

Relay Drill After Action

MCFRS Battalion 5 "C"
May 6, 2011



Purpose of Drill

- Practice setting up and operating a relay
- Assess our ability to draft and move 1000 gpm to the Sycamore Hollow development.
- Assess ability of 2000' of 4" hose to move 500 gpm or better
- Evaluate use of Humat as relay valve



Sycamore Hollow (34-11 Box area)

- Average home value around 6K. Avg. 5K sq. feet. 26 planned; 9 built.
- Closest hydrants 1.5 miles: Brink Road (near cemetery) & Blunt Road (near Watkins Meadows)
- Drafting sites at Davis Mill near Blunt or at Huntmaster Rd Bridge are between 1300' and 1500' away.



Drill Setup

- Units staged at Brink opposite cemetery and proceeded Brink to left on Blunt .
- RE709B laid out 1000' of 4" from Davis Mill Road and Sycamore Hollow Road. They set up 2 50' sections of 3" to feed a TFT Crossfire with a 1" tip.
- E735 laid out 850' of 4" from Blunt & Davis Mill and picked up RE709B's line.
- E713 positioned at intersection of Blunt & Davis Mill & picked up E735's hose.
- E734 laid 250' 4" from Blunt & Davis Mill to drafting site on east side of Davis Mill Road at Seneca Creek.

SECTION LEGEND

- Burton Corner
- Sheppard's Green
- Wildcat Ridge
- Thomas Delight
- Stiles' Hunt



RE709B E735 E713 E734

Drafting site

- 3 10' 6" hard sleeves were used so that E734 could keep all of its wheels on the hard road.
- There was ample depth and flow. Total lift was 9.5'. Unknown how this stream will look in August.



Hose and Hills

- Vertical Distance between E713 & E735 was about 100'. This added 50 psi of head pressure to overcome.



E735

- E735 was able to position off of Davis Mill Road.
- Whenever possible, apparatus should be positioned so as not to block access to other incoming units. Of course, this is not always feasible in the rural environment.



RE709B

RE709B initially had an issue with its older style discharge relief valve sticking open. This prevented them from developing a good flow. The crew recognized the problem, shut down the pump, cleared the strainer and then manage to flush the debris out that was making the pilot valve stick open.



The most flow that was obtained from RE709B in the first evolution was around 830 gpm (50 psi out of a 2" tip).

More relief valve troubles

- E734 & E713 both reported good discharge pressures and flows over 1000 gpm – but where was the water going?
- Turns out E713's #1 Officers Discharge PRV was sticking open and dumping water to the ground.
- This situation could have been mitigated by switching to another discharge – however this takes time and coordination with other units. Also E713 would have had a hard time getting the hose off the discharge with the 50 lbs of head pressure built up in the hose lay between E713 & E735.

2nd Evolution

- E735 was taken out of equation and E713 supplied RE709B through the 1900' of hose that was laid out.
- The humat valve was put in place of E735 to evaluate its use as a relay valve.
- It is necessary to use a male 4.5" NST to 4" storz adapter to make this work. All Crimson engines carry this appliance for use with the soft sleeve.



500 gpm through 1900' 4"

- No issues were experienced supplying 500 gpm through the hose with the humat. E713 reported a discharge pressure of 175 psi and RE709B was able to flow with a residual intake of 25 psi.
- E735 took suction from the humat and boosted the pressure; RE709B reported a resulting intake of 75 psi and was able to flow 500 gpm at an idle.
- We plan to test the humat as a relay valve at higher flows at a later date; however it appeared to work ok in this application.



Review ? For Relay Theory in MC

- Maximum Total Distance?
- Optimal distance between engines?
- Where does biggest pump go if possible?
- If we plan to use more than 1000' which hose bed should we lead off with?
- Do you fill hose with tank water????
- Do we have other options besides 4 inch hose?



Distance....

Maximum Relay Lengths (Feet) ¹³⁻⁴

Flow in gpm	Hose size in inches						
	One 2½	One 3	One 4	One 5	Two 2½	One 2½ & One 3	Two 3s
250	1,440	3,600	13,200	33,000	5,760	9,600	14,400
500	360	900	3,300	8,250	1,440	2,400	36,000
750	160	400	1,450	3,670	640	1,050	1,600
1000	90	225	825	2,050	360	600	900
1250	50	140	525	1,320	200	375	500

Safety....

- Charge all lines slowly
- Throttle up slowly
- Close all valves slowly
- Watch out for traffic

Traffic control by MCPD



Traffic was stopped by MCPD at either end of incident on Davis Mill Road.

Blunt Road at Davis Mill was blocked off by cones.

This worked well with only a couple of complaints by citizens.

Radio

- Incident Channel 71C
- Radio worked well with no transmission issues.

Lessons Learned

- Even though participants were briefed ahead of time, and intersections were chosen as layout points, there was still a little confusion on what units were to do in terms of laying hose. This confusion would be amplified on a real incident unless the first engine or command officer is very specific on what is to be done.
- Any relief valve sticking open on a Crimson is a concern since most have 4" discharges to ground. These valves need to be exercised regularly. Also any pump, especially in the rural environment, should be backflushed at least monthly, to prevent the buildup of sediment which would cause valves to stick open.