Sevier County Volunteer Fire Department

The Engineer’s Handbook



The Engineer’s Prep and Guide for Success

Mission Statement

It is the mission of the Sevier County Vol. Fire Department to provide superior service to the families and businesses in our response area and by assisting other departments as needed with serving the residents of their response areas. The members of the department will accomplish this through fire suppression, fire prevention, public education, emergency responses, and training. The department will maintain the highest level of readiness enabling delivery of firefighting and emergency rescue services in a safe, competent, and caring manner. It must be stressed that under all circumstances, common sense must prevail.

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The Engineer

An Engineer is the most vital part of the operation on the fireground. They are the motor that ensures the wheels are driven and everything stays in motion. The attack, the rescue, the response is all impossible without the Engineer. They are the backbone of the operation, and support for the structure built atop them that is the fire scene. It must be understood that there is so much trust placed in the lap of the engineer, that all others on the fireground will walk away from them and leave them to their duties, entrusting that when they call for water it will reach the nozzle. Ensuring that when conditions worsen, they are told to get out. Ensuring that before the parking brake is released, all seatbelts are buckled so all may return. They are the drive for the firefighters, they are the trust of the officer. They are the bearer of the greatest responsibility on the fireground and possibly in the firehouse. The Engineer is the most serious and difficult role that one will assume in their career, and they must preform the role above and beyond expectations at all times, and should be preformed with grit and tenacity, with a drive to support their fellow firefighters in any situation.

Are you ready to be the backbone?

Testing Process

1. The Member (hereafter to be referred to as candidate) will complete all necessary prerequisites (TN Fire Commission FF1, TFACA 16 Hour Intro To Pumps or TFACA Pumper Driver Operator Series OR TN Fire Commission Equivalent, cleared to operate on all SCVFD apparatus) and will submit on department letterhead a letter stating interest in promoting. The Training Officer will be responsible for verifying the candidate has all necessary certifications prior to moving onto the next step.
2. The Candidate will be interviewed by the Officer’s staff, Executive Board, and the Master Engineers. After successfully passing the board interview, the candidate will be vetted into the testing process.
3. The Candidate will schedule for a written examination to be administered by the Training Officer or other approved member. The candidate must pass with a minimum of 90% score.
4. The Candidate will schedule for practical testing to be administered by the Training officer and other approved members of the department.
5. IF the candidate is to pass through the process, they shall be formally promoted at the next department business meeting, or other event as found necessary by the fire Chief.

The Equipment

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Apparatus

1. The Department has 4 Pumpers
   1. Engine 110, 1997 Freightliner FL80 built by KME. 750 Gallon Water Tank with a 1250GPM Hale Pump. Engine 110 carries 100ft of 1” booster hose 600ft. of 1 ¾” hose (2 preconnects, one trash line, and one extension pack), 200ft. of 2 ½” hose, 1,000ft. of 5” hose, and 300ft of 3” hose. Engine 110 carries one 14ft roof ladder, and one 3 fly 24ft. extension made specifically for Engine 110, along with a 10ft. folding attic ladder.
   2. Engine 116, 1989 E-One Hurricane. 1000 Gallon Water Tank with a 1500GPM Hale Pump. Engine 116 carries 600ft. of 1 ¾” hose (2 preconnects, one trash line, and one extension pack) 200ft. of 2 ½” hose, 1,000ft. of 5” hose, and 300ft of 3” hose. Engine 116 carries one 14ft. roof ladder, and one 35” extension ladder.
   3. Engine 120, 2006 International 4400 built by Ferrara. 1000 Gallon water tank with a 1250 GPM Waterous Pump, including a 30 Gallon Round the pump class “A” injection system. You cannot use a positive pressure intake and operate the foam system. Engine 120 carries 100ft. of 1” booster hose, 600 ft. of 1 ¾” hose (2 preconnects, one trash line, and one extension pack), 200ft of 2 ½” hose, 1000ft. of 5” hose, and 300ft. of 3” hose. Engine 120 carries one 14ft roof ladder, and one 24ft. extension ladder.
   4. Engine 130 is a 1989 Ford F-700 built by E-One. Engine 130 carries 500 gallons of water and has a 750 GPM Hale pump. Engine 130 carries 100ft of 1” booster hose, 500ft. of 1 ¾” hose (2 preconnects and one extension pack) and 600ft. of 3” hose. Engine 130 carries one 14ft. roof ladder, and one 20ft. extension ladder.

The Department has 1 tender

1. Tanker 111 is a 2004 International 4300 built by BST Fire Apparatus. Tanker 111 has a PTO driven pump capable of less than 300GPM and a 1,000 gallon tank. Tanker 111 carries 200ft of 1 ¾” hose, 300ft of 3” hose, and one 50ft pony section of 3” hooked into the tank fill.

The Department has 1 Wildland Apparatus

1. Wildland 1 is a 1998 Ford F-350 that was built locally. Wildland 1 has 250GPM pump, 250 Gallon water tank, 10-gallon Class “A” foam cell, and a separate trash pump in case drafting from clandestine locations is needed. Wildland 1 carries 100ft of 1” booster hose, 300ft of 1” forestry hose, and a 50ft pony section of 2 ½” hose for filling/supply operations.

The Department has 2 Support Apparatus

1. Truck 112 is a 2000 Ford F-550 that carries an on-board cascade system, along with an on-board generator. Truck 112 has the ability to preform as an air, lighting, EMS response, light hazmat, and rescue operations as it carries a rope complement.
2. Truck 122 is a 2006 Ford F-350 that carries an 8 Gallon compressed air foam (CAFS) unit. Truck 122 carries hand tools, rope rescue equipment, and EMS supplies.
3. It should be noted there are 2 other support apparatus, 2 2014 Chevrolet Tahoe’s that are used as administrative vehicles, but do carry EMS supplies in case they are needed to respond to incidents.

Equipment

Nozzles

The Department has 2 categories of Nozzles

1. Master Stream Appliance Nozzles.
   1. Smooth Bore Nozzle- This Nozzle has a set of stacked tips (1 3/8”, 1 ½”, 1 ¾”, 2” flowing 500, 600, 800, and 1,000 GPM respectively. The pump discharge pressure for this nozzle on the apparatus is 105 PSI (accounting for 80 PSI as the Tip Pressure, and 25 PSI for appliance loss). When this nozzle is placed onto the ground to be used as a ground master stream, it is to be supplied with 2 2 ½” lines. The friction loss can be referenced on the sheet in the back of this handbook.
   2. Fog Deluge Nozzle- This Nozzle is a pressure activated automatic fog nozzle. It can flow up to 1,250 GPM, and it should be operated at 125 PSI (100 PSI for the tip pressure, 25 PSI for the appliance loss). As with the other master stream nozzle, it should be supplied with (2) 2 ½” lines. The friction loss can be referenced on the sheet in the back of this handbook.
2. Handline Nozzles
   1. Automatic Fog Nozzles- The Department has a large selection of Automatic Fog nozzles. These nozzles are actuated by a pressure spring in the housing in front of the ball/plug valve. These 1 ¾” nozzles are pumped at 100 PSI, and they are pumped the same on the 2 ½” nozzles.
   2. Selectable Gallonage Fog Nozzles – The department has a few of these on the trucks. These nozzles are found primarily on booster and trash lines. These nozzles are to be pumped for 150 GPM, with 100 PSI used as the tip pressure.
   3. Smoothbore Nozzles – These nozzles are spread throughout the department on several preconnects. The ones found on 1 ¾” preconnects and extension packs are 15/16” nozzles that flow 185 GPM at 50PSI, giving off 68lbs. of nozzle reaction. These can be under-pumped to 40 PSI to flow 160 GPM at 54lbs. of nozzle reaction. The 2 ½” nozzles come in stacked tips. Their sizes are 1”, 1 1/8” and 1 ¼”. Their flows respectively at 50 PSI are 210, 265, and 328 GPM. The primary tip to be used is the 1 1/8” for 265 GPM at 98lbs. of nozzle reaction.
   4. Other nozzles –
      1. The piercing nozzle is made to have 100 GPM delivered by 100 PSI at the tip.
      2. The cellar nozzle is made to deliver 400 GPM delivered by 50 PSI at the tip.
      3. The Pro-Pak is a foam delivery system that can deliver class “A” or “B” foam and requires operating pressure of 100 PSI at the tip.

