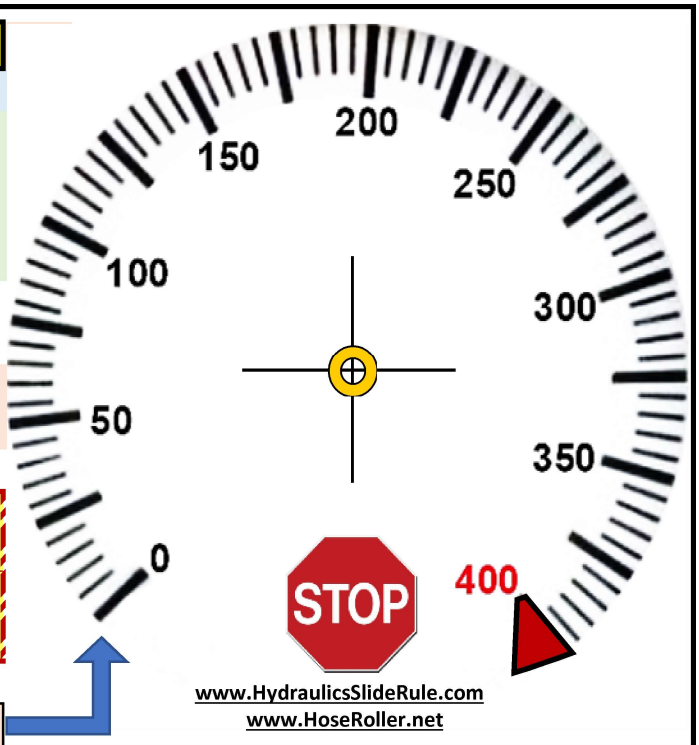
Length
Attack
Overhaul
Max HEAD
Max Grade
Max GPM
Laterals
9
8
7
6
5
4
3
2
1
0

1. *Select* (insert) mode: 'ATTACK' vs. 'OVERHAUL'
2. *Pull* insert "OUT" to current Hoselay Length in feet.
3. *Rotate* DIAL "A" to *TOTAL* of Nozzle Pressure (NP) + Friction Loss (FL) upon number of "Laterals" operating row by the *Nozzle FLOW* *(NFPA 1002)* @ (20/60C or 25/75C GPM '*ATTACK*') column to LEFT.
4. Again *rotate* DIAL "A" until *estimated* *(+)* *HEAD* *(in FEET)* lines up with *TOTAL of #3* (NP + FL)
5. *Read* estimated *ENGINE PRESSURE* (EP) upon *RED NEEDLE* of Dial "A" on 'Fixed' GAUGE "B"

Laterals Operating

Note: *TOTAL* Friction Loss (FL) is calculated upon 10 GPM Laterals w/ 10/23 or 10/30 Comb. Nozzles

'Fixed' GAUGE "B"



www.HydraulicsSlideRule.com
www.HoseRoller.net

HFT-FIRE

*" Is not Friction Loss a direct mathematical function of Gallons Per Minute? " Each individual (GPM) affected section of hose is subject to: [Friction Loss (FL) = (GPM/100)^2 * C * L/100'] (SDTDC-2005: "C" for 1.5" hose is 35 and 1" is 250) On a 32% Grade, the Standard method MUST STOP at 600' before exceeding MAX 400 PSI ; at 1,100', pump DOWNHILL -288 ' The ' HENWAY ' pumps 25% more flow (60 vs. 75 GPM) @ 500' /83% FARTHER and 639' HIGHER in elevation for SAFETY!*

75C

Standard			Length
GPM	FL	Lat.	1,100'
75	19.7	2.5	1,000'
75	19.7		
85	25.3	2.5	800'
85	25.3		
95	31.6	2.5	600'
95	31.6		
105	38.6	2.5	400'
105	38.6		
115	46.3	0	200'
115	46.3		0'
E-1 Total:	323	10	
(+19.7 PSI/+6%) FL:	333		Only
Nozzle Pressure (NP):	100		5%
TOTAL (before 'HEAD'):	433		More
Avail. Pressure to 400:	-33		MAX
Max. HEAD in Feet:	-76		-8%
Max. Length @ 32% Grd:	600		Grd.

