

Shoreline Fire Department



HOSE MANUAL 2005

ENGINE COMPANY HOSE EVOLUTIONS

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ENGINE COMPANY GUIDELINES

Training 1.0 Effective Date: 10/1/04

PURPOSE: To establish standardized evolutions, to be used by all Shoreline Fire engine companies, which shall provide the safest and most expedient method possible to reach the desired outcome, and so that all personnel can understand the expected outcome of each, before an emergency operation begins.

POLICY:

1. It shall be the policy of Shoreline Fire to utilize standardized engine company evolutions wherever possible. All companies must be familiar with the established evolutions in order to function in the safest, most efficient, and most expedient manner possible on the fire ground.
2. These standardized evolutions will also be used as a tool by the Department to evaluate the companies as to uniformity, safety, and training.
3. It shall be the responsibility of the company officers to ensure that all members of their company are proficient in carrying out these evolutions.
4. These evolutions are intended to be used as a standard between companies, and as a guideline and basis for operating on the fire ground. They are not intended to prevent company officers from deviating from these standards, if necessary, to carry out their function during an emergency operation.
5. TNG 1.0 shall supersede all previously-dated SOP's, GD's, and other documents pertaining to the subject of engine company evolutions, including but not limited to the following:
 - Engine Company Evolutions, dated February, 1988*
 - Northshore Hose Manual dated 1990.*

PROCEDURE:

1. Attached are separate pages for each evolution. In order to be prepared, it is imperative for the company officer to conduct drills which simulate these evolutions, including variations which could reasonably be expected to take place. Drills should be designed to give all company members an opportunity to adapt to changing circumstances.

2. General Position Responsibilities:

A. Company Officer responsibilities:

First and foremost, the company officer is responsible for the **SAFETY** of everyone at the incident.

It is the responsibility of the officer to direct apparatus placement, designate the evolution to be used, and the placement of equipment and lines. *Very careful* consideration must be given to engine apparatus placement in order to facilitate **Ladder Company** placement. The default rule is: **“Save the address for the ladder.”**

Orders must be given in a clear and concise manner so that all members of the company are aware of the evolution to be performed. It is also imperative that the company officer verbalize information needed by incoming units over the radio. The company officer should place himself/herself in a position, when possible, to supervise the entire evolution, utilizing additional resources from aid and medic units to complete the evolution. When the company officer is the first arriving officer, he/she must **“ESTABLISH COMMAND”** consistent with the Department’s **Incident Management Policy**.

B. Engineer/pump operator:

Generally, many of the pump operator duties are consistent throughout all evolutions. Some of the common areas, once you reach the incident scene, are as follows:

- Stop where directed by company officer.
- Perform “in-cab” procedures (set emergency brake, engage the pump, verify “OK to pump lights,” and activate ground-lighting.)
- Exit the cab, don helmet and gloves.
- Place wheel chock(s).
- Verify “tank-to-pump” valve is open if a booster tank operation.
- Verify “OK to pump” lamps.
- Supply water to a line or establish a supply and call for water.
- Initial pump discharge pressure of 142 PSI for low pressure automatic nozzles -or- 150 PSI for standard automatic nozzles
- Monitor the pump operation.
- Perform “non-pumping” tasks: traffic cones, blower to entry point, stretching back-up line to entry point, scene lighting, tool cache, and temporary air bottle exchange area, gross decon area, etc.
- If initial fire attack is conducted prior to adequate resources on scene, dons PPE with mask in standby mode.

Remember, the bottom line for the pump operator is to know his /her equipment and its limitations. The firefighters on the hose lines are totally dependent on actions or inactions at the pump.

(Review TNG 2.0 and the Engine Manual on pump operations for additional information on pumps, hydraulics, and relief valves.)

C. Hydrant person responsibilities:

The hydrant person has the task of providing water system supply from the fire hydrant to the fire hydrant to the engine's fire pump. The *most important* safety goal is to charge the Large Diameter Hose slowly to prevent water hammer into the fire engine.

Steps required to "Wrap the Hydrant" safely are:

- * Exit the cab upon the command to ***"WRAP THE HYDRANT."***
- * Proceed to the rear of the pumper.
- * Take the hydrant tools.
- * Grab the hose strap of the Large Diameter Hose and removing enough Large Diameter Hose to reach the fire hydrant.
- * Wrap the hose strap over the hydrant.
- * Returning to the jump seat and signal to ***"DRIVE."***

Steps required to "Take" a fire hydrant safely means:

- * Exit the cab upon the command to ***"TAKE THE HYDRANT."***
- * Proceed to the rear of the pumper.
- * Take the hydrant tools.
- * Grab the hose strap of the Large Diameter Hose and removing enough Large Diameter Hose to reach the fire hydrant.
- * Loop the hose strap over the hydrant.
- * Position yourself in a safe location and signal the engine to ***"DRIVE."***
- * Stand behind the hydrant and remove the hose strap of the Large Diameter Hose from around the fire hydrant.
- * With a hydrant wrench, check to make sure the hydrant is indeed closed.
- * Loosen and remove the "steamer port" cap and the off-side 2-1/2" port cap.
- * Check the remaining cap to make sure it is secure.
- * Attach the stortz adapter and the hydrant gate-valve to the hydrant. (gate valve shall point away from the fire location)

- * Making sure the Large Diameter Hose is "flat"; connect the Large Diameter Hose to the stortz adapter.
 - * Safely check your connections.
 - * Standing behind (in a safe zone) the fire hydrant, wait for three horn blasts, visual hand signal from the engineer or radio communication from the engineer.
 - * Upon the signal from the engineer/pump operator, slowly charge the Large Diameter Hose.
 - * Once the hydrant is fully opened, proceed up the hose removing significant kinks along the way.
 - * Rejoin the company officer and assume nozzle person duties.
3. Related information on hose loads can be found in TNG 3.0.
 4. Use of Class "A" Foam Agent for Fire Attack:

The use of Phos-chek agent on structural fires and vehicle interior fires is encouraged. The pump operator shall initiate the Class "A" system with the activation of the Fire Commander on these fires, unless the company officer directs otherwise. Discharge rate through the FoamPro system defaults to a 0.3% application. Discharge rates through the CAFS defaults to 0.2%. Fires involving bale stock or vegetation may require a higher setting.

Caution: the 0.5% and higher applications may produce a visible foam blanket which can be very slippery and somewhat corrosive to materials.

After fire suppression activities cease, the Phos-chek application lines and appliances should be thoroughly flushed with water.

5. Placing the pump "in-line" or "direct connect" for Blind Alley lays:

In the event a pumper lays Large Diameter Hose reverse to a hydrant, the engineer has to decide whether to connect the Large Diameter Hose supply direct to the hydrant, or route the hydrant water through the fire pump (in-line) in order to provide increased flows to the fire scene. The engineer should consider the needed fire flow and the local water system output. A general rule is: if the distance from the hydrant to the attack pumper is over 600 feet in length, the pump should be placed in-line at the hydrant. If in doubt, communicate with command for instructions.

For forward lays to supply a blind alley lay: place the supply pumper in-line if the attack engine has dropped over 600 feet of LDH.

6. All evolutions are designed to be completed by three-person engine companies. Adjustments must be made by the company officer when staffing varies, keeping personnel safety in mind.
7. During standpipe operations, the officer shall enter the stairwell and check the standpipe for caps and valves being in the off position. The officer shall only enter the stairwell by themselves to inspect the system in **NON-IDLH** conditions. In the event smoke is in the stairwell, the officer shall enter as a member of a team. This relies on the officer to make an assessment of the stairwell conditions including but not limited to smoke, construction or building conditions etc. When in doubt, utilize a team member to accompany the officer.

PRE-CONNECT, BOOSTER TANK

Training 1.1 Effective Date: 8/2004

Description: 1-3/4" pre-connected line to incident, tank water only, no hydrant supply.

Use: Rapid attack on a limited fire or rescue operation that does not warrant more than 500 gallons. Second-due engine may supply the pumper if needed.

Duties: In coordinated and chronological order.

Engineer:

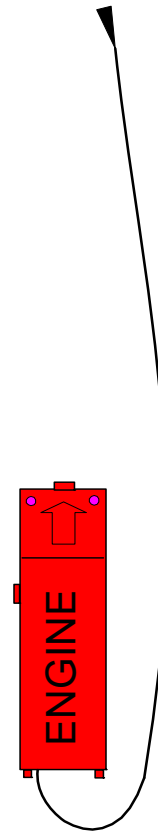
- Stop as directed by company officer.
- Go through in-cab procedures.
- Set wheel chock(s).
- Ensure tank-to-pump valve is "*open*".
- Adjust discharge pressure.
- Slowly charge the pre-connected line when nozzle person is ready.
- Monitor gauges.
- Consider "non-pumping" tasks.

Company Officer:

- Direct engineer where to locate apparatus.
- Give command "***PRE-CONNECT, BOOSTER TANK***".
- With radio, don SCBA, take tool-of-choice and check fire/incident.
- Evaluate your orders and adjust accordingly.

Nozzle Person:

- Don SCBA, check radio, grab a tool of choice
- When the vehicle comes to a complete stop, exit vehicle after a command is given.
- Extend pre-connect to directed location.
- Assume nozzle person duties which could include preparing to enter a toxic atmosphere.



FORWARD LAY, PRE-CONNECT

Training 1.2 Effective Date: 8/2004

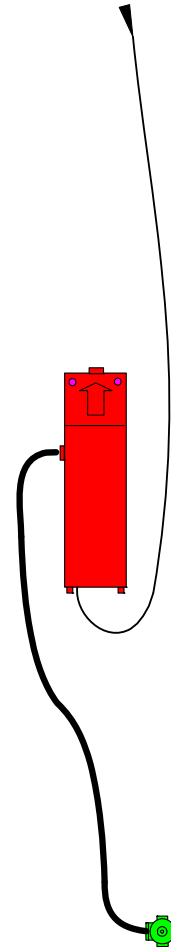
Description: Single LDH supply line utilizing one engine laying forward from a hydrant to an incident. Attack made utilizing one or more pre-connects.

Use: Used to provide a continuous supply of water to an incident requiring greater than 500 gallons. Must have hydrant located en-route to incident with adequate static and residual pressure to provide the desired flow.

Duties: In coordinated and chronological order.

Engineer:

- Stops at hydrant as directed by company officer.
- Drives 7-10 MPH to incident after command “**DRIVE.**”
- Locates apparatus as directed by company officer.
- Goes through in-cab procedures.
- Sets wheel chock(s).
- Disconnects LDH from bed and attaches hydrant supply-line to gated-inlet valve at pump.
- Gives three air horn blasts, radio, and or visual signal to hydrant person.
- Adjusts discharge pressure.
- *May pull pre-connect*, if directed by company officer.
- Slowly charges pre-connected line.
- After supply line is charged, bleed air, open inlet valve, adjust discharge pressure.
- Monitor gauges and consider “non-pumping” tasks.



Company Officer:

- Directs engineer to stop at appropriate hydrant.
- Gives the order “**FORWARD LAY, TAKE THE HYDRANT.**”
- Directs the engineer on apparatus placement at the incident.
- Gives the command “**PRE-CONNECT**” and designates line placement.
- Takes tool-of-choice and checks fire/incident.
- *If engineer hasn't*, deploys pre-connect.

Hydrant person:

- Gets off apparatus after hearing command.
- Removes hydrant kit.

- Loops the hydrant.
- Gives command “**DRIVE**”.
- Makes the hydrant.
- Slowly charges the supply line on signal from engineer.
- Advances up the supply line, removing kinks as needed.
- Proceed to pre-connected line placement with a tool and assumes nozzle person’s duties.
- Pull and extend assigned pre-connect with tool, if not already done.

DRY FORWARD, PRE-CONNECT

Training 1.3 Effective Date: 8/2004

Description: Same as forward lay, pre-connect, except the hydrant is wrapped and not charged by this company.

Use: Same as **FORWARD LAY, PRE-CONNECT**, except other companies are close behind and need for the nozzle person at the incident outweighs the need for quicker water supply. Other units will **“MAKE THE HYDRANT.”**

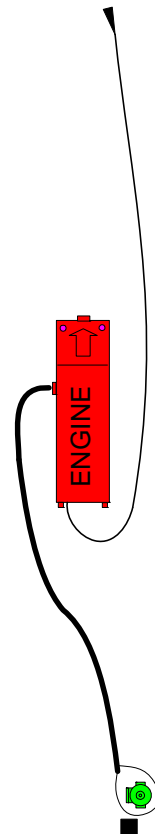
Duties: In coordinated and chronological order.

Engineer:

- Stops at hydrant as directed by company officer.
- **Drives 7-10 MPH** to incident after command **“DRIVE.”**
- Locates apparatus as directed by company officer.
- Goes through in-cab procedures.
- Sets wheel chock(s).
- Disconnects LDH from bed and connects supply line to gated-inlet valve at pump.
- Gives three air horn blasts, radio, and or a visual signal to company taking hydrant.
- Adjusts pump discharge pressure.
- Slowly charges pre-connected line when nozzle person is ready.
- After supply line is charged, bleed air, open inlet-valve, adjust discharge pressure.
- Monitor gauges.
- Consider “non-pumping” tasks.

Company Officer:

- Directs engineer to stop at appropriate hydrant.
- Gives the order **“DRY FORWARD LAY, WRAP THE HYDRANT.”**
- Gives order to incoming unit to **“MAKE THE HYDRANT.”**
- Directs the engineer on apparatus placement at the incident.
- Gives the command **“PRE-CONNECT”** and designates line placement.
- Takes tool-of-choice and checks fire/incident.
- Assumes company officer’s duties.



Hydrant person:

- Gets off apparatus after hearing command.
- Removes hydrant kit.
- Pulls enough LDH to reach the hydrant, then “wraps” the hydrant with attached hose strap.
- Gets back on apparatus, once seated gives the command “*DRIVE*”.
- At fire scene, extends pre-connected line to designated location with a tool and assumes nozzle person duties.

BLITZ-LINE ATTACK

Training 1.4 Effective Date: 8/2004

Description: Single LDH supply utilizing one engine laying forward from a hydrant to an incident. Attack made utilizing a 2-1/2" pre-connected "Blitz-line."

Use: Used to provide a large capacity attack-line to a large fire incident requiring greater than the 500 gallons carried on the apparatus. Must have hydrant located en-route to incident with adequate static and residual pressure to provide the desired flow without an in-line pump.

Duties: In coordinated and chronological order:

Engineer:

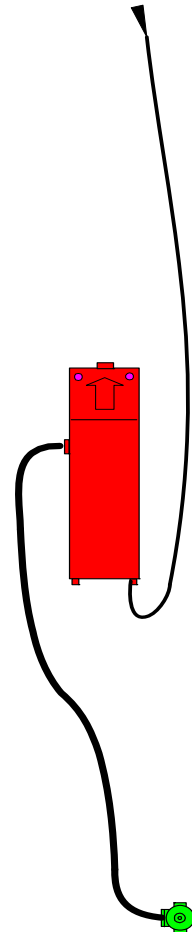
- Stops at hydrant as directed by company officer.
- **Drives 7-10 MPH** to incident after command "**DRIVE.**"
- Locates apparatus as directed by company officer.
- Goes through in-cab procedures.
- Sets wheel chock(s).
- Disconnects LDH line from bed. Attaches supply line to gated-inlet valve at pump.
- Gives three horn blasts, radio, and or a visual signal to hydrant person.
- Raise pump pressure to match nozzle requirement.
- Slowly charges pre-connected line.
- After supply line is charged, bleed air, open valve, adjust discharge pressure.
- Monitor gauges & consider "non-pumping" tasks.