Equipment

Saws

The Department Carries 3 types of saws.

1. Rotary Saws
   1. These saws are powered by a 50:1 Mix of gasoline and oil. They have a multitude of cutting edges for concrete, wood, and metal.
   2. Common failures of these saws are flooding, spark plugs burning out, clogged carburetors, or bad fuel mixed too rich or too lean.
   3. These saws should be started every 2-4 days and let run.
2. Chain Saws
   1. The department only uses Stihl brand chainsaws. These saws are powered by a 50:1 mix of gasoline and oil. They have a bar oil reservoir and chain that needs to be kept tight enough to have some slack, but rebound back onto the bar when pulled away.
   2. Common failures of these saws are flooding, spark plugs burning out, clogged carburetors, or bad fuel mixed too rich or too lean, dull chains, or loosely/incorrectly installed chains.
   3. These saws should be started every 2-4 days and let run through ¼ tank of fuel to ensure it is running correctly.
3. Reciprocating Saws
   1. These saws are battery powered, and have multiple blades with them for wood and metal.
   2. Common failures are uncharged batteries, dull blades, or incorrectly installed blades.

Equipment

Small Motors

1. Leaf Blowers
   1. The department uses Stihl brand leaf blowers exclusively. These run off of a 50:1 mix of gasoline to oil.
   2. Common failures with these are bad fuel mixes, either too lean or too rich, spark plug failures, or clogged carburetors.
   3. These should be started every 2-4 days and let run through ¼ tank of fuel.
2. Generators.
   1. The department has several variants of generators on board apparatus for lighting and other power needs. These run off of 100% ethanol free gasoline. These generators have a separate oil reservoir that uses SAE 5W-30.
   2. Common failures with these are bad fuels that have sat for too long, clogged carburetors, bad fuel lines, or bad spark plugs.
   3. These should be started once a week and let run through ¼ tank of fuel. These should also be run at least once a month, going through a full tank of fuel.
3. Hydraulic Pumps
   1. The department uses Res-Q-Tec hydraulic pumps that run on 100% ethanol free gasoline. These have a separate oil reservoir that uses SAE 5W-30, as well as a reservoir for hydraulic fluid.
   2. Common failures with these are bad fuels that have sat for too long, clogged carburetors, bad fuel lines, or bad spark plugs.
   3. These should be started once a week and let run through ¼ tank of fuel. These should also be run at least once a month, going through a full tank of fuel.
   4. These should also have a tool hooked onto them once a week and actuated to ensure proper function.
4. “Trash” Water pumps.
   1. The department carries 2 pumps, one on Wildland 1, and one on board Tanker 111. These run on 100% ethanol free gasoline, along with a separate reservoir for SAE 5W-30 oil.
   2. Common failures with these are bad fuels that have sat for too long, clogged carburetors, bad fuel lines, or bad spark plugs.
   3. These should be started and ran once a month, and it should be remembered that they should be circulating water while running, as running with no water could damage the impeller or casing while running a dry pump.

Equipment

Hand Tools

1. Cutting Tools
   1. These tools include flat head and pick head axes, mauls, and hacksaws (glass master saws count as well). Axes and mauls should be kept sharpened using a hand or “bastard” file, and painted with spray paint. The paint should not go over the cutting edge.
2. Prying tools.
   1. These tools include Haligan tools, pry bars, and crow bars. The Haligan tools should not be kept sharp, but the forks and adz ends should be kept narrow to allow them to more easily slip into door frames.
3. Pushing/Pulling tools
   1. These tools include all pike poles, New York Hooks, sheetrock hooks, and trash hooks. Tools with fiberglass handles should be inspected often to ensure the handles are not weak or splintering. These tool heads should be painted with a spray paint to ensure protection from rust damage and chipping.

