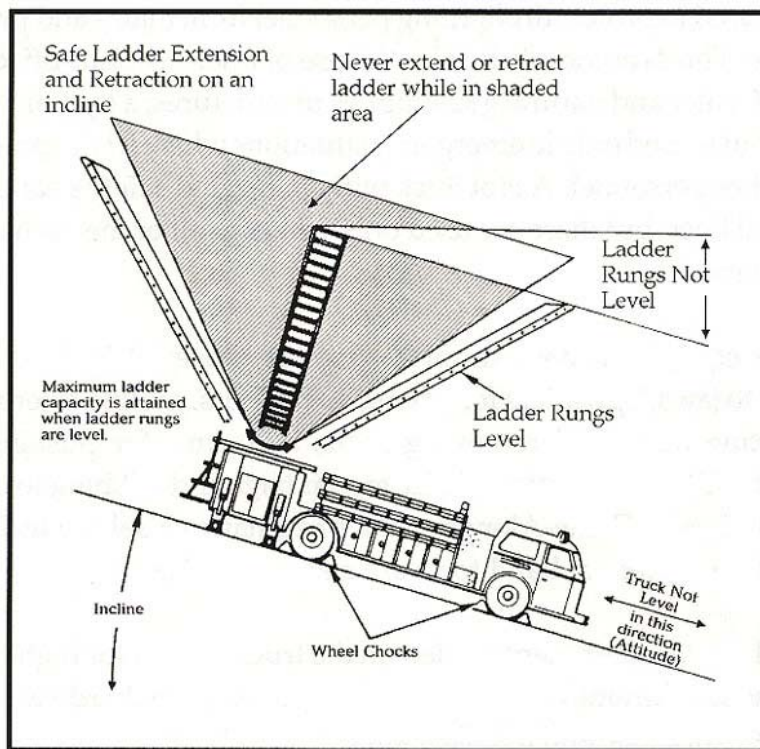
The search for and extinguishment of hidden or remaining fire is accomplished with such overhaul equipment as axes, saws, and pike poles to pull ceilings and open up walls. Canvas carriers and shovels are used to remove burned debris from the structure to the outside.

Truck companies also carry a dry chemical, CO₂, and water extinguisher; complete medical aid supplies; an assortment of nozzles and fittings; electrical adapters; and SCBAs for each crewmember.

TRUCK PLACEMENT

Truck company apparatus must be spotted in precisely the right position to be fully effective. Rescue and ventilation activities may require a closer spot than would

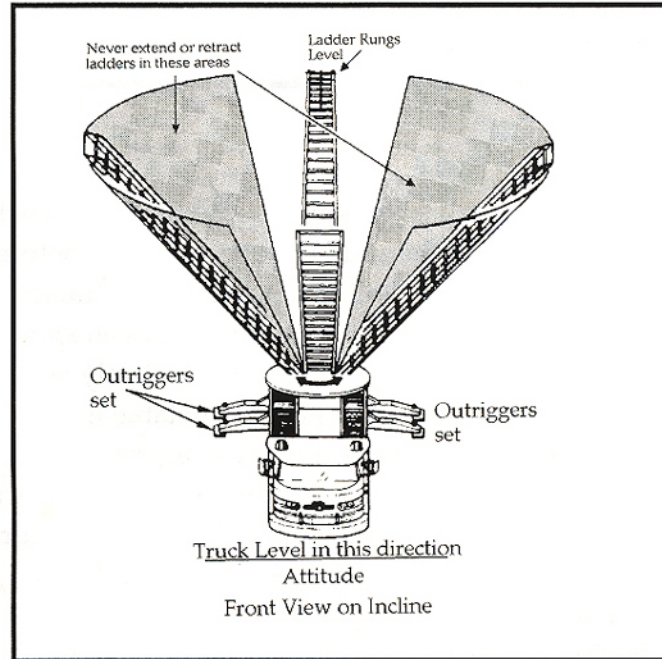
heavy stream placement. When spotting a truck on a hill or slope, always position the vehicle with the front of the apparatus headed downhill. If the hill is approached from the top, drive straight down and spot at the most advantageous location. If the hill is approached from the bottom, back up the hill to the desired position.



Side View on Incline

Correct apparatus positioning is critical because once the truck has been spotted and set up for aerial operations, it is very difficult to change locations. For this reason, the officer in charge must be able to accurately interpret fireground conditions, know the capabilities and limitations of the equipment, anticipate fire growth and extension, and be familiar with the involved building and its surroundings. If an aerial device is necessary, truck positioning is determined by a combination of set back, height of objective, length of aerial device, and the presence of hazards (electrical lines, etc.). It is not necessary for an aerial to be positioned in front of a structure; in fact, the corners of a building offer a prime location. It allows the device to reach two sides of the structure; it spots to a strong portion of the building; by driving past a building and spotting at the far corner, company personnel will see three sides of the structure and leave the front open for other companies; if an aerial must be positioned in front of a building in close proximity to the initial engine company, spot the truck inside of the engine if maximum reach is required, or outside if maximum reach is not necessary. If an aerial will not be necessary for

above-ground direct rescue operations, position the apparatus for easy access to equipment. Care should be taken when spotting a truck whose ground ladders are removed from the back.