75C

Standard			Length
GPM	FL	Lat.	1,100'
75	19.7	2.5	1,000'
85	25.3		
85	25.3	2.5	800'
95	31.6		
95	31.6	2.5	600'
105	38.6		
105	38.6	2.5	400'
115	46.3		
115	46.3	2.5	200'
125	54.7	0	
125	54.7		0'
E-2 Total:	413	12.5	
(+90 PSI/+28%) FL:	425		TOTAL
Nozzle Pressure (NP):	100		21%
TOTAL (before 'HEAD'):	525		More
Avail. Pressure to 400:	-125		MAX
Max. HEAD in Feet:	-288		-13%
Max. Length @ 32% Grd:	600		Grd.

75C

HEN-WAY			Length
GPM	FL	Lat.	1,100'
75	19.7	2.5	1,000'
43	6.3		
43	6.3	2.5	800'
53	9.6		
53	9.6	2.5	600'
53	9.6		
53	9.6	2.5	400'
63	13.7		
63	13.7	2.5	200'
73	18.4	0	
73	18.4		0'
E-3 Total:	135	12.5	
(-288 PSI/-67%) FL:	148		TOTAL
Nozzle Pressure (NP):	100		53%
TOTAL (before 'HEAD'):	248		LESS
Avail. Pressure to 400:	152		639'@
Max. HEAD in Feet:	351		32%
Max. Length @ 32% Grd:	1100		+83%

" HEN-WAY "

Attack fire w/ one (1) 1.5" hose; lay '*Supply*' line dry. At 600', 1,000' & 1,400': *Attach* (2) Dbl. Females, a 'reversed' Gated-Wye, a Dbl. Male, an 1.5" X 1" Tee, and a Gated-Wye. *Charge* secondary 'Supply' line *ONLY AFTER* connected; (radio) *CONFIRM* ! RULE OF THUMB: *Install* at any time Nozzle Pressure reduces; *STOP* at *MAX 400 PSI* (EP)

29 CFR 1910.156(c)(1) & (2) NFPA 1002/1041 REQUIRES YOU to STOP at 400 PSI !

*** FIREFIGHTER SAFETY ***

"NP" and "FL" ("A" is '*NUL*') Pressure Losses are one (1) variable for up to *all* laterals *flowing simultaneously* in both '*ATTACK*' vs. '*OVERHAUL*' *modes.* The remaining pressure LESS from the MAX 400 PSI when divided by 0.434 PSI/ft. determines the MAX (+) HEAD; % Grade then verifies the MAX Length.

Use 'OVERHAUL' inserts *AFTER containment. ALL* pressures are *'Color-Coded'* to indicate you're in the *DANGER ZONE* *if* '*ATTACK*' *PRESSURES are required for an ESCAPE or severe BLOW-UP !*

DO THE MATH!

This is a 1,000' hoselay as illustrated:

There are eight (8) contour lines.
Each contour line is 40 feet INCREASED elevation.
Eight (8) times (X) 40'/contour line = 320'

320' over a 1,000' run is a 32% Grade

320' times 0.434 PSI/ft. = 139 PSI *HEAD* pressure.

Per *NFPA 1002* , 139 PSI HEAD pressure LOSS [*PLUS* TOTAL (FL) AND (NP)] MUST BE COMPENSATED at the pump for SAFETY!

The *Standard* method must *STOP* at *600'* on a 32% Grade upon utilizing *75 GPM* /10 GPM nozzles for HEAVY FIRE ATTACK for far BETTER PROTECTION and EFFICIENCY to INCREASE FIREFIGHTER SAFETY!

