جامعة الملك سعود
King Saud University

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King Saud University
College Of Engineering

Properties of Reservoir Fluids (PGE 362)

Phase Behavior of Liquids

BY
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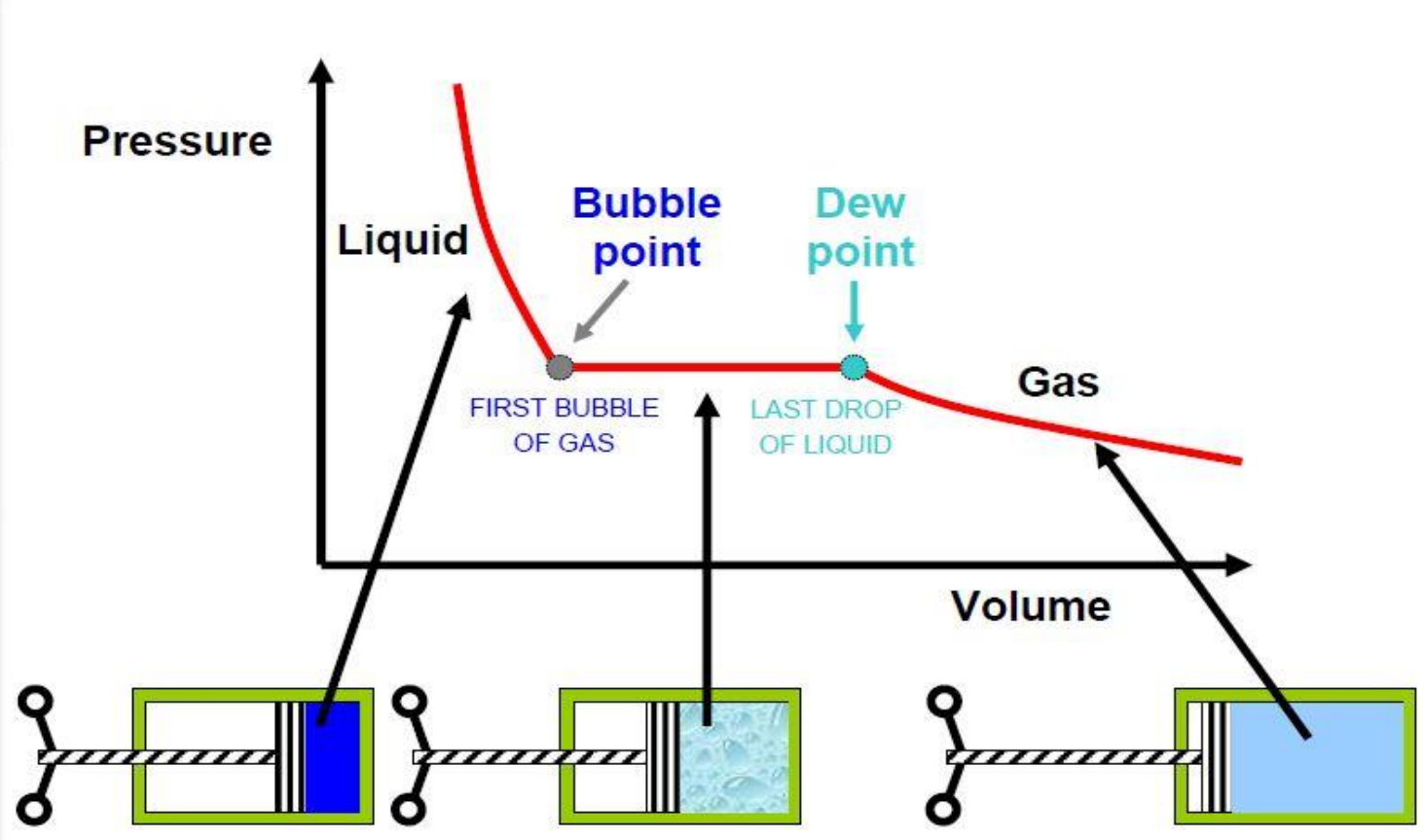
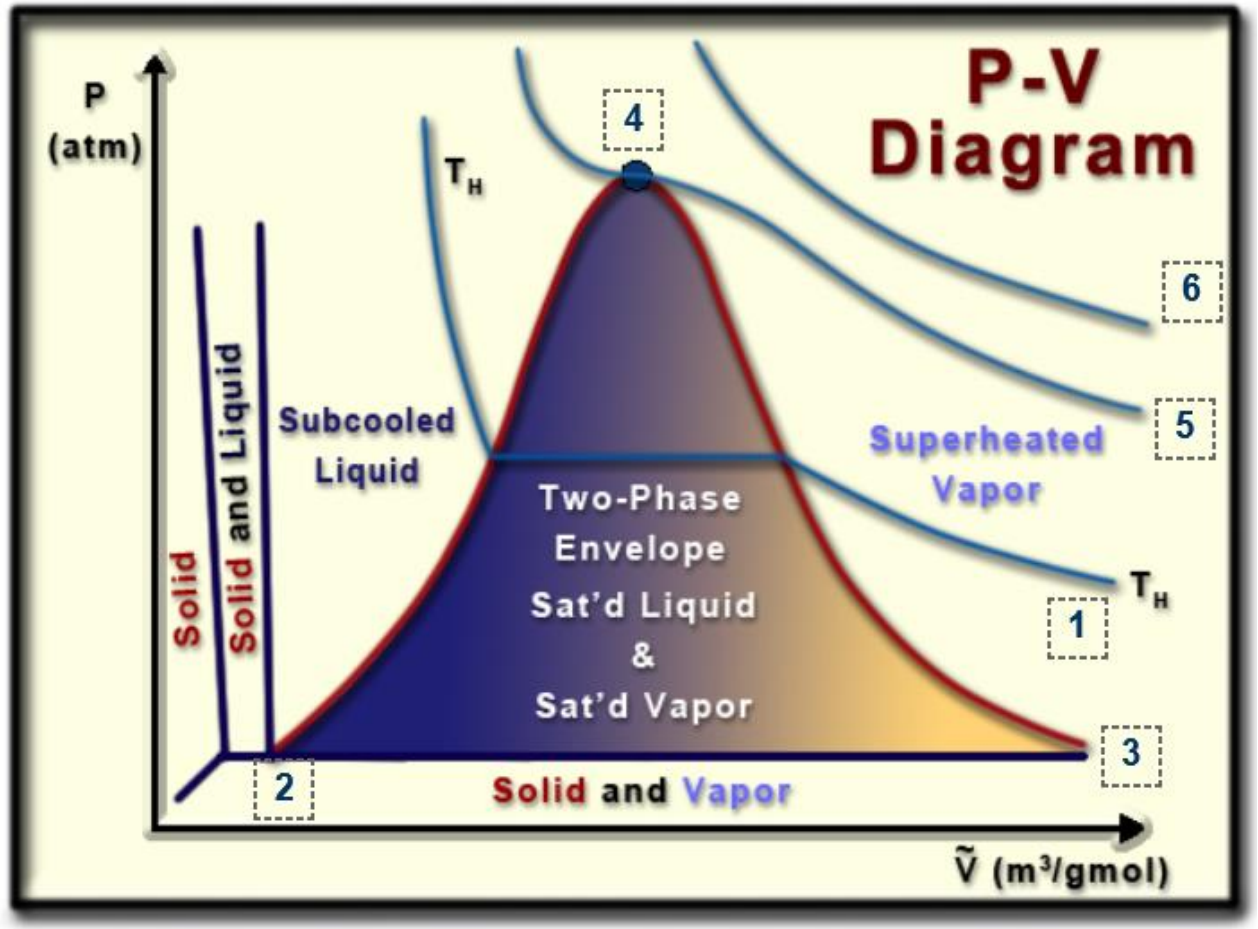
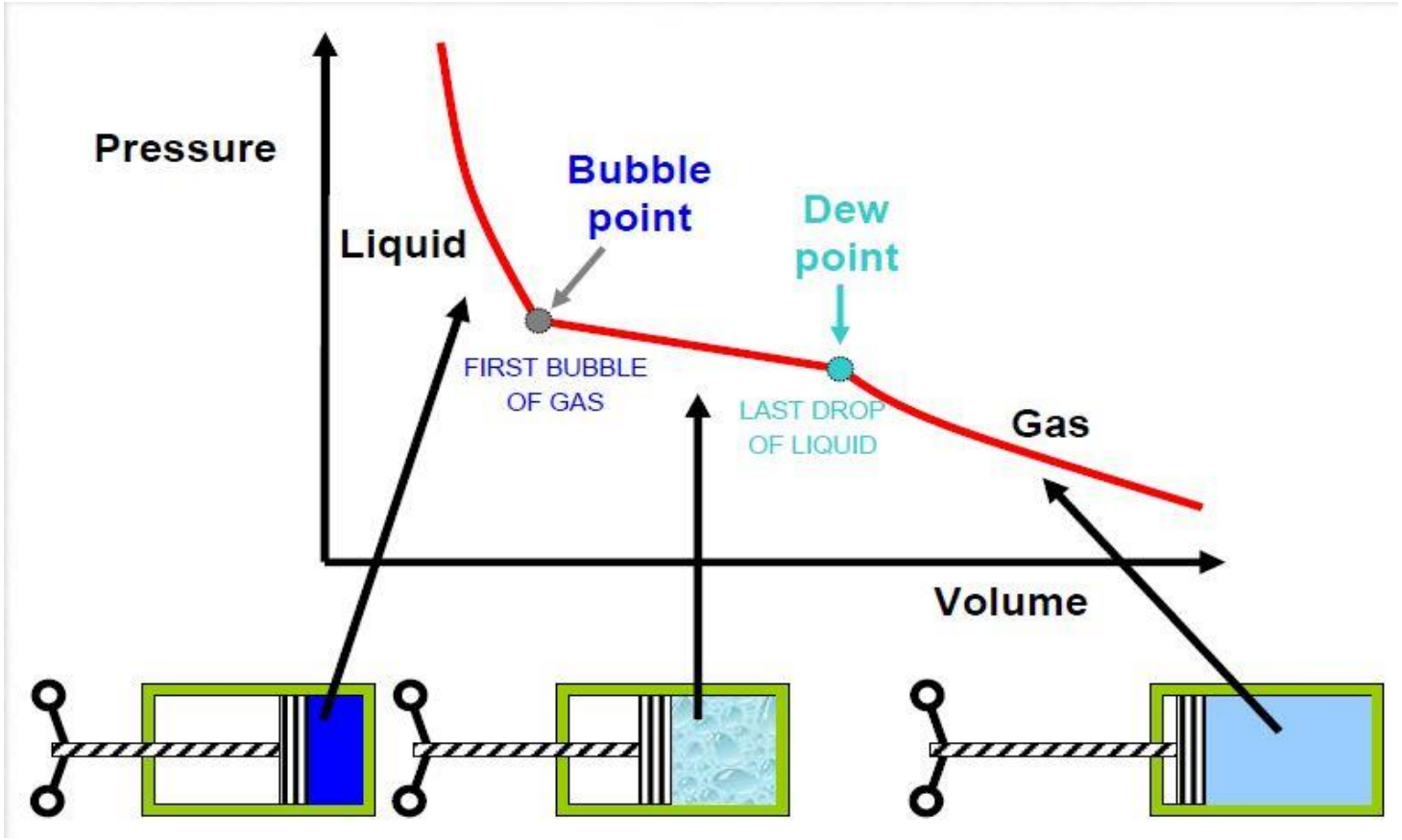
Single Component System



