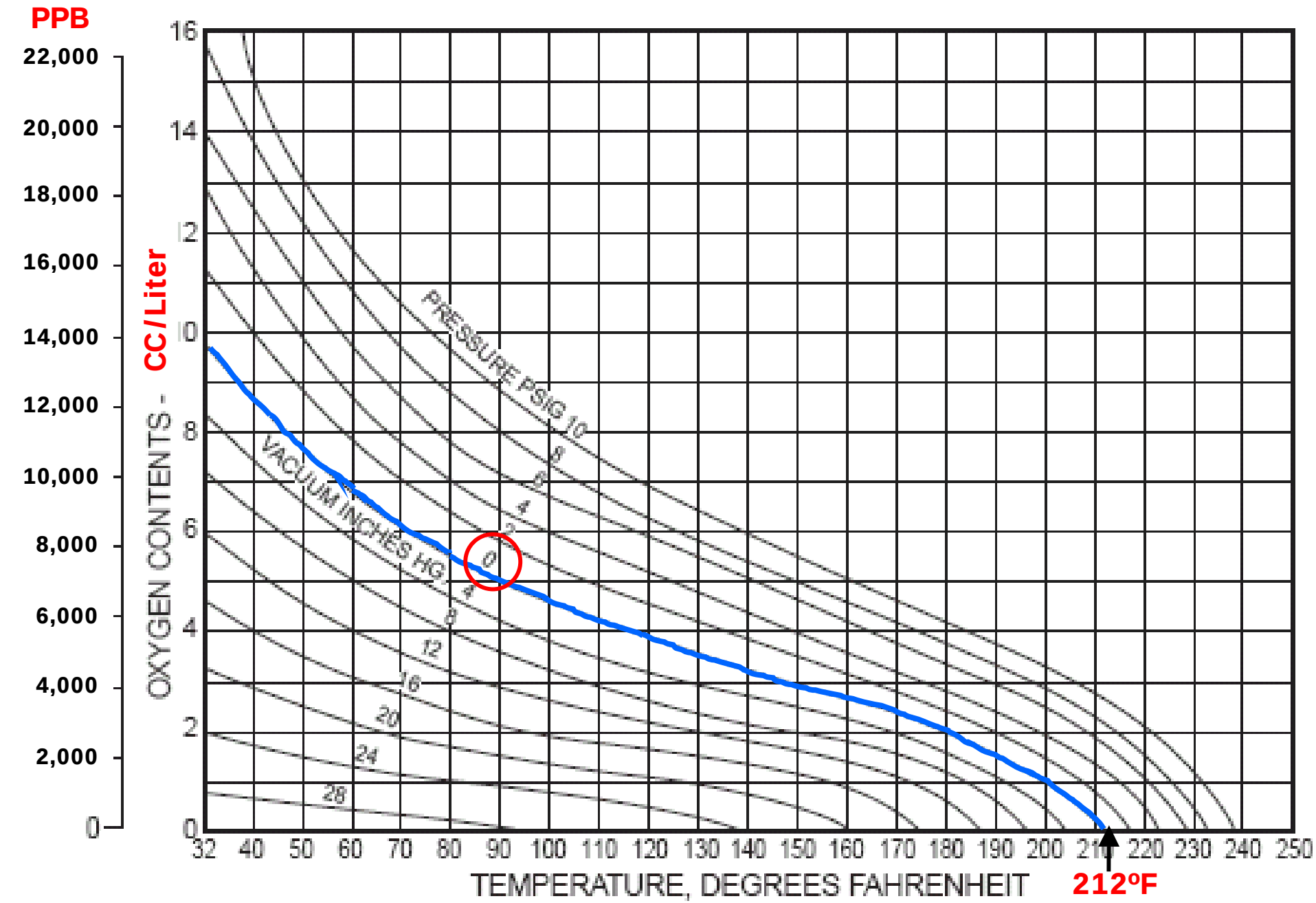
Oxygen Solubility

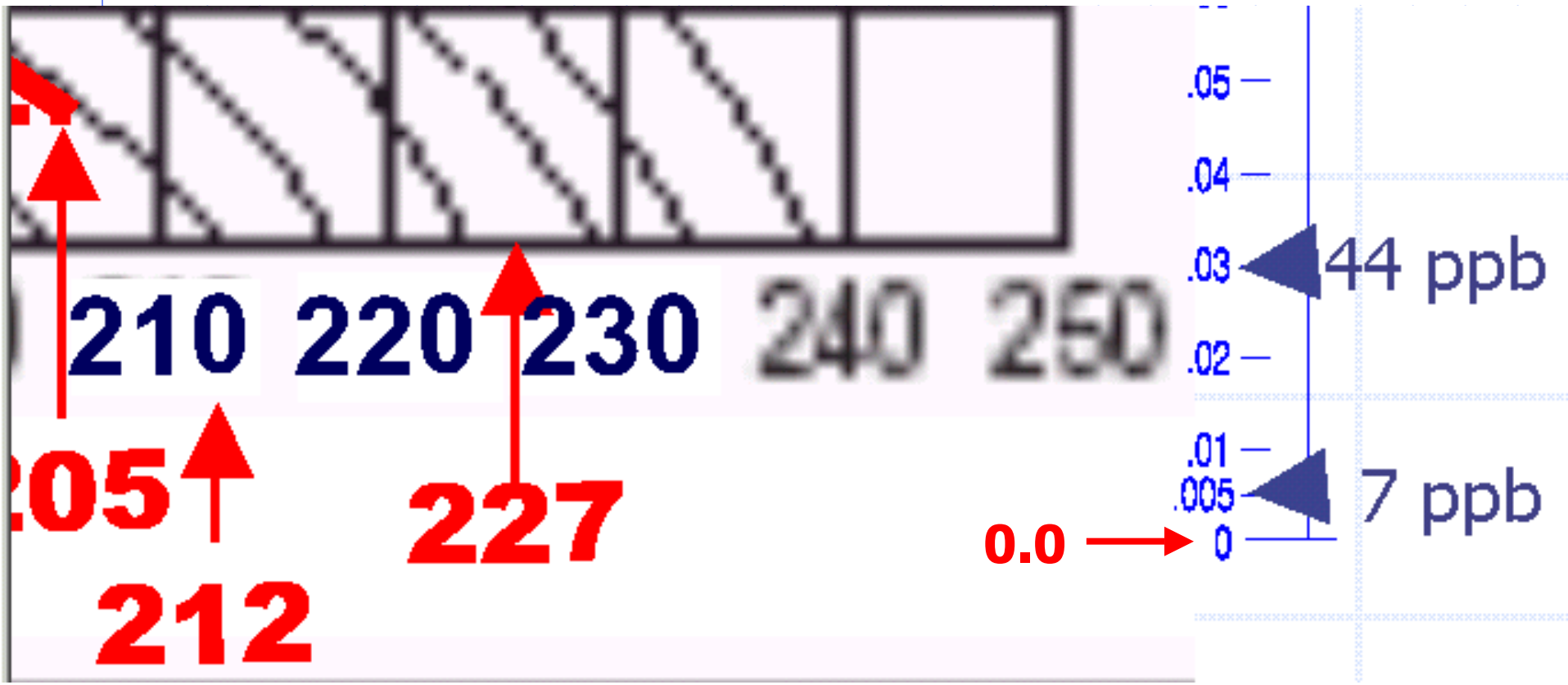
Oxygen Solubility Chart



Parts Per Billion Scale

44 ppb equates to .03 cubic centimeters of oxygen per liter of make up water

7 ppb equates to .005 cubic centimeters of oxygen per liter of make up water



Henry's Law

- **Based on Henry's Law** formulated by the English chemist William Henry states that at a given temperature, the solubility of a gas is directly proportional to the pressure of the gas directly above the liquid.

- The quantity of nonpolar gases (such as oxygen) that will dissolve in a given volume of water is strongly affected by temperature and pressure. Henry's Law describes the effect of pressure on the solubility of a gas in a liquid. The law states that the amount of gas that dissolves in a given volume of solvent at a specified temperature is proportional to the partial pressure of the gas above the liquid. When gas under pressure contacts a liquid, the pressure tends to force gas molecules into solution. At a given pressure the number of gas molecules that will enter into solution rises until equilibrium is reached. By definition, at equilibrium, the number of gas molecules entering and leaving the solution is balanced and the concentration of the gas in solution remains constant. If the partial pressure of a gas increases, more gas enters into solution. If partial pressure drops, gas comes out of solution and reaches a new equilibrium. Illustrate this by opening a can or bottle of soda pop.

Le Chatelier’s Principle

- Le Chatelier's principle states that a change in any of the factors determining equilibrium will cause the system to adjust to the changes in order to restore equilibrium.
- Le Chatelier's principle predicts that the solubility of a gas will increase as a system loses heat, and will decrease as it gains heat.