Figure shows a tank of oil with one side open to the atmosphere and the other side sealed with air above the oil. The oil has a specific gravity of 0.90. Calculate the gage pressure at points A, B, C, D, E, and F and the air pressure in the right side of the tank.

$$p_A = 0 \text{ Pa } gage$$

$$p_B = p_A + \gamma_{Oil} \times 3.0 = p_A + SG_{Oil}\gamma_{Water} \times 3.0 = 0 + 0.9 \times 9{,}810 \times 3.0 = 26{,}487 \text{ Pa} \approx 26.5 \text{ kPa } gage$$

$$p_C = p_A + \gamma_{Oil} \times 6.0 = p_A + SG_{Oil}\gamma_{Water} \times 6.0 = 0 + 0.9 \times 9{,}810 \times 6.0 = 52{,}974 \text{ Pa} \approx 53.0 \text{ kPa } gage$$

$$p_D = p_B = 26.5 \text{ kPa } gage$$

$$p_E = p_A = 0 \text{ Pa } gage$$

$$p_F = p_A - SG_{Oil}\gamma_{Water} \times 1.5 = 0 - 0.9 \times 9{,}810 \times 1.5 = -13{,}244 \text{ Pa } gage = -13.2 \text{ kPa } gage = 13.2 \text{ kPa } vacuum$$