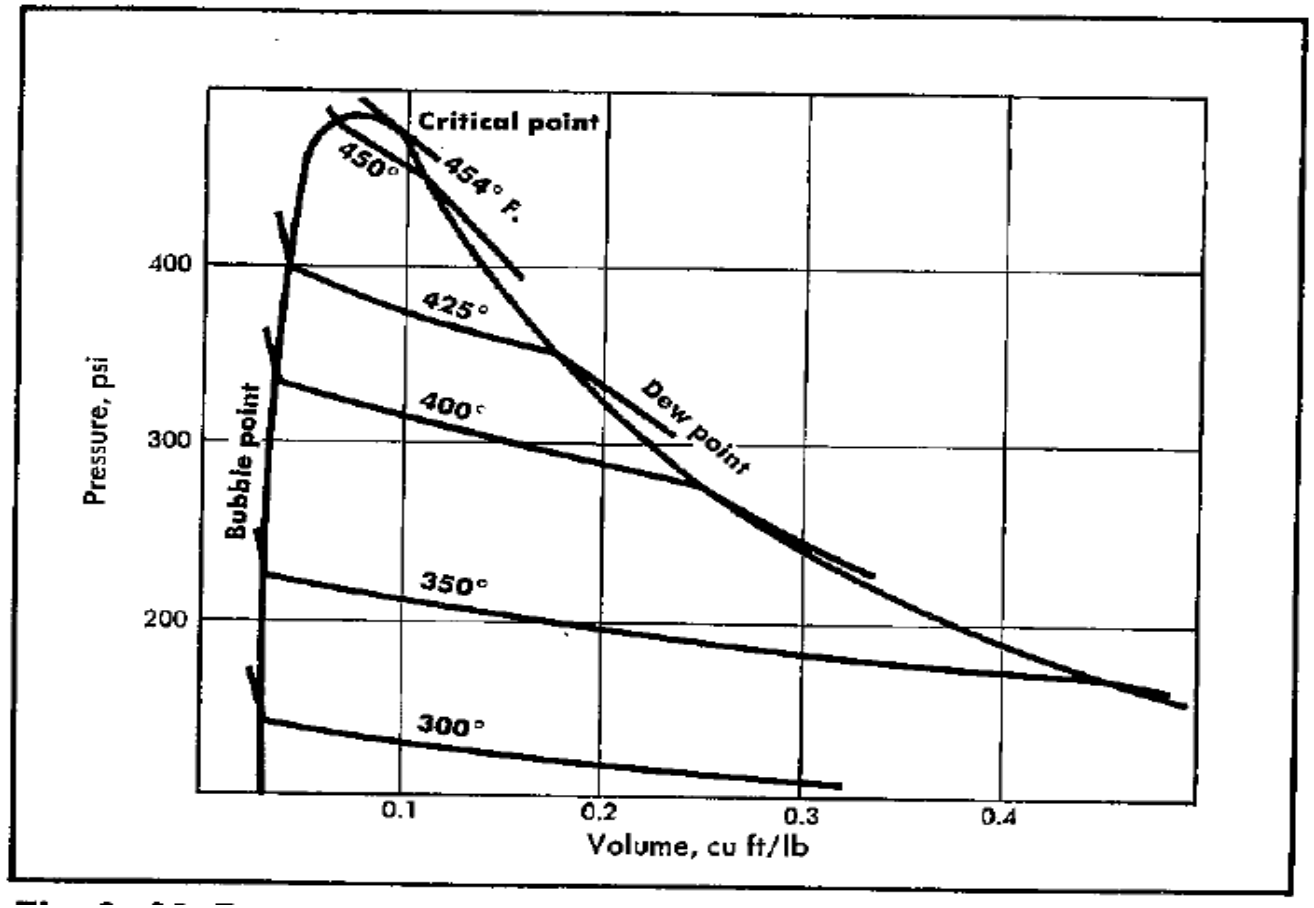
Single Component System



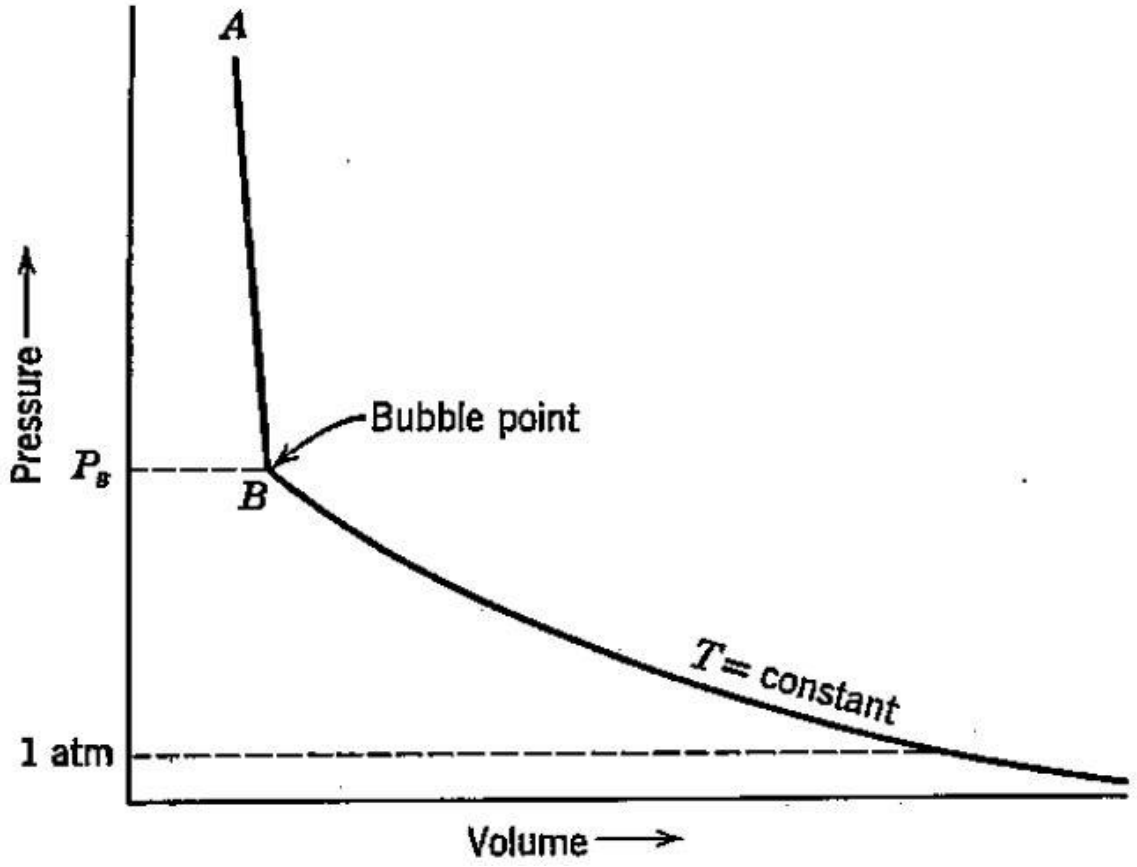
Two Components System



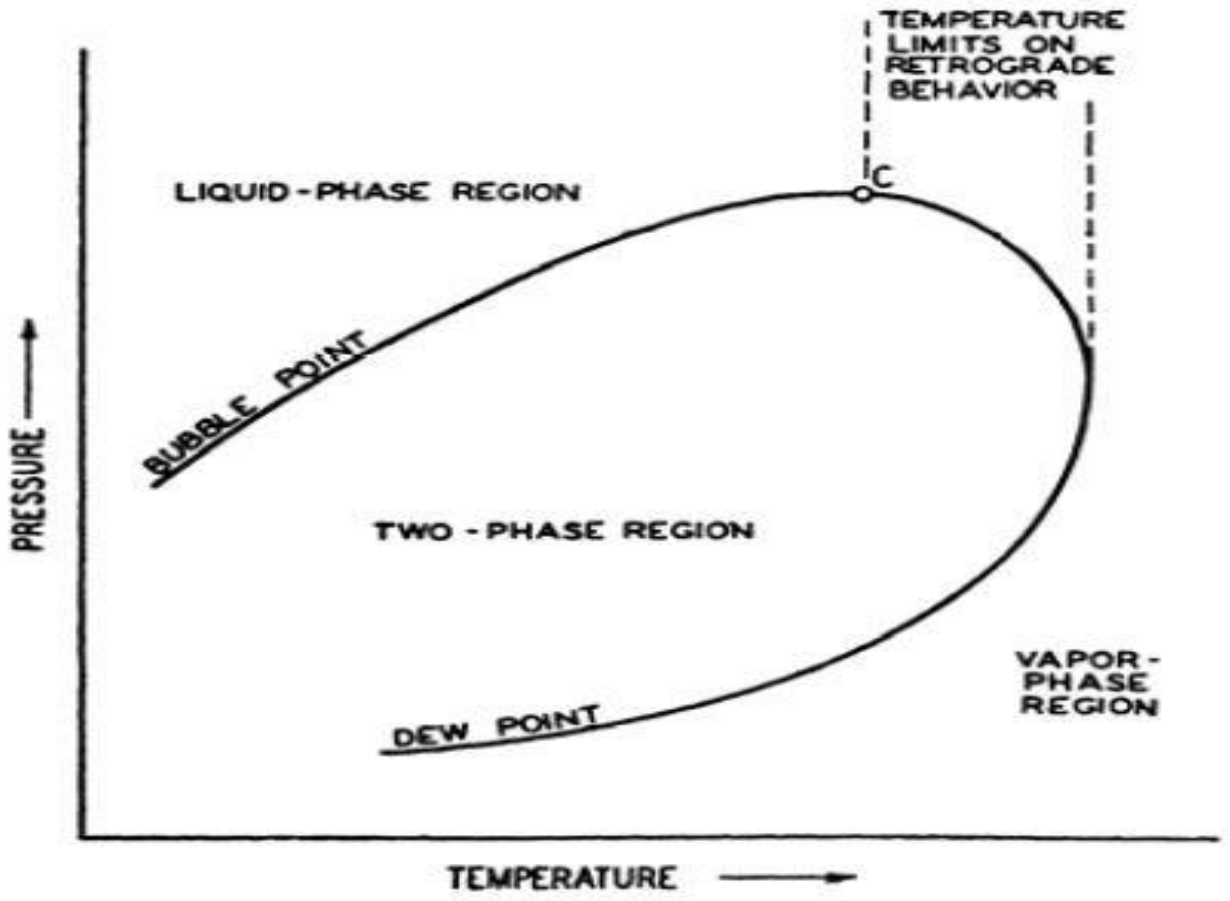
Two Components System



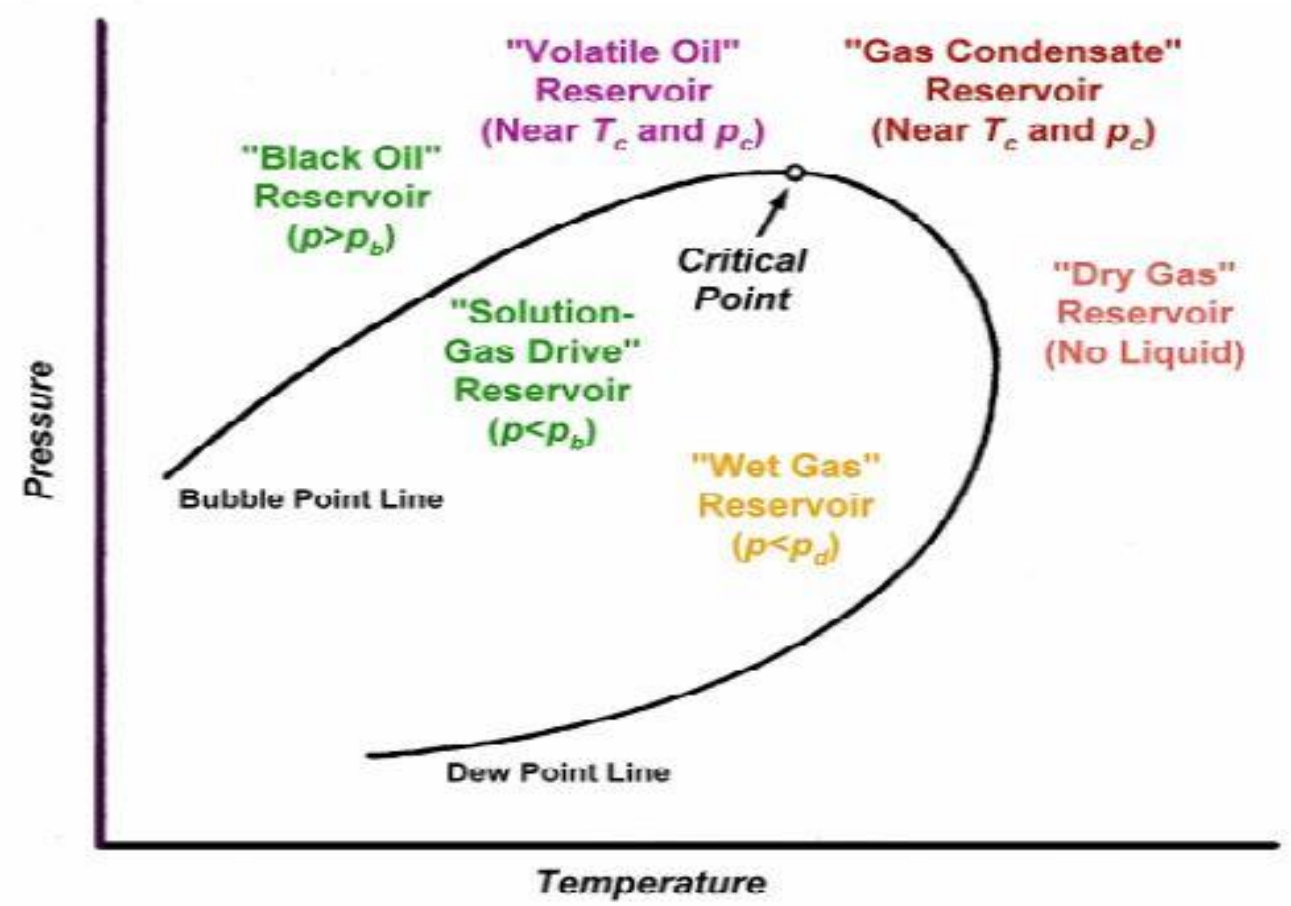
Multicomponent System