Company Officer:

- Directs engineer to stop at appropriate hydrant.
- Gives the order "**FORWARD LAY, TAKE THE HYDRANT.**"
- Directs the engineer on apparatus placement at the incident.
- Gives the command "**BLITZ-LINE**" and designates line placement.
- Takes tool-of-choice and checks fire/incident.
- If hydrant person is still at hydrant, then company officer pulls and extends the Blitz-line.

Hydrant person:

- Gets off apparatus after hearing command.
- Removes hydrant kit.



- Loops hydrant.
- Gives command “**DRIVE**”.
- Makes hydrant connections.
- Slowly charges the supply-line on signal from driver.
- Advances up the supply-line, removing kinks as needed.
- Proceed to “Blitz-line” placement and assumes nozzle person’s duties.
- Pull and extend blitz-line if not already done.

NOTE: Operating the Blitz-line as a hand line requires two members and using hose straps can offer even more control. One member may be used on a Blitz-line when it is a static hose line, this is best done by forming a loop with the hose and sitting on it where the two hoses intersect, directing water onto the fire or exposure.

EXTENDED ATTACK

Training 1.5 Effective Date: 8/2004

Description: The Blitz-line, wyed and extended with 1-3/4" hand line(s), in order to "extend" the reach of the attack line. A gated-wye is placed at the end of the Blitz-line to facilitate placing two (2) hand lines into operation over the "extended" distance.

Use: Used to increase hand line reach when the fire is beyond the normal range of pre-connected lines. Supply has been previously established.

Duties: In coordinated and chronological order:

STANDARD EVOLUTION: (All company members available)

Engineer:

- Stops engine where directed by company officer.
- Performs in-cab procedures.
- Sets wheel chock(s).
- Disconnects large diameter hose from the bed and attaches hydrant supply-line to gated inlet valve at pump.
- Gives three air horn blasts, radio, and or visual signal to hydrant person
- Adjusts pump discharge pressure.
- Slowly charges the Blitz-line when called for.
- Monitor gauges.
- Consider "non-pumping" tasks.

Company Officer:

- Gives command "***EXTENDED ATTACK.***"
- Takes tool-of-choice and checks fire.
- Specifies pre-connect placement and directs nozzle person to "***SHOULDER A BUNDLE.***"
- Officer grabs gated wye.
- Pulls Blitz-line and extends towards fire.
- When Blitz-line is extended, remove nozzle tip, attach wye, connect female coupling from nozzle person's bundle.
- Direct nozzle person as to attack-line placement
- Signal engineer to charge the Blitz-line.
- When signaled by nozzle person, open appropriate valves to charge the "extended" attack line for the nozzle person.
- Assume company officers duties.

ONE PERSON EXTENSION: (used when hydrant person is still at hydrant)

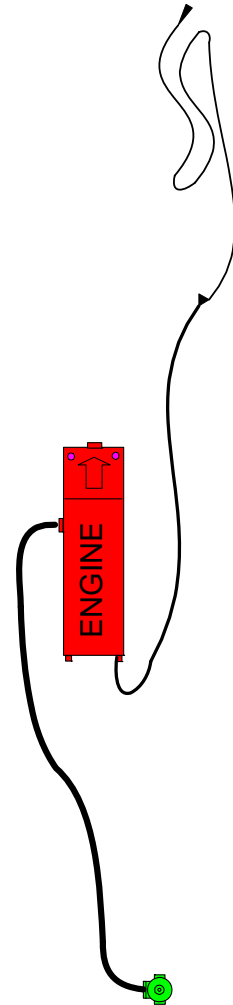
Engineer:

- Stops at hydrant as directed by company officer.
- **Drives 7-10 MPH** to incident after command **“DRIVE”**.
- Locates apparatus as directed by company officer.
- Goes through “in-cab” procedures.
- Sets wheel chock(s).
- Disconnects supply line from bed, attaches supply line to gated-inlet valve at pump.
- Signals hydrant person to charge the supply-line with three air horn blasts, visually or by radio.
- Adjusts pump discharge pressure.
- Slowly charges pre-connected line when signaled.
- After supply line is charged, bleed air, open valve, adjust discharge pressure.
- Monitor gauges
- Consider “non-pumping” tasks.

Note: Engineer may pull the blitz-line for the company officer if still checking the fire.

Company Officer:

- Directs engineer to stop at the appropriate hydrant.
- Gives command **“EXTENDED ATTACK.”**
- Directs engineer on apparatus placement at the incident.
- Takes tool-of-choice and checks fire.
- Pulls the “Blitz-line” and places neatly on the ground clear of rear of engine.
- Obtains gated wye.
- Shoulders desired bundle and returns to Blitz-line lying on ground.
- With bundle still on shoulder, grabs bale of blitz-line and drags blitz-line towards fire location.
- When blitz-line is stretched, puts down bale of blitz-line nozzle and neatly places shouldered bundle on ground.
- Signals engineer to charge Blitz-line.
- Removes Blitz-line tip and connects gated wye to nozzle.
- Bundle coupling is connected to wye.
- Nozzle of blitz-line is opened. Wye gate to bundle is kept closed.
- Most of neat bundle is re-shouldered and extended to fire site.



- Makes contact with nozzle person who goes to nozzle at fire site.
- Opens wye valve when signaled by nozzle person
- Assumes company officers duties.

Hydrant person:

- Gets off apparatus after hearing command.
- Removes hydrant kit.
- Loops hydrant, stands behind hydrant and gives command to ***“DRIVE.”***
- Makes the hydrant and slowly charges the Large Diameter Hose supply line when signaled.
- Advances up the supply line, removing kinks as needed.
- Proceeds to fire location with a tool, makes contact with company officer and then assumes nozzle person duties.

EXTENDING AN 1-3/4"

Training 1.6 Effective Date: 8/2004

Description: Extension of an existing pre-connected 1-3/4" attack line with a length of hose in order to "extend" the reach of that attack-line. This procedure would be utilized when additional line is needed for a previously extended 1-3/4 line. Normally when this is used, the "Extended Attack" with the Blitz-line would have been the original evolution.

Use: Used to increase the range of a hand-line when the fire is beyond its reach.

Duties: In coordinated and chronological order:

Engineer:

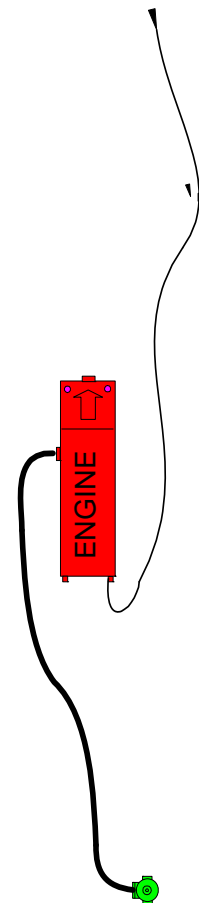
- Standard pumping operations as per other evolutions
- When attack-line is extended, boost pump pressure to 200 PSI.

Company Officer:

- Upon seeing that more hose line is needed, determines the amount to be added and gives the command "***EXTEND THE ATTACK LINE ___ FEET.***"
- Upon arrival of the additional section, remove nozzle tip, connect female coupling of bundle.
- When signaled by nozzle person, open appropriate valves to charge the attack line for the nozzle person.
- Assume company officers duties.

Nozzle person:

- Retrieves requested amount of hose to be added (ie: bumper roll, apt. bundle, slot load, etc.)
- Proceeds to nozzle with a tool and the requested line to the deployed hose-line.
- Hands female coupling of bundle to company officer.
- Extends bundle to fire location as directed by company officer.
- Assumes nozzle person duties.



BLIND ALLEY

Training 1.7 Effective Date: 8/2004

Description: First-due engine lays dry Large Diameter Hose supply up the alley, driveway, cul-de-sac, etc., and then attacks fire with pre-connect and booster tank water. Second-due pumper lays Large Diameter Hose supply reverse or forward, to or from a hydrant, connecting to the blind alley dry line. The second-due pumper's officer will make the decision as to forward or reverse, and as to whether to tie the supply engine "in-line" or whether to "direct" connect.

Use: Used when first-due engine must commit up long dead-end drive or street, without a hydrant available.

Duties: In coordinated and chronological order.

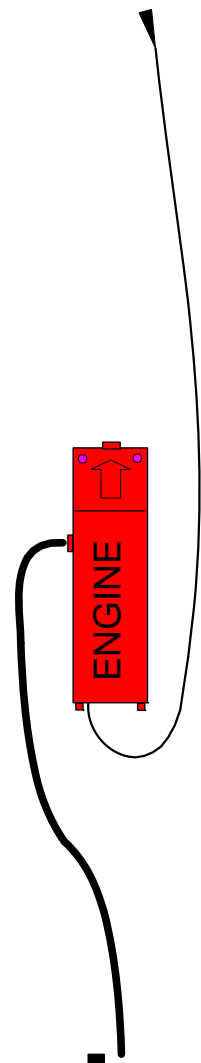
FIRST DUE ENGINE

Engineer:

- Stops apparatus as directed by company officer.
- **Drives 7-10 MPH** to incident on command "**DRIVE**" and locates as directed.
- Goes through in-cab procedures.
- Sets wheel chock(s).
- Disconnects Large Diameter Hose line from bed, attaches supply line to gated-inlet valve at pump.
- Communicates "READY FOR WATER" to the *supply* engine.
- Adjusts pump discharge pressure.
- Slowly charges pre-connected line(s).
- After supply line is charged, adjust discharge pressure.
- Monitor gauges & consider "non-pumping" tasks.

Company Officer:

- Directs engineer where to stop.
- Gives command "**BLIND ALLEY.**" Gives radio command and information on location to incoming unit.
- Directs engineer on apparatus location at incident
- Gives command "**PRE-CONNECT**" and designates location. Takes tool-of-choice and checks fire/incident.
- *If not already done*, pulls pre-connected line and extends.
- Assumes company officer duties.



Hydrant person:

- Gets off apparatus on command.
- Removes required tools/adapters.
- Pulls Large Diameter Hose supply line.
- **Heels line** by kneeling on one knee, holding the hose (keeping the hose between you and the apparatus) and leaning back, and gives command **“DRIVE”**.*
- Once enough hose is on the ground so that the hose will not be drug by the apparatus, follows hose to engine, moves hose to side of roadway, and removes kinks as needed.
- Pulls hose line(s) and acquires a tool if so designated by company officer.
- Assumes nozzle person duties.

*If supply line can be secured (and it is not necessary for the hydrant person to clear the Large Diameter Hose from the roadway), then the hydrant person should get back on engine and then give command **“DRIVE.”** He/she would then assume nozzle person duties at fire scene.

SECOND DUE ENGINE

(Reverse)

Engineer:

- Stop apparatus as directed by company officer.
- On command **“DRIVE,”** precede **7-10 mph** to hydrant.
- Position apparatus as necessary. **
- “Make” hydrant supply to blind alley.
- Slowly charge supply-line on signal.

**If company officer gave command to put engine “in-line” the engineer would proceed as in a reverse lay with engine connected to hydrant.

Company Officer:

- Gives command **“BLIND ALLEY SUPPLY”** designating whether the pump should go “in-line” or “direct.”
- Advises engineer of hydrant location.
- Insure hydrant person makes hook-up to blind alley lay.
- Consider needed tools and equipment
- Proceed to fire and assume Company Officer duties.

Hydrant person:

- Assists with tools and equipment to be removed.
- Pulls enough Large Diameter Hose to reach blind alley lay.

- **Heels the line** by kneeling on one knee, holding the hose (keeping the hose between you and the apparatus) and leaning back, and gives command **“DRIVE”**.*
- Utilizes the tools/adapters from first-due engines to connect supply lines.
- Proceed to fire and rejoin company officer.

SECOND DUE ENGINE

(Forward)

Engineer:

- Stops apparatus at hydrant as directed by company officer.
- **Drives 7-10 MPH** to blind alley lay on command **“DRIVE”**.
- Locates apparatus as directed.
- Sets brake, exits cab, sets wheel chock(s).
- Breaks supply line, pulls supply end to blind alley lay.
- Connects the two supply lines.***
- After confirmation from attack engine that they are ready for supply, signals by three air horn blasts or radio to the hydrant person.
- Proceed to fire and rejoins company officer.
***Places pump in-line if directed, if so, assumes pump operator’s duties.

Company Officer:

- Directs engineer to stop at designated hydrant
- Gives command **“FORWARD LAY, TAKE THE HYDRANT”**
- Directs engineer as to apparatus placement at blind alley.
- Gives command, **“MAKE THE BLIND ALLEY”** and designates if pump to go “in-line” or “direct.”
- Assures engineer makes hook up to blind alley.
- Proceed to fire and assume company officer’s duties. (Consider equipment to be shuttled forward to the fire scene)

Hydrant person:

- Gets off apparatus after hearing command.
- Removes hydrant kit.
- Pulls enough Large Diameter Hose supply line to just reach the hydrant then wraps hydrant with attached hose strap, steps to rear of hydrant.
- Gives command **“DRIVE”**.
- “Makes” connection to the hydrant.
- Slowly charges the hydrant on signal from engineer.
- Advances up the supply line, removing kinks as needed.
- Proceeds to fire and rejoins company officer.

MANIFOLD FORWARD

Training 1.8 Effective Date: 8/2004

Description: Single supply line utilizing one engine laying forward from a hydrant to an incident. Attack made utilizing one or more pre-connects operating from a manifold supplied by a length of Large Diameter Hose from engine.

Use: Used to provide a continuous supply of water to an incident requiring greater than 500 gallons. Manifold used to extend the reach of attack lines when closer engine placement is not practical. The maximum practical manifold distance away from the engine (with a crew size of three) is 200', using this evolution. For distances in excess of 200' see note at the end of this evolution. Consideration on using an EXTENDED ATTACK should be made first.

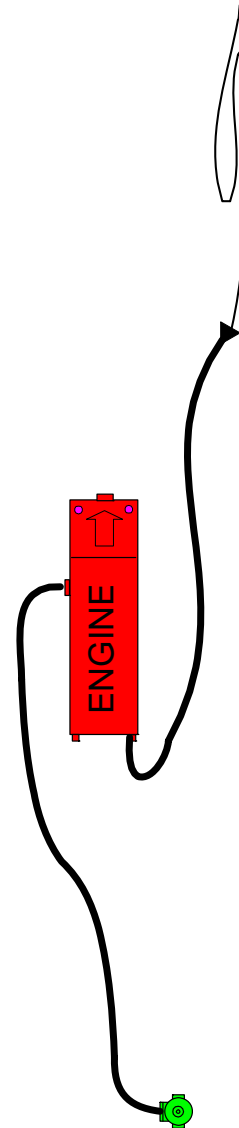
Duties: In coordinated and chronological order:

Engineer:

- Stops at hydrant as directed by company officer.
- **Drives 7-10 MPH** to incident after command "**DRIVE.**"
- Locates apparatus as directed by company officer.
- Goes through in-cab procedures.
- Sets wheel chock(s).
- Disconnects Large Diameter Hose from bed and attaches supply line to gated-inlet valve at pump.
- Gives three air horn blasts, radio, or visual signal to hydrant person.
- *If company officer has not:* connects Large Diameter Hose coupling from bed to discharge port and strips and piles designated amount of hose from bed.
- Breaks next coupling and assists company officer connecting coupling to manifold.
- *If company officer has not:* places manifold and hose over shoulder, holds manifold to chest, proceeds to drag hose to designated location, making sure that all discharge valves on manifold are closed. Returns to engine.
- Hydrant supply should now be charged, bleed air, open inlet valve, and adjust discharge pressure.
- Slowly charges manifold supply line.
- Pumps to selected tip and monitor gauges.
- Consider "non-pumping" tasks.