Equipment

Miscellaneous Equipment

1. Thermal Imaging Cameras
   1. Always ensure that these cameras are charged and throttling them correctly by aiming them at the exhaust of a running truck,
2. 4 Gas Monitors
   1. Always ensure that these monitors are charged, and always do a FAS clearing on them while you are checking them off.
3. Struts and Ratchet straps
   1. Ensure that these struts always have the cotter pins in the correct place, and that the ratchet straps are correctly set for fast deployment.
4. Air Packs and Spare Bottles
   1. It is the individual firefighter’s responsibility to check the air pack in their seat, but open seats should fall on the engineer. Spare bottles should be checked as well. All bottles should read full.
5. RIT packs.
   1. RIT packs should be checked for functionality of air flow through the low-pressure lines, mask, and all connectors.
6. Rope/Specialty Bags
   1. Your truck may have rope or water bags on board. If rope, ensure all necessary equipment is in the bag to preform a 3:1 haul. If water, ensure that there are 2 helmets, 2 PFD’s, and 2 throw bags.
7. EMS Equipment
   1. All EMS bags and monitors should be checked to ensure supplies are in date, and monitor/AED batteries are charged. This responsibility should fall on the highest medically trained on the apparatus.

The Check Off

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The Check Off

Support Apparatus

1. Preform a walk around of the apparatus. Check for flat tires, new dents or scratches, obvious damage.
2. Start the apparatus and pull it out onto the pad. Turn on all emergency lighting, scene lighting, hazard lights, and brake lights. Put the apparatus in park, set the parking brake or emergency brake. If in T112, engage the generator and let it operate for the duration of the check off. If in Wildland 1, start the pump and let it recirculate for the duration of the check off.
3. Open the hood of the apparatus and check oil, transmission fluid, coolant, brake fluid, and power steering fluid. Ensure there are no fluid leaks.
4. Walk around the truck and ensure all lighting is functioning correctly.
5. Start all small motors and let them run.
6. Begin checking all auxiliary equipment, air packs, EMS equipment, flashlights, and gas monitor.
7. Preform a final walk around, shutting off all small motors as you go. Thump the tires on this walk around as well.
8. Shut down any pumps or generators, shut down all emergency lighting, and return the apparatus to the bay. Complete a check off form and submit it in fire station. Document any problems found and submit to the maintenance officer.

The Check Off

Tankers

1. Preform a walk around of the apparatus. Note any new damage such as dents, scrapes, flat tires, or broken lighting. Ensure all hose and nozzles are properly secured and positioned on the apparatus.
2. Start the apparatus and ensure that the apparatus either has or builds air pressure properly. Turn on all emergency and scene lighting, as well as bright lights and hazard lights.
3. Preform an air brake test. First, apply stiff pressure to the brake pedal and observe the air pressure gauges. Air pressure should not fall more than 20 PSI. Next, put the apparatus in drive with the air brake still applied. Use the accelerator and idle up to 1,000 RPM on the tachometer. The apparatus should not move. If the apparatus loses too much air or moves with less than 1,000 RPM, it is a DOT failure and the apparatus must be immediately removed from service.
4. Pull the apparatus onto the apron and set the parking brake. Engage the PTO and exit the apparatus and chock the drive tires appropriately. Pull the 50’ section of fill line to a discharge and open the inlet. Open the tank to pump and attach the fill line to the driver side discharge and begin circulating water.
5. Preform a walk around of the apparatus and ensure that all emergency, DOT, and scene lighting is functioning properly. Ensure all ground ladders and externally mounted tools are properly secured. Start all small motors and let them run for the duration of the check off.
6. Open the hood of the apparatus and check fluid levels. Oil, coolant, transmission fluid, and window washing fluid. Close and secure the hood when finished.
7. Check all compartments for properly stowed and accounted for equipment.
8. Stop all small motors and check fluid levels before stowing them. Turn the pump off and drain the fill line and replace it.
9. Remove the chocks and replace the apparatus in the bay. Document all failures and report them to the maintenance officer.