Multicomponent System

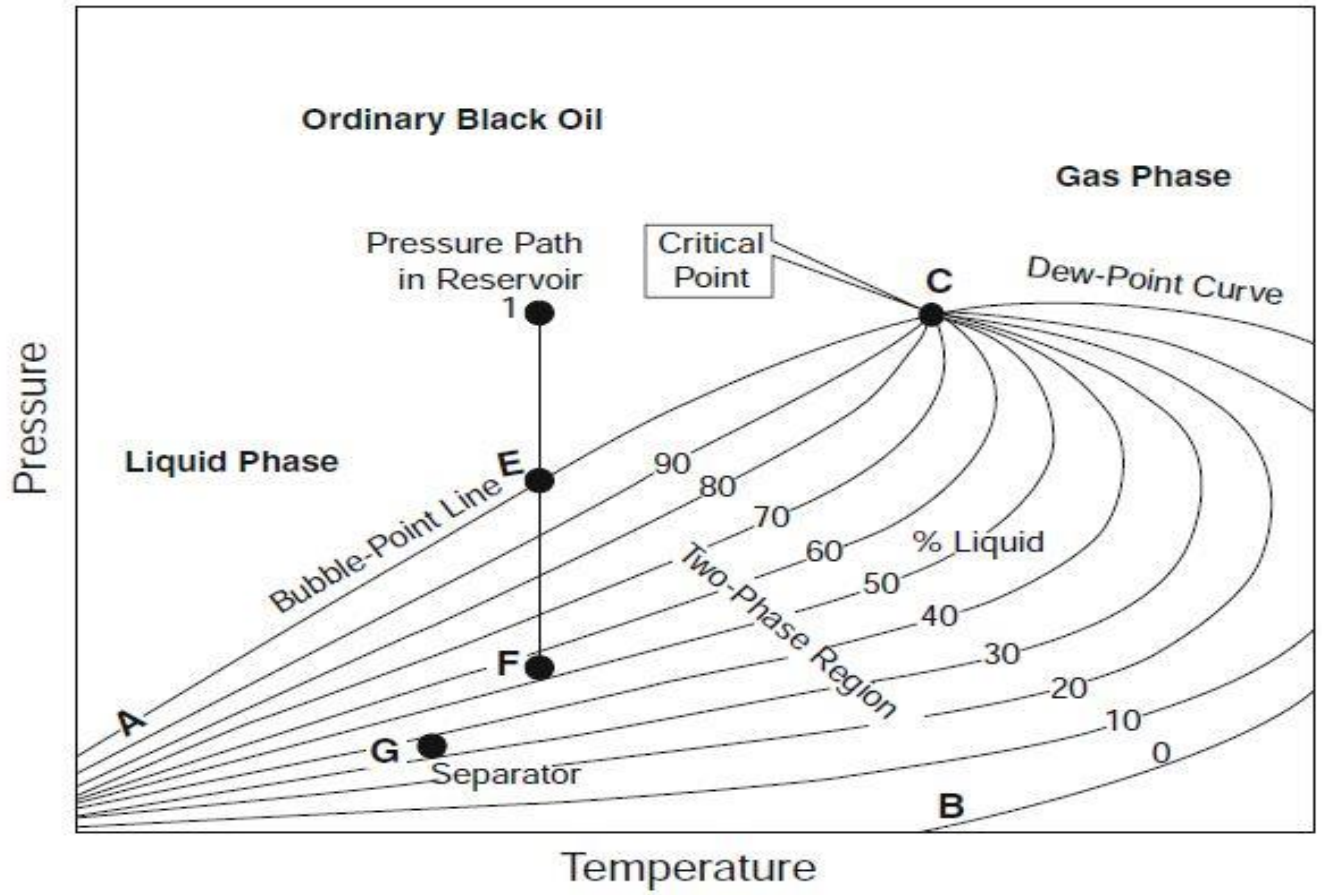