Company Officer:

- Directs engineer to stop at appropriate hydrant.
- Gives the order “**FORWARD LAY, TAKE THE HYDRANT.**”
- *The company officer may specify if he/she wants the 2-1/2” hose extended from the manifold for use as an attack line.*
- Directs the engineer on apparatus placement at the incident.
- Gives the command “**MANIFOLD FORWARD**”, takes tool-of-choice and proceeds to check incident site, and marks manifold location with tool.
- Returns to engine and, if engineer is free, designates amount of hose to be stripped by engineer for evolution, removes manifold and sets it to the side of the tailboard
- If engineer is not free, connects “bed” coupling to Large Diameter Hose rear discharge at rear of engine, strips off up to 200’ of hose, breaks coupling and attaches to the manifold.
- With help of engineer, one member carries manifold to designated location, second member grabs next coupling and assists in stretching the manifold’s supply line.
- Takes bundle coupling from nozzle person, heels the attack line, and directs the nozzle person to stretch line. Makes bundle connection to manifold.
- Charges attack-line after nozzle person is ready for water.
- Proceeds to fire and assumes company officer duties.



Note: Normally a quick exterior check in a non-hazardous environment is all that is needed to make the initial decision as to manifold placement. A more thorough investigation can then be made with a line in place.

Hydrant person:

- Gets off apparatus after hearing command.
- Removes hydrant kit.
- Pulls enough supply line to just reach the hydrant then loops hydrant with attached hose strap, steps to rear of hydrant.
- Gives command “**DRIVE.**”
- “Makes” the hydrant.
- Slowly charges the hydrant on signal from engineer.

- Advances up the supply line, removing kinks as needed
- Shoulders a bundle, taking to manifold's location.
- Hands female coupling of bundle to company officer.
- Extend attack-line to fire after company officer gives command to stretch line.
- Assumes nozzle person duties.

NOTE: This entire evolution is written with a three person engine company in mind and a maximum of 200' hand lay of Large Diameter Hose with the manifold. If the distance of the manifold forward exceeds 200', additional personnel will be needed. In that case, the designated amount of manifold supply-line should be stripped into one big pile. The first member will take the manifold and head towards the desired target location. Each successive member will grab the next coupling and stretch the manifold supply-line, following the preceding member.

-Or-

Another option is to have each member pull/shoulder/grab the Large Diameter Hose sequentially, directly off the hose-bed, until the desired amount has been deployed. Members will be spaced 50' to 70' apart. The engineer will stand on the tailboard and feed the hose out. The engineer will then break the connection from the bed and connect it to the Large Diameter Hose discharge port. With this evolution time is not as important a factor as getting an adequate supply to the incident site. It would be used in such areas as freeway supply after laying forward to the freeway gates, supplying either hand lines from a manifold or an engine located on the freeway.

MANIFOLD REVERSE

Training 1.9 Effective Date: 8/2004

Description: A single Large Diameter Hose supply line utilizing one engine laying reverse from the incident site to a hydrant. Attack lines are operated off the manifold supplied from the pumper at the hydrant. All needed equipment must be off-loaded at incident site prior to engine laying to hydrant.

Use: Used to provide a continuous supply of water to an incident site in any of the following conditions:

1. Supply needed after first-due engine arrives at scene and no additional engine en-route.
2. Only hydrant is located away from incoming engine, not possible to lay forward.
3. Water supply and/or pressure in area is low, requiring a pumper at the hydrant.
4. Large flows of water, or long supply lay, are anticipated.
5. Any other situation where the company officer determines that a forward lay is not feasible or possible

NOTE: The company officer must consider if other options are available before resorting to this evolution. Attack on the fire and/or interior rescue will be **severely** delayed. An initial tank operation, with the second-due engine laying supply, should be considered if the fire is manageable with 500 gallons of water. A second consideration lies in the optional equipment to be stripped from the engine. If additional apparatus are not immediately en-route, the company officer should designate any additional equipment to be removed, based on the immediate need versus the ETA of additional apparatus. Additional equipment, that is not part of the standard evolution includes but is not limited to:

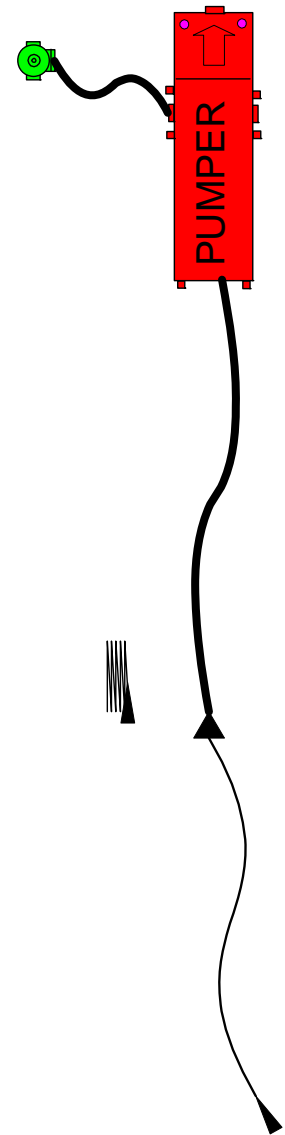
- Ground ladders
- Chainsaw
- Spare breathing apparatus and/or bottles
- Additional bundles/hand-lines
- Gas blower

Duties – In coordinated and chronological order:

Engineer:

- Stops engine where directed by company officer.
- Sets brake and exits cab

- Removes one (1) 1-3/4" bundle and places neatly on ground away from rear of engine.
- Removes one (1) axe and two (2) lanterns and sets on ground alongside engine.
- Gets back in cab and awaits command to **"DRIVE."**
- Drives to designated hydrant and goes through in-cab procedures.
- Breaks supply line, connects line to rear Large Diameter Hose discharge port.
- Removes hydrant kit and takes to hydrant.
- Removes pony and connects one end to gated-inlet valve at pump.
- Opens gated-inlet valve.
- Takes other end of pony to hydrant.
- Makes the hydrant
- Adjusts discharge pressure.
- Monitor gauges
- Consider "non-pumping" tasks.



Company Officer:

- Directs engineer where to stop apparatus, hydrant location, and gives command **"MANIFOLD REVERSE."**
- Gets out of cab, gets tool-of-choice and designates *optional equipment* to be removed.
- *If called for:* assists nozzle person with removal of ladders, lying alongside engine.
- Removes manifold and *required tools* to desired location.
- Removes enough Large Diameter Hose supply line to reach manifold location, heels line, and gives command **"DRIVE"**, making sure nozzle person has cleared engine.
- Makes connection of 1-3/4" attack line to manifold for nozzle person.
- Makes connection of supply line to manifold and removes kinks.
- Ensures nozzle person has extended 1-3/4" attack line, opens manifold valve, and proceeds to fire with axe and assumes company officer's duties.

Nozzle person:

- After hearing command, gets off engine, taking axe and lantern.
- *If optional equipment called for:* assists company officer.

- Shoulders second 1-3/4" bundle and proceeds to manifold location, leaving bundle on shoulder, hands female coupling to company officer.
- After company officer makes bundle connection to manifold, extends 1-3/4" attack-line to fire location and assumes nozzle person duties.

*optional equipment may include: ground ladders, chainsaw, forcible entry tools, etc.

FORWARD LAY TO STANDPIPE

Training 1.10 Effective Date: 8/2004

Description: Single supply line utilizing one engine laying forward from a hydrant to building standpipe system using a 2-1/2" line.

Use: Used to provide a continuous supply of water to a building standpipe system that will supply interior attack lines.