The Check Off

Engines

1. Preform a walk around of the apparatus. Note any new damage such as dents, scrapes, flat tires, or broken lighting. Ensure all hose and nozzles are properly secured and positioned on the apparatus.
2. Start the apparatus and ensure that the apparatus either has or builds air pressure properly. Turn on all emergency and scene lighting, as well as bright lights and hazard lights.
3. Preform an air brake test. First, apply stiff pressure to the brake pedal and observe the air pressure gauges. Air pressure should not fall more than 20 PSI. Next, put the apparatus in drive with the air brake still applied. Use the accelerator and idle up to 1,000 RPM on the tachometer. The apparatus should not move. If the apparatus loses too much air or moves with less than 1,000 RPM, it is a DOT failure and the apparatus must be immediately removed from service.
4. Pull the apparatus onto the pad and engage pump. Watch for either an “OK TO PUMP” light or the Speedometer to increase to ~20MPH. Exit the apparatus and engage the tank to pump and tank fill/recirculating line. Chock the drive tires appropriately.
5. Preform a walk around of the apparatus. Ensure all emergency, DOT, and scene lighting are functioning appropriately. Start all small motors on this pass around the apparatus.
6. Open the hood or enter the cab and check all fluids. Check oil, transmission fluid, coolant, and window washing fluid. Secure the hood/cab doors when finished.
7. Preform a pump test by idling the truck to 100,150, and 200 PSI, referencing the manufacturer’s panel and ensuring RPM’s are within 200 RPM at each point. Check for leaks at each pressure under the truck. Idle the apparatus down slowly to idle.
8. Preform a second walk around of the apparatus, this time removing and replacing any stortz connections to keep them lubricated and freed. Lower the ladder racks or access the ladders and inspect for damage. Check all compartments for properly secured equipment and all necessary equipment is present.
9. Ensure all hose and nozzles are correctly loaded and functional, ready for rapid and easy deployment. If not, use a probationary or newer member and have them stretch the line to reload it properly and check nozzle functionality.
10. Stop all small motors and check fluid levels before stowing them. Disengage the pump and remove wheel chocks, return the apparatus to the bay.
11. Document any failures appropriately and contact the maintenance officer for failures that need to be addressed immediately.

Operational Competencies

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Operational Competencies

Residential Building Fires

Supporting the Attack

1. It is incredibly important for the engineer to master the “Mad 2 Minutes” that occur when the parking brake is set on the scene of a fire. Even if it is just an alarm, we always put the pump into gear circulating water, and set chocks.
2. If you laid in, detach from the bed and attach to the pump intake. It is recommended that we hook into the master intake valve, as there is less friction loss there than there is on auxiliary intakes.
3. Charge the handline(s) that have been pulled. The firefighter should flow water to allow you to set the discharge pressure and lock the lever controlling that line.
4. Begin setting up for incoming units, and be ready to call for water from a hydrant or from the supplying units. Set out a tarp with extra hooks, saws, and most importantly, a RIT bag. Spare bottles should be set out as well, ready for recycling crews to come out. The last thing to be taken out is the command board to assist with accountability. Drop the ladder rack in case ladders are needed for multi-story structures.
5. Monitor your water. Ensure your tank never runs completely dry, as you will lose prime on your pump and will have to re-prime it before resuming operations.
6. Monitor the building. If conditions continue to worsen with water application, MAKE THE CALL. Tell your crews to come out, they may not see what you do. Darkening or increasing smoke, sagging roof lines, “bulging” of walls, or any other signs of structural compromise must be taken with the highest amount of seriousness. 3 long blasts of the air horn, repeated over and over is the universal lingo for evacuating the structure.

