Assignment 4.

Q2 Texxon Oil:

The Variables for this problem are:

X1A: From Well 1 to Pump A
X1B: From Well 1 to Pump B
X1C: From Well 1 to Pump C
X2A: From Well 2 to Pump A
X2B: From Well 2 to Pump B
X2C: From Well 2 to Pump C
X3A: From Well 3 to Pump A
X3B: From Well 3 to Pump B
X3C: From Well 3 to Pump C

XA4: From Pump A to Refinery 1
XA5: From Pump A to Refinery 2
XA6: From Pump A to Refinery 3
XA7: From Pump A to Refinery 4
XA8: From Pump A to Refinery 5
XA9: From Pump A to Refinery 6 (DUMMY)

XB4: From Pump B to Refinery 1
XB5: From Pump B to Refinery 2
XB6: From Pump B to Refinery 3
XB7: From Pump B to Refinery 4
XB8: From Pump B to Refinery 5
XB9: From Pump B to Refinery 6 (DUMMY)

XC4: From Pump C to Refinery 1
XC5: From Pump C to Refinery 2
XC6: From Pump C to Refinery 3
XC7: From Pump C to Refinery 4
XC8: From Pump C to Refinery 5
XC9: From Pump C to Refinery 6 (DUMMY)

Minimum
1.52X1A + 1.6X1B + 1.4X1C + 1.70X2A + 1.63X2B + 1.55X2C + 1.45X3A + 1.57X3B + 1.3X3C + 5.15XA4 + 5.69XA5 + 6.13XA6 + 5.63XA7 + 5.8XA8 + 5.12XB4 + 5.47XB5 + 6.05XB6 + 6.12XB7 + 5.71XB8 + 5.32XC4 + 6.16XC5 + 6.25XC6 + 6.17XC7 + 5.87XC8 + 0XA9 + 0XB9 + 0XC9

Given That, Total Supply of Oil per well -> 93 + 88 + 95 = 276 thousand / Barrel

Demand Total -> 30 + 57 + 48 + 91 + 48 = 274 thousand / Barrel

We see that the Supply > demand, we will create a dummy variable to balance out the supply demand constrains, dummy variables are created to refinery.

The objective function Minimum cost is = 1943.22 $, Well 1 and 3 are used in full capacity.

Network Diagram: