As an employee of the Poor Boy Oil Company you are in charge of the Savejob field. This field consists of 4 wells, 3 oil and one gas, with the following data.

Savejob #2 is located 2640' FNL and 660 FWL of section 16-15S-36E in Lea County, NM. Depth 9550 ft, 2 3/8” tubing set at 9425 ft with perforations from 9450-9460 ft. The well produces 125 BOPD of 35 API oil with a GOR of 1000 ft³/bbl and a 0 bpd water. The latest production test showed a J of .9 bbl/day, with a ave reservoir pressure of 3400 psi. The gas has a gravity of .63 and a bubble point of 2500 psi.

Savejob #1 is located 660’ FNL and 1980’ FWL of section 16. Depth of 10,100’ with perforations at 9925 – 9950’ with 2 7/8” tubing set at 9900’. The well was tested at a rate of 75 BOPD of 36 API oil and 25 BWPD water, with a BHP of 3170 psi. The well is needed to be produced at a rate of 150 BOPD, it has a GLR of 1100 ft³/bbl. Same bubble and gas gravity as the #2. BHT is 125 for both wells.

Savejob #3 is located 660’ FSL and 1980’ FWL of section 16. Depth of 5000’ with perforations at 4490-4810’ with 2 7/8” tubing set at 4450’. The average reservoir pressure recorded at 1010 psi, the well producing at a rate of 50 BOPD and 100 BWPD with a GOR of 1600 ft³/bbl, with a gravity of 28. The productivity index of 1.5 BOPD/psi.

Savejob Gas Com #1 is located 1980’ FNL & FEL of section 16. Depth of 12,100’ with perforation at 11,780 – 11,810, the tubing is set at 11,722’ and is 2 7/8”, N80. With a BHP of 4215 psi the well has a rate of 5,125 mscf/pd. The slope of the CAOF test is 1.01. The reservoir pressure is 6999 psi.

There are wells to the west which produce 500 BOPD with 150 BWPD and half of million cubic feet of gas.
The tank battery for the oil wells is 4680' due east of the Savejob #2. There is no separation equipment at the oil wells.

The #1, #2, #3 wells will be tied together, and the other well will be tied into this line, then the total will piped to the thank battery. If the input pressure of the equipment at the battery is 50 psi what is the best configuration of the flowlines that will all the most wells flow. You the option of 2 or 3 inch pipe for these flowlines. What would be the best economical solution if the 3” pipe costs 50% more to lay.

The gas well has to deliver 3.0 mmscfpd to a sales line that 4.27 miles distant. That line has a pressure of 600 psi. Will a compressor be necessary, what would be the best size for the flowline.

Using the H&B method calculate the pressure drop in well #1 for the flow given. Use the software to get the PVT at this pressure.