When a large fire is threatening to extend to adjacent exposures, the first heavy streams should be positioned downwind where they can protect the exposures and simultaneously attack the fire. One of the most common errors is to position the heavy stream where the fire is burning when the company arrives on the fire ground, by the time the master stream appliance is in place and ready to flow water, the fire has moved on and the ladderpipe will be ineffective.

Aerial platforms should not be placed in areas where overhead or adjacent obstructions may be encountered. Care must be taken to avoid any contact with electrified signs, high-tension wires, and street lights.

All aerial ladders, ladder towers, and elevating platforms are constructed of metal, so they can be considered excellent conductors of electricity. Extreme caution must be exercised whenever operating any boom or ladder around electrical wires, consider all wires as charged, even if the utility company declares them de-energized. Fallen wires in the vicinity may have re-energized them. The essential point is never to provide a path to ground for an electrical circuit. If a ladder or boom actually makes electrical contact, the safest course for the operator to follow is to get away from the controls and touch nothing until the power is turned off. Personnel

on the ladder should keep their hands and feet on the rubber-covered rungs until the circuit is cut.

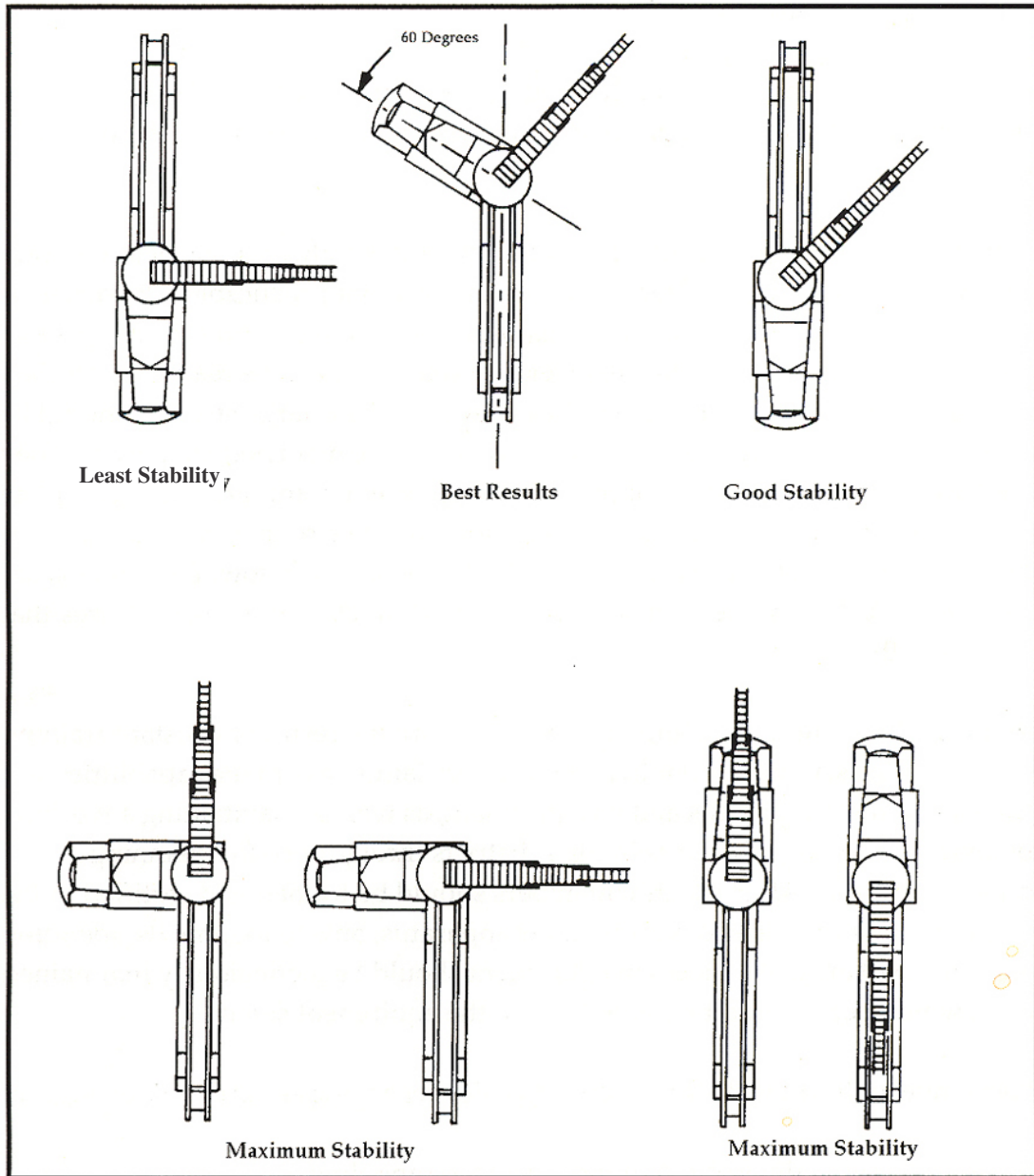
TRUCK STABILIZATION

Regardless of whether the truck is equipped with an aerial ladder, elevating platform, or ladder tower, the apparatus must be stabilized before the aerial device is raised. Properly extending the stabilizers, jackknifing a tractor-trailer, or angling a truck will increase stability. After the apparatus has been spotted, the brakes set, and wheel blocks placed, the outriggers should be firmly set, using the pads to evenly distribute the weight. The safest and most stable method of stabilizing an apparatus is to use the ladder or booms directly over the cab or rear of the vehicle. In the case of a tractor-trailer when it is not possible to operate directly off the cab or rear, the truck should be jackknifed. Jackknifing means to turn the tractor of a truck at an angle to achieve stability. There are two methods of jackknifing: inside and outside. The ideal angle is approximately 60 degrees from the incline position and away from the direction of ladder extension - this is called the outside jackknife. Even when the truck is jackknifed as much as 30 degrees, the truck stability is more than twice as great as when in the incline position with the ladder rotated 90 degrees off the side.

LADDERPIPE OPERATIONS

The ladderpipe is usually attached while the ladder is still in the bedded position. Once the appliance is secured, all couplings spanner-tight, ladderstraps in place, and the firefighter (with SCBA in operation) properly life belted-in, the ladder is ready to be raised and extended. Charging the line after extension helps keep unnecessary weight off the ladder during its most critical period of adjustment. When water is at the nozzle the ladder may be rotated into position. The nozzle should be flowing if the ladder will be close to the fire. The ladder operator must stay in constant communication with the firefighter at the top of the ladder. If an intercom problem should arise the operator and the firefighter can communicate by hand signals or by striking the ladder rails with a metal object, such as a spanner.

(One clang = turn right, two clangs = turn left, three or more = get me out of here.)