Supporting the Attack (Water Supply)

1. Pumping Hydrants
   1. If you are relaying to another truck over a long lay or just “boosting” pressure off of a hydrant, ensure that the hydrant is at least a green top, capable of pulling the water that is needed.
   2. Take the steamer, and one side outlet of the truck, bringing the steamer LDH line into your master intake, and the side outlet into either the auxiliary intake or into another master intake of the truck, using a 3” line if at all possible. 2 ½” lines are acceptable as well.
   3. Drop two 3” 50’ sections from two parallel discharges, siamesing them into the supply line going up the driveway/road/path. It is acceptable to use 2 ½” lines in this as well.
   4. Increase your discharge pressure until your intake pressure is just above 20 PSI. *NEVER LET YOUR INTAKE PRESSURE DROP BELOW 20 PSI*
2. Drafting
   1. Begin by placing your apparatus nearest the water supply as possible. If using portable dump tanks, remember to place them where the tenders will be able to quickly dump water and depart, keeping speed and efficiency at the top of your priorities.
   2. Place your drafting lines on the ground and attach them, ensuring a tight seal with a rubber mallet. Close all open discharge and supply lines, as well as all drains.
   3. Begin pulling a prime, for no more than 45 seconds, until you have water by noting a pitch change from the priming motor. (If you have above ¼ of a booster tank, open your tank to pump and backfill the lines, making it easier to pull a draft)
   4. IMMEDIATELY fill your booster tank. Recirculate water either back into the dump tank/water source using a booster reel to keep your pump cool.
   5. Make sure to advise command when setting up these operations, as it will and does disturb fire attack.
3. Relaying
   1. The biggest thing to remember in relaying is that you cannot send more than you are taking on.
   2. Bring all supply lines into master intakes to reduce friction loss. Ensure your supply line is as large as it can be (5” is preferred) and your discharge line is either the same size, or one size smaller.
   3. Open pump and engine coolers for these operations, and always remain by your apparatus. If your supply line is suddenly shut off, it will result in cavitation of your apparatus and could severely hinder further operations.

The take away from water supply is that is one of the foremost tasks on the shoulder of the engineer. If you are put in charge of a water supply op, speed and efficacy should be at your forefront. Don’t cut corners. Your guys inside wouldn’t cut corners on you.

Operational Competencies

Commercial Fires

Supporting the Attack

1. As always, pump in gear and chocks set. Pay attention to your water supply, you will more than likely have one hydrant, if not more, at your disposal.
2. Big water on big fire. Master stream fires are master stream fires. If you only have one hydrant, be sure that an incoming aerial can take it, or you can relay and supply them
3. Ring and Knot Bags, Bottles, TICs, and RIT bags should be out immediately.
4. Accountability will be a mess, so once your pump is set, be ready to take in a large number of incoming.

Standpipes and FDC’s

1. FDC’s are pumped at 150 PSI with (2) 2 1/2” lines going in. If one swivel is broken or unusable, use your Siamese to create another dual intake port.
2. Make sure you have a good hydrant, and bringing in a second 2 ½” or 3” supply line from one of the side outlets is never a bad idea.
3. Cordon off the area around your discharge lines and the FDC. Brittle hardware, weak connections, weakened pipes can cause a rupture that will send pressurized lines, water, and debris in many angles at high velocity. Ensure that no one goes near them,
4. When pumping standpipes (hardware or floating) remember appliance loss, elevation loss, and friction loss of hose and nozzle tip pressures.

