



Big Water Data

3-inch Hose Flow Test
Autauga County, Alabama
November 14, 2010

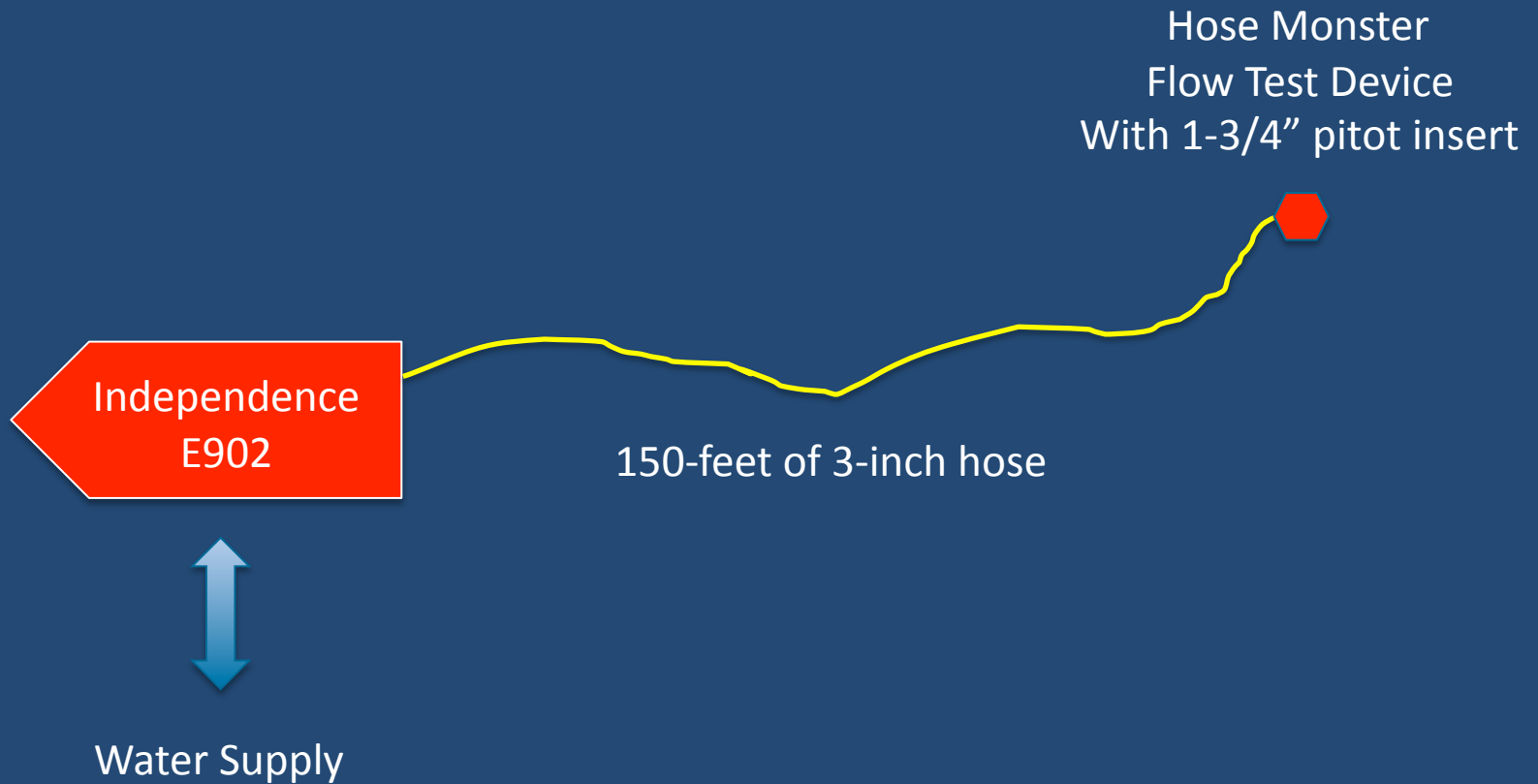
Purpose

- During a water supply seminar in Autauga County, Alabama, some discussion arose about the amount of water that could be pumped through 3-inch hose.
- There was some belief that a 3-inch hose could not support more than 400 or 500 gpm.
- So...the GBW instructors set out to demonstrate that flows in excess of 500 gpm can be attained in 3-inch hose – BUT because friction loss increases exponentially, then hose line length becomes a critical factor when trying to pump high flows through small hose lines.

Test Set-Up

- Independence Engine 902 – a 1,500 gpm pumper – was used as the test pumper .
- Engine 902 was supplied via another pumper that was taking its water from a tanker shuttle operation.
- 150 feet of 3-inch hose was stretched from E902, connected to a rear discharge and the nozzle was replaced with a Hose Monster Flow Test Device which was equipped with a 1-3/4-inch fixed pitot insert for pressure and flow measurement.