Jackknifing Increases Stability

Ladder inclination while using a ladderpipe should not exceed 80 degrees. At 70 degrees and above the ladder can easily handle the weight of the hose, water, and appliance and operate safely; at 75 degrees and under the nozzle reaction is usually not sufficient to force the ladder backwards. Whenever the ladder is used at 80 degrees inclination or more, the nozzle reaction will have a serious adverse effect on stability because the force generated by the nozzle reaction exceeds the force

exerted on the ladder by gravity. If this occurs, the nozzle may be shut down, or the stream directed upward to transfer the nozzle reaction down to the ladder beams. The ladder can then be properly inclined.

Limit the sideways movement of the ladderpipe to no more than 15 degrees either way from straight ahead. If more than 15 degrees is required, rotate the turntable instead.

A ladderpipe, elevating platform, or ladder tower is a highly mobile heavy stream appliance that can be used where other streams are not practicable. Of particular value in the control of fires in upper stories, they are also effective in supplying water curtains at high elevations. Fires in extensive roof areas can be readily controlled and confined by major streams from these devices. These large streams should be operated only long enough to effect a knockdown of the main body of the fire. They should then be shut down to allow handlines to enter the area and complete extinguishment. Although the use of hose streams over roofs is seldom justified because of the difficulties created for firefighters working below, fog streams are sometimes valuable in effecting containment and quick knockdown of fires that have vented through the roof.

Smooth and efficient truck company operations are the result of constant training and practice drills. Officers should be thoroughly familiar with the capabilities and limitations of their apparatus and its equipment, as well as maintaining a working knowledge of the target hazards in their districts through pre-fire planning, FCIP, and walk-throughs. All truck crewmembers should be trained and certified in the safe operation of the aerial device on their apparatus, able to assume its operation should the need arise. All pieces of equipment should be meticulously maintained and crewmembers should be trained to use the equipment safely.

All personnel will adhere to the following policy regarding aerial device operation:

- Aerial devices will not be used for rappeling.
- Aerial devices will not be utilized as anchor points, this applies to the aerial device only.
- Aerial devices will not be supported by buildings, they are designed to carry the rated load unsupported.
- Aerial devices will not be utilized to lift loads and/or rotate loads.

- Aerial device will not be utilized in any other operations that would require that apparatus to operate outside its factory recommended capacities or design.
- All options should be identified and reviewed prior to utilizing any aerial device in a non-approved manner.
- Should an emergency situation due to immediate life threatening issues require the use of an aerial device in a non-approved manner, the repair facility should be notified immediately and that aerial device taken out of service as an aerial device until tested and recertified.

REFERENCES

"Fire Fighting Apparatus and Procedures", Lawrence Erven, Glencoe Publishing 1979.

"Essentials of Firefighting", IFSTA, Oklahoma State Univ. Press 1986.

"Fire Command", Alan Brunacini, YBS Productions 1985.

