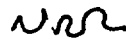


From: Sunil Weerakkody 
To: Holahan, Gary 
Date: 4/26/05 5:19PM
Subject: Re: Fwd: Fire Hose station

Gary:

I have attached the info that Rick Dipert of my staff provided in response to your question. Please call me (2870) or Rick (4064) if you need additional information. In summary, a single hose has a capacity of about 200-300 gpm, even if the length of the hose is 1000ft.

Your guess that hose stations are designed for a lot more than 60 gpm is correct. As you guessed, they are more like 500 gpm.

The 2.5 inch rubber lined hose is the standard hose employed by fire brigades at NPPs. It is what would be used should the fire brigade would have on hand for spent fuel cooling.

NFPA 14 is the standard for the installaion of standpipes and hose systems. This NFPA standard has been referenced by NRC over the last 30 years.

CC: Black, Suzanne; Hannon, John; Johnson, Michael

A-4

From: Richard Dipert / *NR*
To: Sunil Weerakkody *NR*
Date: 4/26/05 4:49PM
Subject: Re: Fwd: Fire Hose station

Delivery Rate of A Single Fire Hose to Any portion of the Plant (applicable to the Spent Fuel Pool)

Assume - Diesel Driven Fire Pump - Meets NFPA 20 "Stationary Pumps for Fire Protection"

Assume - 2.5 inch Hose Station - Meets NFPA 14 "Standpipe and Hose Systems - 1983 Edition" used for reference - Class I service - For use by Fire Departments and those trained in handling heavy streams. 100 feet of hose is standard on standpipe, more may be used if friction loss is taken into account.

Each standpipe must flow at least 500 gpm; standpipes may have multiple hose connections. 100 psig at the outlet of the hose connection is usually the minimum pressure considered adequate to employ effective manual hose streams (note: this is current requirement and a change from the 1983 edition, based on changes in hose nozzle technology). Standard firefighting practice expects 200 to 300 gpm from a standard fog nozzle on an individual hose connection (2.5 inch).

Flow Losses based on Table 3-28 from "Hydraulics for Fire Protection" by Harry E. Hickey

For 100 gpm, loss is approximately 2 psi/100 feet of hose.

For 150 gpm, loss is approximately 5 psi/100 feet of hose.

For 200 gpm, loss is approximately 8 psi/100 feet of hose.

for 250 gpm, loss is approximately 12 to 13 psi/100 feet of hose.

I believe 200 gpm would be a reliable flow rate from a single hose anywhere in the plant. At 100 psi minimum at the hose connection and 8 psi loss per 100 feet of hose, this flow rate could be established with over 1000 feet of hose connected (no nozzle) and still have 20 psi at the open hose end. No elevation change is assumed, but could be accounted for.

Richard Dipert PE
Fire Protection Engineer
301-415-4064

>>> Sunil Weerakkody 04/26/05 03:53PM >>>