Static Pressure of 100 psi
One line working delivering 250 gpm
Residual pressure of 85 psi

100 psi (static)
- 85 psi (residual)

15% drop

2 or more lines or a total of 500 gpm available

Static Pressure of 100 psi
Three lines working deliver 250 gpm each (750 gpm)
Residual pressure of 60 psi

100 psi (static)
- 60 psi (residual)

40% drop

No more 250 gpm lines available
Total Flow left is less than 250 gpm
Motor Pump Operator – Module 4: Hydraulics

2-1/2" Line
NP = 
FL = 
EL = 
AL = 
LP = 

Line 1
NP = 
FL = 
EL = 
AL = 
LP = 

Line 2
NP = 
FL = 
EL = 
AL = 
LP = 

Both Lines 150' of 1-3/4" Hose
150 gpm Comb Nozzles

200' of 2-1/2" Hose

Total Flow?

What pressure is the pump run at?

3" Line
NP = 
FL = 
EL = 
AL = 
LP = 

2-1/2" Line
NP = 
FL = 
EL = 
AL = 
LP = 

400' of 3" Hose
Reducer

200' of 2-1/2" Hose

1" SS

Total Flow?

What pressure is the pump run at?
Motor Pump Operator – Module 4: Hydraulics

What pressure is the pump run at?

What size is the SS tip?

What is the Total Flow?

What is the pump pressure?

What is the pressure at the gated wye?

How many more lines are available?

How much flow is available?
Motor Pump Operator – Module 4: Hydraulics

Pump is a two stage 1250 gpm

20' of 6" Hard Suction Hose

With an 8' Lift

300' – 3"

Line 1

500' – 2-1/2"

Line 2

500' – 2-1/2"

Line 3

200' – 2"

Line 4

200' – 2"

Line 5

150' – 2-1/2"

Line 6

200' – 2"

Line 1 Pressure

NP = FL = EL = AL =

Line 2 Pressure

NP = FL = EL = AL =

Line 3 Pressure

NP = FL = EL = AL =

Line 4 Pressure

NP = FL = EL = AL =

Line 5 Pressure

NP = FL = EL = AL =

Line 6 Pressure

NP = FL = EL = AL =

Line 1 Pressure

Auto

250 gpm

What stage should this pump be in?

What is the flow in 3" hose?

What is the friction loss per 100’?

What is the total flow?

What size is the 2" Solid Stream?

Is this a practical hose layout?

Why?
Motor Pump Operator – Module 4: Hydraulics

**WYED LINES**

![Diagram of a fire engine with Wimbledon connection showing hoses and pressure points]

<table>
<thead>
<tr>
<th>LINE 1 (1-3/4&quot;)</th>
<th>LINE 2 (1-1/2&quot;)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 psi</td>
<td>50 psi</td>
</tr>
<tr>
<td>60 psi</td>
<td>100 psi</td>
</tr>
<tr>
<td>0 psi</td>
<td>0 psi</td>
</tr>
<tr>
<td>0 psi</td>
<td>0 psi</td>
</tr>
<tr>
<td>110 psi</td>
<td>150 psi</td>
</tr>
</tbody>
</table>

Pressure = 150 psi (Pressure at the wye)  
FL = 55 psi (Total Flow in 3" 3x3 = 9 9x6=54  round up to 55)  
AL = 5 psi  
EL = 0 psi  
210 psi = Discharge Pressure  

Line 1 is gated back to 100 psi at the wye

The hydrant pressure static is 100 psi. The residual pressure is 90 psi.

What is the % of drop?

What is the remaining flow available?

What size straight stream tip would be on the 1-1/2" line?

What size straight stream tip would be on the 1-3/4" line?
Motor Pump Operator – Module 4: Hydraulics

2 Stage 1500 GPM Pumper

Static Pressure 200 psi

550' of 3'' Hose

Residual Pressure is 20 psi

What is the remaining flow? __________

What is the % of drop? __________

What is the flow from the 1-1/4'' solid stream? _________

Both Lines are 200' of 2-1/2''

1-1/4'' SS

Line 1 1500 gpm Single Stage

300' of 3'' Hose

Line 2

What stage should this pump be in? Pressure or Volume? __________

NO ELEVATION LOSS OR GAIN

What is the Total Flow? __________

What is the Friction Loss between E-1 and E-2? __________

What is E-2 discharge pressure? __________

What would the pressure be at E-1 if both of E-2's lines are shut down? __________

What is the Friction Loss is 3'' hose between the hydrant and E-1? __________
Ending each segment should include the:

Application Step:
Students will be given the opportunity to meet all objectives during field evolutions

Testing:
Present questions to cover objectives

Notes: