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Tank to Pump Piping

We often consider how we would effect a "blitz" attack on a building heavily involved in fire. Our rationale is that we can knock down the bulk of the fire and then mop up with hand lines. While practicing this technique on a drill just a few days ago an interesting question came up. How much flow can you get out of your deck pipe off of your booster tank? I gave the troops what I thought was the right answer the flow off of the booster tank is limited by the tank to pump piping and I was not too far off the mark. Just to be sure though I posed the same question to the Assistant Chief in charge of the apparatus fleet from Montgomery County, MD, Steve Lohr. His answer to this question is below.

Although the diameter of the pipe is a primary factor, there are other things to consider:

- A 3" tank-to-pump pipe is generally considered in the industry to support at least 500 GPM @ gravity pressure. Clearly, if we were supplying this same pipe under some additional pressure the flow through that pipe would be much greater.
- The length and routing of the pipe is critical. (Go underneath and look). We are OK in MCFRS because we pay attention. It will be a very short, straight routing of the pipe. Some others are problematic. Our (MCFR County owned) tankers have two 4" lines, 1-front, 1-rear so that if the rig is on a hill, it is good to the last drop!
- The spot where we can improve the most is our two auxiliary 2-1/2" suctions at the pump panel. They typically have at least two 90 degree turns which add considerable FL to an incoming line. That is one of the reasons we have routed a 5" pipe directly into the rear of the new Pierce pumpers. If you want to do a test. Take a suction line in one of the auxiliary lines and then take one in the steamer (single 3"). Note the difference before cavitation occurs.
- One of the tests we perform at pump test in MCFRS is to fill the booster tank and flow a 1-3/8" tip (500 GPM) for 90

seconds to make sure that the tank-to-pump is 1) fully opened, and 2) not obstructed with debris.

Hope this helps.

Thanks Chief this does help.

Anyone out there with any similar questions or concerns or perhaps even additional insight should e-mail tinhelmet (charlesbailey@verizon.net)