Multicomponent System



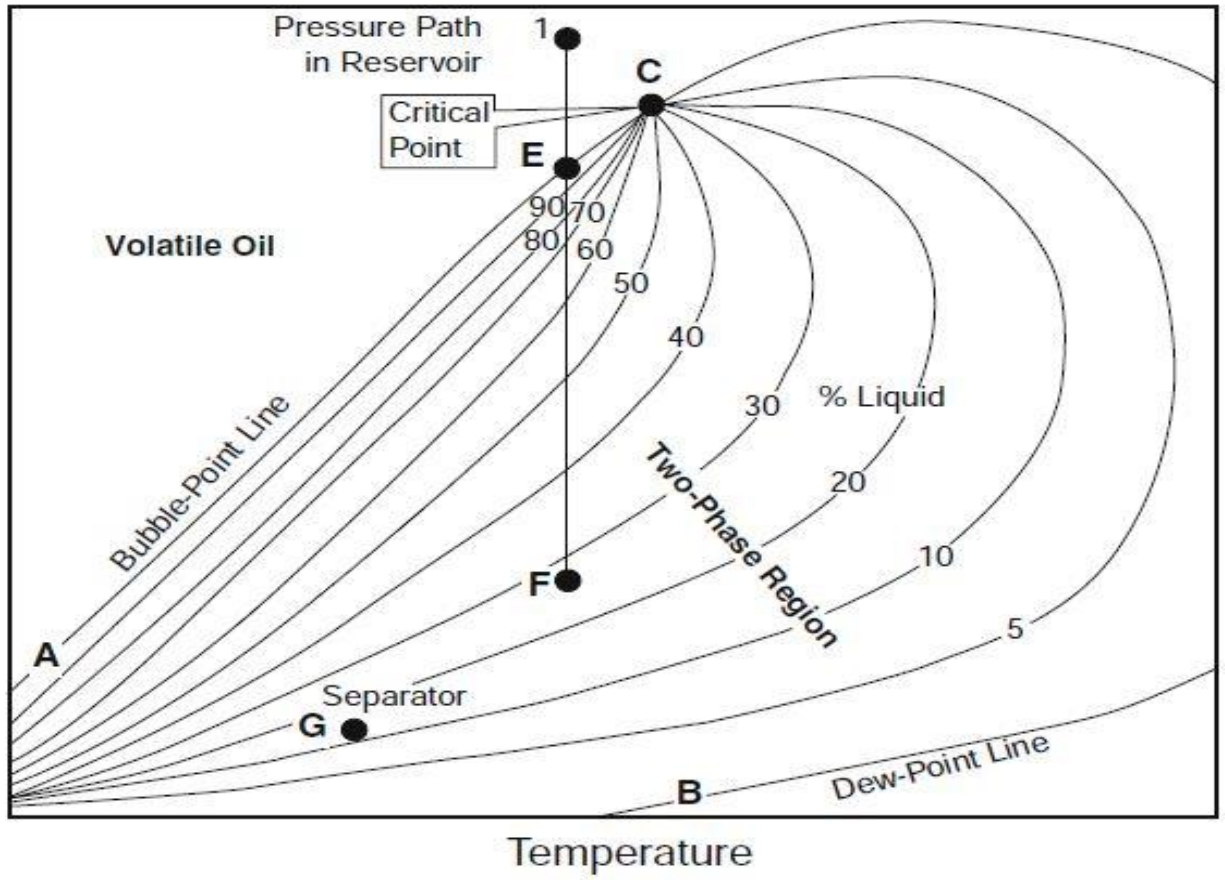
Multicomponent System

Black Oil