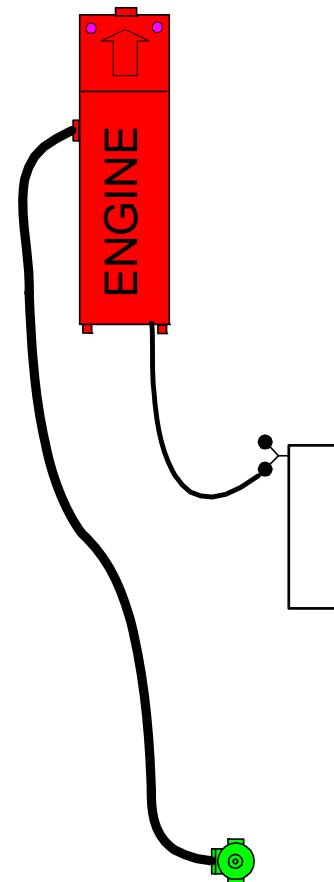
Duties: In coordinated and chronological order:

Engineer:

- Stops at hydrant as directed by company officer.
- **Drives 7-10 MPH** to incident after command "**DRIVE.**"
- Locates apparatus as directed by company officer
- Goes through in-cab procedures.
- Sets wheel chock(s).
- Disconnects supply-line from bed and attaches to gated inlet valve at pump.
- Gives three air horn blasts, radio or a visual signal to hydrant person.
- Takes *standpipe kit* to standpipe connection.
- Stretches Large Diameter Hose to standpipe connection and connects.
- Attaches other end of selected line to a discharge port.
- Charge standpipe to the required pressure. After hydrant supply-line is charged, bleed air, open valve.
- Monitor gauges & consider "non-pumping" tasks.

Company Officer:

- Directs engineer to stop at appropriate hydrant.
- Gives the order "**FORWARD LAY, TAKE THE HYDRANT.**"
- Directs the engineer on apparatus placement at the incident.
- Takes tool-of-choice and lantern; checks fire (checks standpipe interior valves on the way). **



- Shoulders ½ of *apartment bundle* and proceeds to the standpipe connection just below the fire floor with nozzle person.(Shoreline)
- Make connection to standpipe.
- Assumes company officer's duties.

Hydrant person:

- Gets off apparatus after hearing command.
- Removes hydrant kit.
- Pulls enough Large Diameter Hose to just reach the hydrant. Wraps the hydrant, then steps to rear of hydrant.
- Gives command "**DRIVE.**"
- "Makes" the hydrant.
- Slowly charges the hydrant on signal from engineer.
- Advances up the supply-line, removing kinks as needed.
- Shoulders ½ of *apartment bundle* and proceeds to standpipe discharge with company officer. (shoreline)
- Assumes nozzle person duties.

** See **ENGINE COMPANY GUIDELINES**

Training 1.0

Procedure #7

STANDPIPE REVERSE

Training 1.11 Effective Date: 8/2004

Description: Single supply line to standpipe connection utilizing one engine laying reverse from the incident site to a hydrant. All needed equipment must be off-loaded prior to engine laying to hydrant.

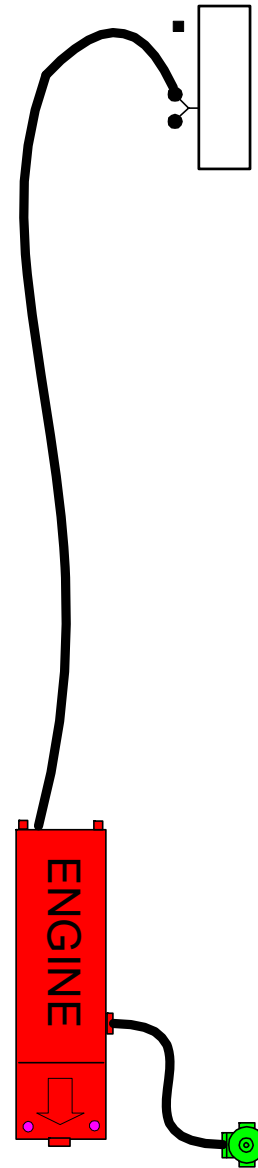
Use: Used to provide a continuous supply of water to a building standpipe system which will supply interior attack lines.

NOTE: The company officer must consider if other options are available before resorting to this evolution. Attacking the fire and/or interior rescue will be severely delayed. An initial tank operation, with the second-due company laying supply, should be considered if the fire is manageable with 500 gallons of water or rescue needs are immediate. A second consideration lies in equipment that may be stripped from the engine. If additional apparatus are not expected to arrive in a reasonable time, the officer may select optional equipment to be removed, based on the immediate need versus the ETA of additional apparatus.

Duties: In coordinated and chronological order:

Engineer:

- Stops engine where directed by company officer.
- Sets brake and exits cab.
- Removes one (1) hose bundle and places on ground away from rear of engine.
- Removes an axe and two (2) lanterns, and places on ground alongside engine.
- Gets back in cab and awaits command to "**DRIVE.**"
- Drives to designated hydrant and goes through in-cab procedures.
- Breaks Large Diameter Hose line and connects standpipe supply line to Large Diameter Hose discharge port.
- Removes hydrant kit and takes to hydrant.
- *Opens discharge valve, pump to be at idle until supply established.*
- "Makes" hydrant supply using pony hose. (or Large Diameter Hose from bed)
- Slowly charges standpipe to required pressure.



- Monitor gauges.
- Consider "non-pumping" tasks.

Company Officer:

- Directs engineer where to stop apparatus, hydrant location, and gives command "**STANDPIPE REVERSE.**"
- Gets out of cab, takes tool-of-choice, lantern, and designates optional equipment.
- If called for, assists nozzle person with removal of optional equipment, setting alongside engine.
- Takes tool and lantern; checks fire and standpipe valves. **
- Shoulders ½ of *apartment bundle* and proceeds with nozzle person to standpipe discharge valve near and below fire floor.(Shoreline)
- Make connections to standpipe discharge and assume company officer's duties.

Nozzle person:

- After hearing command, gets off engine, taking axe and lantern.
- If optional equipment is designated, assists company officer with optional equipment.
- Pulls ½ of *apartment bundle* and sets neatly on ground.(Shoreline)
- Removes standpipe connection tools to desired location.
- Removes enough Large Diameter Hose supply-line to reach standpipe connection, heels line, and gives command "**DRIVE**", making sure company officer has cleared engine. -OR- drops manifold and 2-1/2" lines.
- Makes connection of standpipe supply line to standpipe connection.
- Shoulder loads ½ of *apartment bundle* and proceeds with company officer to standpipe valve on the floor (or landing) below the fire.
- Assumes nozzle person duties.

*Optional equipment includes: ground ladders, chainsaw, forcible entry tools, etc.

** See **ENGINE COMPANY GUIDELINES**
Training 1.0
Procedure #7

DECK GUN

Training 1.12 Effective Date: 8/2004

Description: Monitor evolution utilizing a deck gun (pre-plumbed monitor) mounted on the engine. May also be supplied utilizing a second-due engine company.

Use: Used for quick deployment of a master stream appliance when it is possible to locate the engine close enough without jeopardizing safety of crew or engine. May be used for quick knockdown of large brush fires, or fully involved non-occupied structure fires, where there is an immediate exposure hazard, or used to protect the exposure itself.
NOTE: Always *safety check* the monitor before use.

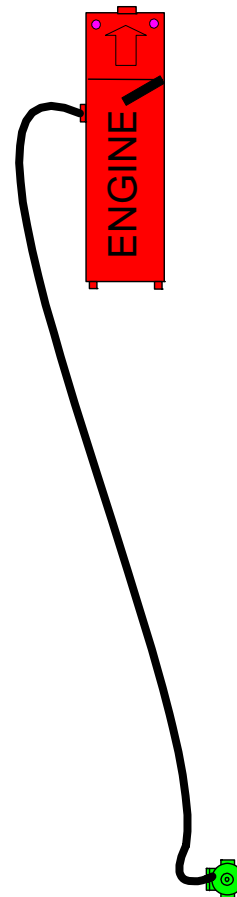
Duties: In coordinated and chronological order:

Engineer:

- Stops at hydrant as directed by company officer.
- **Drives 7-10 MPH** to incident location after hearing command "**DRIVE.**"
- Locate engine as directed by company officer.
- Goes through in-cab procedures.
- Sets wheel chock(s).
- Disconnects supply-line from bed and attaches to gated inlet valve at pump.
- Gives three air horn blasts, radio or a visual signal to hydrant person.
- Adjusts pump discharge pressure to match selected tip.
- Monitor supply and gauges
- Consider "non-pumping" tasks.