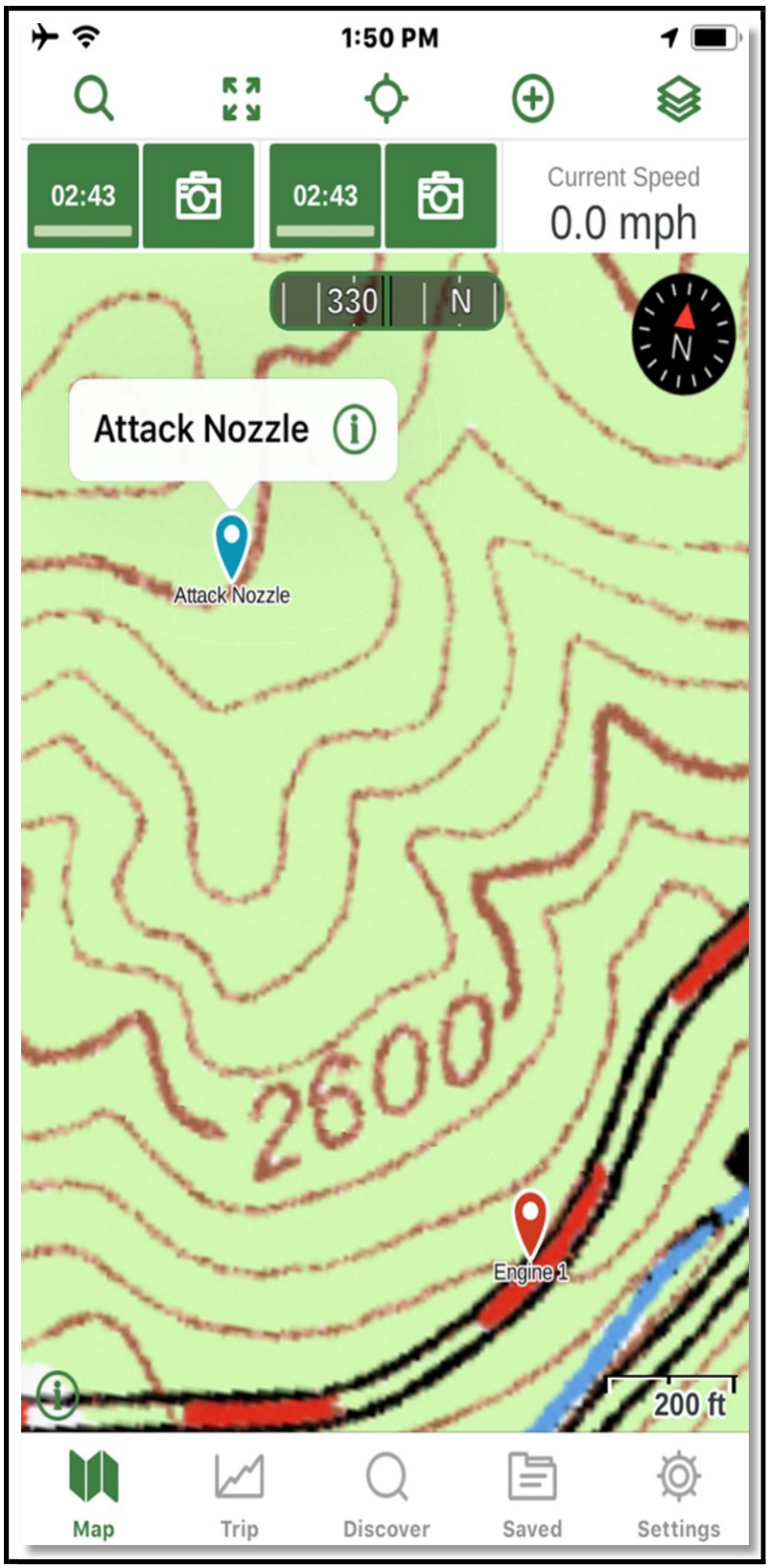
Upon extending *only* 100' from 900' feet to 1,000', FL increases by only 19.7 PSI or 6%...

BUT* when extending only 100' from 1,000' to 1,100', and therefore ADDING a FIFTH (5th) lateral at 10 GPM, the *OVERAL FLOW* from the Engine to the first lateral increases from 115 GPM to 125 GPM, PLUS the Friction Loss (FL) of each AFFECTED section thereafter, to cause FL to INCREASE a *FULL* 90 PSI at 28%! *The calculated evidenced increase in Friction Loss SHALL NOT EVER be disregarded to ensure our highest priority: FIREFIGHTER SAFETY!

The *HEN-WAY* method, reduces the water flow (GPM) to supply the ATTACK nozzle and each Lateral thereafter by one-half (1/2); upon squaring this fraction of 1/2 X 1/2 = 1/4, Friction Loss in each INDIVIDUALLY *AFFECTED* SECTION is reduced by an INCREDIBLE:

75% *LESS* FRICTION LOSS!!!

Thus, a 75 GPM /10 GPM hoselay limited to 600' (at 25% MORE flow and therefore 50% MORE "KNOCK-DOWN" than 60 GPM) can be SAFELY EXTENDED an additional 500' (83% further) to 1,100' ...and yet a FULL 639' higher (351' uphill vs. -288' downhill) to significantly INCREASE FIREFIGHTER SAFETY!



Get the APP that this technology is perfectly matched for at:
https://GAIAGPS.com