Operational Competencies

Wildland/Urban Interface Incidents

1. Water Supply
   1. Be smart with your water. You could be in a clandestine area far away from steady water or resupplies. Use your water and foam to protect what you know you can.
   2. Use your portable pump if you find wells, streams, or rivers to supply your truck. If in a pumper, draft from those sources, and keep an eye on your surroundings to protect what is SAVABLE.
2. Apparatus Placement
   1. Leave yourself a way out. Don’t ever get into a spot where you only have one way out, or your way out can be compromised by deadfall trees and other debris.
   2. Do not trap your apparatus between houses, and NEVER leave pavement or gravel unless traversing on SOLID ground. Walk in or stretch hose.
3. Watch Outs for Engineers
   1. Do not go into unfamiliar terrain.
   2. Do not get trapped in a dead-end road with apparatus blocking in behind you.
   3. Be wary of wind direction and speed, notify crews of any changes.
   4. Do not waste water on unsavable structures.
   5. Always have a fire shelter on your person, no matter what.
   6. Always wear full PPE when deployed to firefighting activities, driver or not.

Operational Competencies

Highway and Other Rescue Incidents

1. Apparatus Placement
   1. Your apparatus should be used to block the scene from traffic. If on a car fire, the pump panel should be protected and hose stretched from the panel side if at all possible.
   2. Your apparatus can be used as an anchor for rope operations. Keep on solid ground and position your tires closest to the anchor point.
   3. Keep thoroughfares open for specialty rescue apparatus if needed. Don’t block the area from a truck that can do something better than you can.
2. Supporting Operations
   1. Place equipment in areas that is easy to access.
   2. Light the scene! You have scene lights and generators, keep the area well lit to assist with operations.
3. Traffic Management
   1. Keep roads closed until the incident is mitigated.
   2. Once roadways are open, personnel in traffic vests with flashlights should be used to help identify personnel and clearly mark their directions.
   3. Do NOT let any Law Enforcement agency open traffic while the incident is ongoing and responders are moving on the roadway. Protect the scene, protect your people.
4. Landing Zone setup.
   1. Lifestar and Wings aircraft require a 100’ by 100’ area clear of power lines, limbs, and trees.
   2. No vehicle traffic will be allowed within the area while the aircraft is approaching, on the ground, or taking off.
   3. Remember to leave a lane open for ambulances to make it to the aircraft!!

Operational Competencies

Picking Up from Incidents

1. Ensure that all items used from the apparatus are returned to their place.
2. Decontaminate personnel and equipment with a mild detergent before replacing it into its place. For especially soiled equipment, use a black garbage bag or bio hazard bag and tie the bag off to ensure that it does not contaminate its storage area.
3. If foam was used in a batch mix fashion, back flush the pump AND tank to ensure that all excess foam is dispelled. When you are able to cup water from a discharge in your hand and not smell foam anymore, the truck is clear.
4. It is the engineer’s responsibility to ensure that all hose is loaded back correctly, all tools are cleaned, and all battery and gas powered devices are cleaned and charging or refueled.

Pump Chart

2 1/2” Handlines

200ft. 1 1/8” Tip (265 GPM)- 80 PSI

200ft. 1 ¼” Tip (328 GPM)- 90 PSI

200ft. Fog (250 GPM)- 130 PSI

Handlines

200ft. 15/16 Smoothbore (185 GPM)- 150 PSI

200ft. 100 PSI Fog (150 GPM)- 170 PSI

100ft. Selectable Gallon Fog (150 GPM)- 140 PSI

Master Stream

1 3/8” Tip- 500 GPM at 105 PSI

1 ½” Tip- 600 GPM at 105 Psi

1 ¾” Tip- 800 GPM at 105 PSI

2” Tip- 1,000 GPM at 105 PSI

Fog Tip- Begin at 125 PSI and increase until adequate flow is met, or until intake reaches 20 PSI

Friction Loss for Supply Lines

Flow is “Q”

5”- Q x Q / 15

3”- Q x Q

Floating Stand Pipe/Extension Pack

W/ 15/16 SB- 120 PSI

W/ 100 PSI Fog- 140 PSI

½ Pound of loss/gain per foot

Ground Master Streams

(2) 2 ½” Lines running into the base.

1 3/8” Tip- 12.5 PSI per 100 ft.

1 ½” Tip- 18 PSI per 100ft.

1 ¾” Tip- 32 PSI per 100ft.

2” Tip- 50 PSI per 100ft.