Company Officer:

- Directs engineer to stop at appropriate hydrant.
- Gives the order "**FORWARD LAY, TAKE THE HYDRANT.**"
- Direct engineer on proper apparatus placement at the incident.
- Give command "**DECK GUN.**"
- Informs engineer of tip choice.
- If nozzle person hasn't, climbs to pre-plumbed monitor and assumes master-stream operations.
- Assumes company officer duties and directs nozzle person on monitor application.



Hydrant person:

- Gets off apparatus after hearing command.
- Removes hydrant kit.
- Pulls enough Large Diameter Hose to reach the hydrant, and then wraps the hydrant, steps to the rear of the hydrant.
- Gives command "**DRIVE.**"
- "Makes" the hydrant, slowly charging the supply line after signal from engineer.
- Advances up the supply line, removing kinks as needed.
- If company officer hasn't, assumes nozzle person duties at monitor.
- After notification by engineer, charges monitor by slowly opening the 3" ball valve on riser or pump panel valve.
- Coordinates discharge pressure with engineer.

NOTE: In freezing weather the monitor must be drained after use. Do this by lowering the barrel below horizontal with the hand crank.

MONITOR FORWARD

Training 1.13 Effective Date: 8/2004

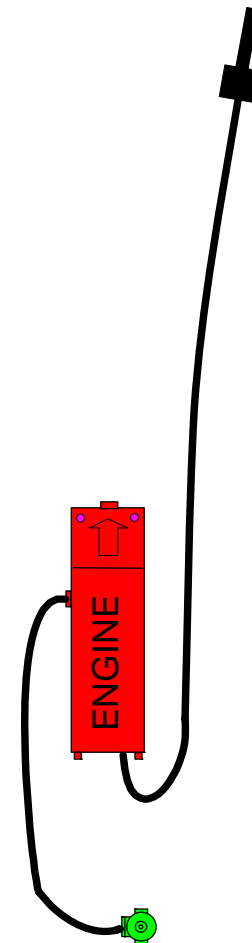
Description: Single supply line utilizing one engine laying forward from a hydrant to an incident. Attack made utilizing a portable monitor supplied by a length (maximum 200' for crew of three) of Large Diameter Hose from an engine.

Use: Used to provide a continuous supply of water to a master stream appliance at an incident requiring large volumes of water. Must have hydrant located en-route to incident with adequate static and residual pressure to provide the desired flow without a pump in-line.

Duties: In coordinated and chronological order.

Engineer:

- Stops by hydrant as directed by company officer.
- **Drives 7-10 MPH** to incident after command "**DRIVE.**"
- Locates apparatus as directed by company officer.
- Goes through in-cab procedures.
- Sets wheel chock(s).
- Disconnects supply-line from bed and attaches to gated inlet valve at pump.
- Gives three air horn blasts, radio or a visual signal to hydrant person.
- Hands down monitor, monitor base, stacked tips and chain to company officer.
- *If company officer has not:* connects "bed" coupling to Large Diameter Hose discharge and strips off designated amount of hose from bed, piling to rear and side of tailboard.
- *If company officer has not:* disconnects line from bed and attaches monitor supply line to portable monitor base.
- *If nozzle person has not:* assists company officer extending monitor and monitor supply line.
- Charges the monitor supply line on command from company officer.
- Maintain pump discharge pressure by coordinating with monitor operator.
- Monitor gauges.
- Consider "non-pumping" tasks.



Company Officer:

- Directs engineer to stop at appropriate hydrant.
- Gives the order "**FORWARD LAY, TAKE THE HYDRANT.**"
- Directs the engineer on apparatus placement at the incident.
- Gives the command "**MONITOR FORWARD**" and designates type of tip to be used.
- Receives monitor, monitor base and tips (chain optional) from engineer; places to side of tailboard.
- Evaluates amount of hose needed* to reach desired monitor location and informs engineer and/or nozzle person.
- *If driver has not already:* removes "bed" coupling and connects to Large Diameter Hose discharge, then strips designated amount of monitor supply line into pile at rear and off to side of tailboard.
- *If driver has not already:* couples monitor supply line to portable monitor base.
- Ensure stream-shaper and selected tip are on monitor.
- *If nozzle person is not available,* with engineer, carry monitor and drag hose to desired monitor location.
- Give order to charge monitor and assume Company Officer duties.

Hydrant person:

- Gets off apparatus after hearing command.
- Removes hydrant kit.
- Pulls enough Large Diameter Hose to just reach the hydrant then wraps hydrant with attached hose strap, steps to rear of hydrant.
- Gives command "**DRIVE.**"
- Makes the hydrant.
- Slowly charges the hydrant on signal from engineer.
- Advances up the supply line, removing kinks as needed.
- *If driver has not already:* assists company officer in carrying monitor and dragging hose to designated location.
- Assume nozzle-person duties and coordinate discharge pressure at monitor after it is charged.

*If hand lay is over 100' in length, more personnel is required. Place members at each coupling during the hand lay.

MONITOR REVERSE

Training 1.14 Effective Date: 8/2004

Description: Single Large Diameter Hose supply line utilizing one engine laying reverse from the incident site to a hydrant. All *optional* equipment must be off-loaded at incident site prior to engine laying to hydrant.

Use: Used to provide a continuous supply of water to a master-stream appliance where large flows of water are anticipated.

Duties: In coordinated and chronological order:

Driver:

- Stops engine where directed by company officer.
- Sets brake and exits cab
- Hands monitor, portable monitor base and tips down to hydrant person.
- Gets back in cab and awaits command to "**DRIVE.**"
- Drives to designated hydrant and goes through in-cab procedures.
- Breaks monitor supply line, connects monitor supply-line to Large Diameter Hose discharge port.
- Opens Large Diameter Hose discharge valve. Consider pumping at idle until hydrant supply established.
- Removes pony and connects one end to gated inlet valve at pump, takes the other end to hydrant.
- After hydrant supply established, pump to monitor.
- Maintain pressure to selected tip.
- Monitor gauges.
- Consider "non-pumping" tasks.

Company Officer:

- Directs driver where to stop apparatus, hydrant location, nozzle and/or tip size to be used, and gives command "**MONITOR REVERSE**"
- Gets out of cab and removes *required tools* from rear compartment.
- Removes enough supply line to reach monitor location.
- Heels line and gives command to "**DRIVE**"
- Stretches the supply line to monitor and makes connection.
- Ensures right tip selection.
- Signals engineer via radio to charge monitor supply line.



Hydrant person:

- After hearing command, gets off engine.
- Receives monitor, portable monitor base and nozzle/tips and places in designated location.
- Climbs back in engine and rides to hydrant location.
- Takes hydrant kit to hydrant and "makes" hydrant for engineer.
- Returns to monitor location and assumes nozzle person duties.

FORWARD LAY TO SPRINKLER CONNECTION

Training 1.15 Effective Date: 8/2004

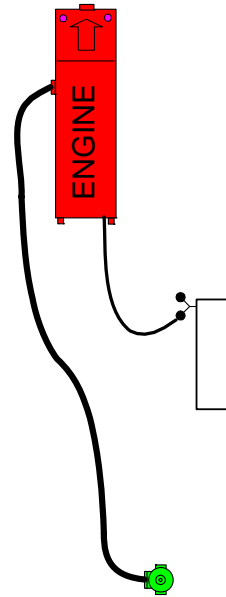
Description: Single supply line utilizing one engine laying forward from a hydrant to supply an automatic sprinkler connection, using a 2-1/2" or Large Diameter Hose line.