Test Set-Up



Water Supply



Engine 902

Water Supply

Water Supply



Engine 902

Hose Layout



150 feet of 3-inch hose

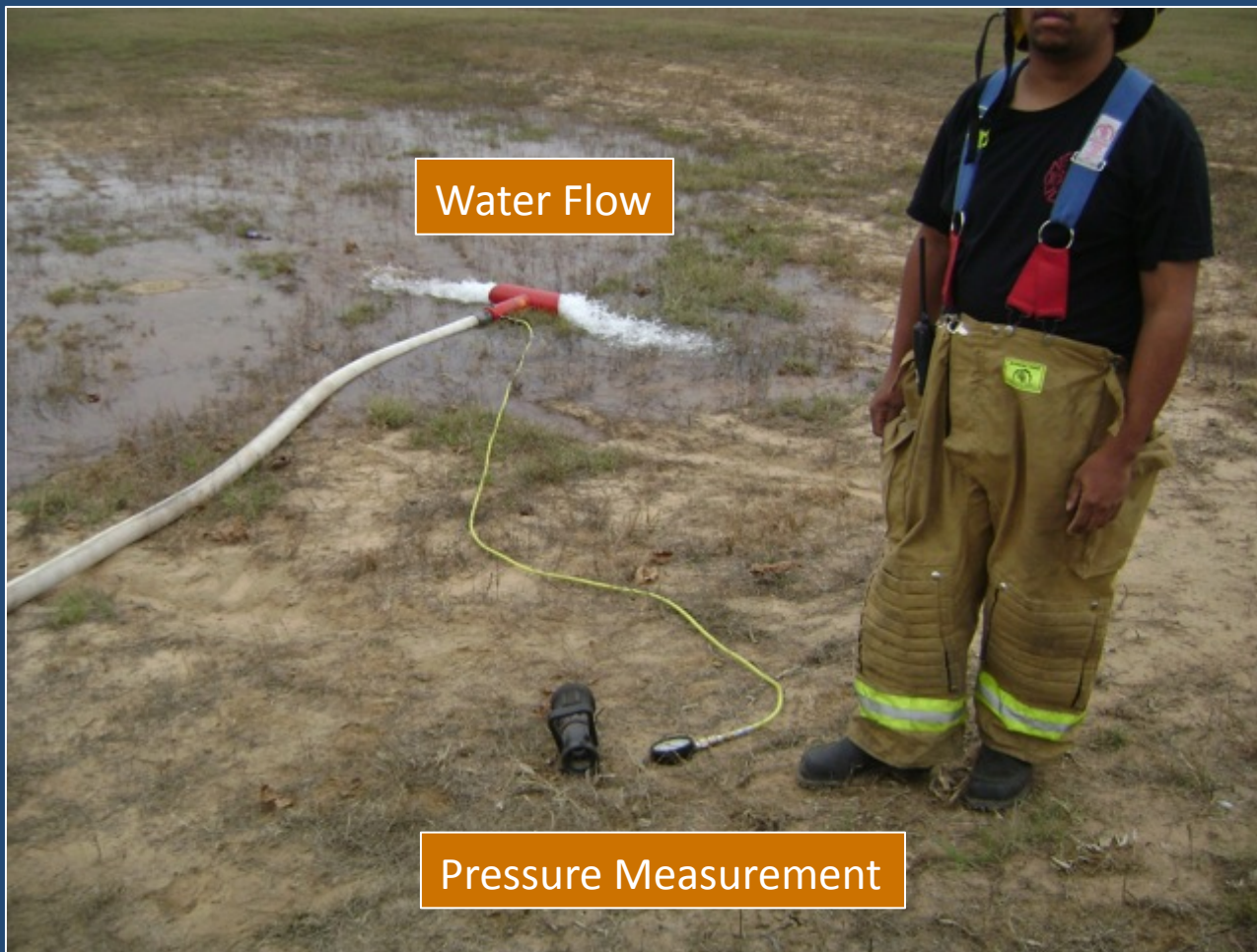
Flow Measurement

Nozzle is removed and replaced with
Hose Monster Flow Test Device.



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Flow Test Conducted



Pressure Reading



With a pitot pressure reading of 62 psi on the 1-3/4-inch tip, a flow of 701 gpm was achieved. Engine 902's master discharge gauge read 235 psi and the individual discharge gauge read 160 psi.

Summary

- When we speak about the flow capability of fire hose, we generally think of hose diameter, but we must also consider the length of the hose lay as well.
- Relatively high flows are achievable in smaller diameter hose lines – the problem is that those flows CANNOT be “pushed” very far – therefore, length becomes an issue. This is where LDH has a true advantage.



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