Use: Used to provide a continuous supply of water to an automatic sprinkler system in order to supplement the system in terms of volume and pressure.
NOTE: An isolated hydrant should be used for sprinkler supply so as not to compromise the water supply for attack line purposes.

Duties: In coordinated and chronological order:

Engineer:

- Stops at hydrant as directed by company officer.
- **Drives 7-10 MPH** to sprinkler connection site after command "**DRIVE.**"
- Locates apparatus as directed by company officer.
- Goes through in-cab procedures.
- Sets wheel chock(s).
- Disconnects line from bed and attaches supply-line to gated inlet valve at pump.
- Gives three air horn blasts, radio, or a visual signal to hydrant person.
- Takes standpipe tools to FD connection.
- Strips off enough Large Diameter Hose to reach FD connection.
- Makes connection to FD connection.
- If Large Diameter Hose, connect sprinkler system supply line to Large Diameter Hose discharge port.
- After hydrant supply line is charged, bleed air, open valve, adjust inlet relief valve (if applicable) to incoming hydrant pressure.
- Charge the line to sprinkler connection at:
 - pump at idle speed if no fire showing
 - 150 PSI if fire showing and consider connecting 2nd FDC supply-line
- Monitor gauges.
- Consider "non-pumping" duties.



Company Officer:

- Directs engineer to stop at appropriate hydrant.

- Gives the order "***FORWARD LAY TO A SPRINKLER SYSTEM, TAKE THE HYDRANT.***"
- Directs the engineer on apparatus placement at the incident.
- Signals engineer to charge the sprinkler system.
- Assume company officer's duties and assist at fire as needed.

Hydrant person:

- Gets off apparatus after hearing command.
- Removes hydrant kit.
- Pulls enough Large Diameter Hose to reach the hydrant, then wraps hydrant, steps to rear of hydrant.
- Gives command "***DRIVE.***"
- "Makes" the hydrant.
- Slowly charges the hydrant on signal from the engineer.
- Advances up the supply line, removing kinks as needed.
- Rejoins company officer with a tool and assists at the fire.

SPRINKLER REVERSE

Training 1.16 Effective Date: 8/20/04

Description: Single supply line to automatic sprinkler system utilizing one engine laying reverse from the incident site to hydrant. All optional equipment* must be off-loaded at incident site prior to engine laying to hydrant.

Use: Used to provide a continuous supply of water to an automatic sprinkler system in order to boost both volume and pressure.

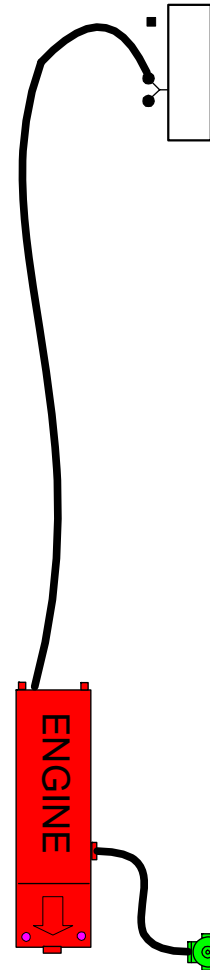
Duties: In coordinated and chronological order:

Engineer:

- Stops engine where directed by company officer.
- On command drives to designated hydrant and does in-cab procedures.
- Sets wheel chock(s).
- Breaks sprinkler supply line, connects sprinkler supply-line to Large Diameter Hose discharge port.
- Removes hydrant kit and takes to hydrant
- Opens Large Diameter Hose discharge valve. Pump to be at idle.
- Removes pony and connects one end to gated-inlet valve at pump, takes other end to hydrant.
- "Makes" the hydrant.
- Slowly charges the hydrant; opens inlet valve at pump.
- Charges the sprinkler supply-line:
 - pump at idle speed if no fire showing
 - 150 PSI if fire showing, consider 2nd feed to FDC
- Monitor gauges
- Consider "non-pumping" tasks.

Company Officer:

- Directs engineer where to stop apparatus, hydrant location, and gives command "**SPRINKLER REVERSE.**" Designates *optional* equipment.
- Gets out of cab and removes tool-of-choice and *tools* from rear compartment.
- Removes enough sprinkler supply line to reach sprinkler system connection.
- Heels line and gives command to "**DRIVE.**"
- Signals engineer via radio to charge sprinkler supply line.
- Assumes company officer duties at fire.



Nozzle person:

- After hearing command, gets off engine.
- If called for, assists in retrieving optional equipment and obtains a tool.
- Stretches the sprinkler supply line to sprinkler connection and makes connection utilizing reducer.
- Assists company officer as needed.

*Optional equipment may include: spare SCBA bottles, hand tools, hose bundles, etc.

FOAM ATTACK

Training 1.17 Effective Date: 8/2004

Description: Single 1-3/4" attack line utilizing "Class-B" foam. Attack line may be extended up to 300' from eductor location. Eductor location may be at pump panel or manifold.

Use: Used to apply a foam blanket for extinguishing flammable liquid fires or to lay down a protective blanket or vapor barrier at spill scenes.

Duties: In coordinated and chronological order - For forward lay evolution only:

NOTE: The following duties outline the responsibilities of engine company personnel after the supply has been established utilizing any of the accepted supply evolutions. Normally a forward lay will be used, if a manifold reverse evolution is used you must remember to remove all needed equipment from the apparatus. This will include all available foam concentrate, eductor, foam tip, and fittings. The company officer must also consider the need for additional foam concentrate (a 5 gallon jug will only last a little more than a minute at 4%, 40 seconds at 6%). Burn back time is approximately 5 minutes.

Engineer:

- Stops at hydrant as directed by company officer.
- Drives 7 - 10 MPH to incident after command "**DRIVE.**"
- Locates apparatus as directed by company officer.
- Goes through in-cab procedures.
- Sets wheel chock(s).
- Hands down all foam jugs and eductor equipment to company officer.
- Makes hydrant supply connections and signals hydrant person.
- Attaches eductor to discharge port.
- Checks eductor % setting: 3-4% petro-chemical, 6% for polar solvents when using FFFP concentrate.
- Connects 1-3/4" line to eductor.
- Opens foam concentrate jugs and insert eductor suction tube in first jug.
- Charge pump to meet requirement of foam eductor.
- Charge 1-3/4" foam attack-line on order from company officer.
- Monitor foam concentrate. Changes jugs as needed; changeover between jugs must be made as quickly as possible to avoid interruption in foam at the tip. Cutting the top off the first jug and pouring subsequent jugs into first is advised if time permits).
- Notifies crew/command with radio when foam concentrate is exhausted.

Company Officer:

- Advises engineer on apparatus location.
- Gives command: "**FORWARD LAY, TAKE THE HYDRANT.**"
- Gives command: "**FOAM ATTACK.**"
- Checks situation.
- Receives foam concentrate jugs and eductor equipment from engineer.
- Applies foam tip to nozzle.
- Breaks pre-connect and shoulders same giving the driver the coupling.
- Extends foam attack line and gives order to charge.
- Clears line of air away from target assuring good foam production. This must be done with nozzle fully open.
- If nozzle person is not available, apply foam with nozzle fully open utilizing the bounce method or lob foam high into the air and allow to settle down onto target.
- Assume company officer duties.

Hydrant person:

- Gets off apparatus after hearing command.
- Removes hydrant kit.
- "Takes" the hydrant.
- Gives command to "**DRIVE.**"
- "Makes" the hydrant and slowly charges the hydrant supply line when signaled.
- Advances up the supply line, removing kinks as needed.
- Assume nozzle person duties.

*Consider additional resources early on in the evolution. Such resources include Seattle, Woodinville, Kirkland, and South Snohomish County fire engines, all carry compatible foam concentrates.