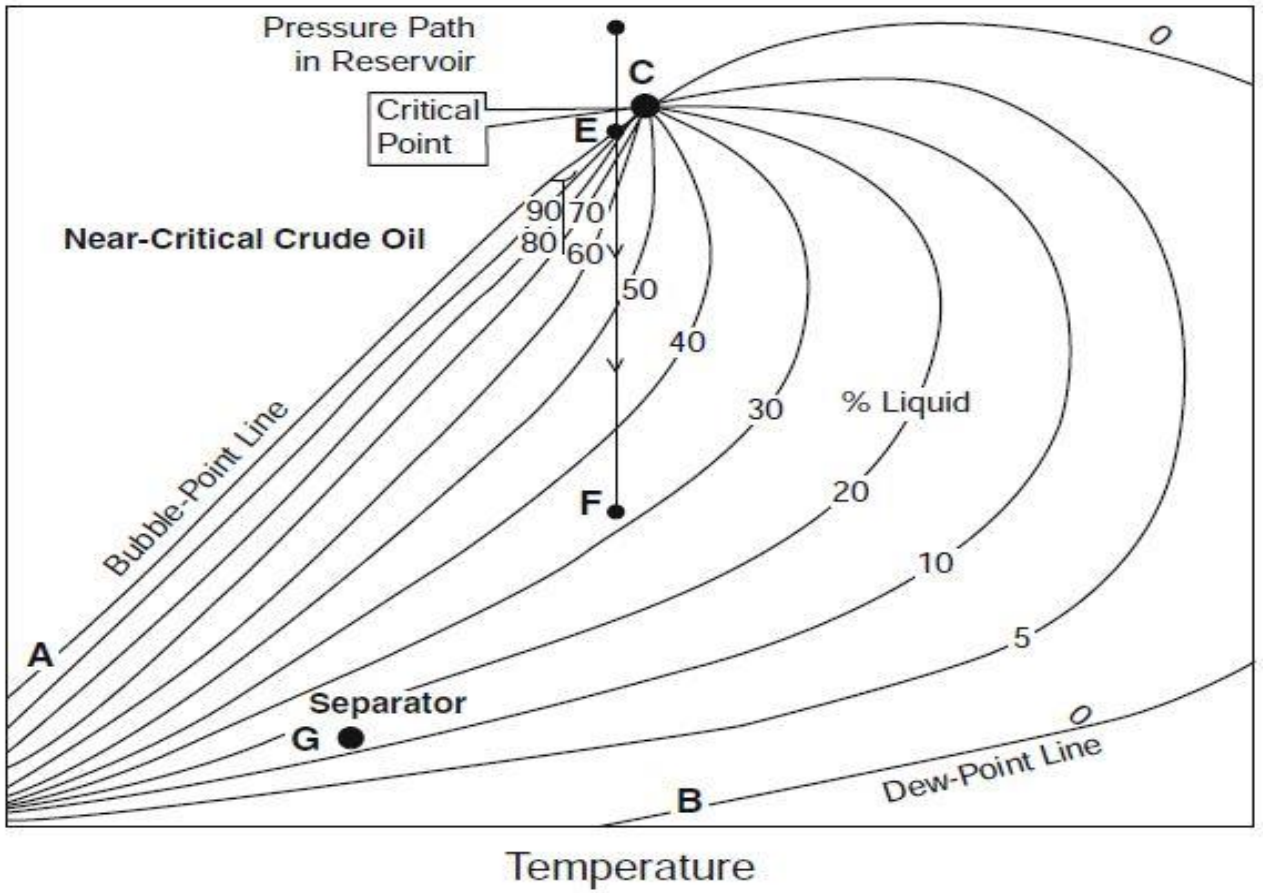
Multicomponent System

Volatile Oil



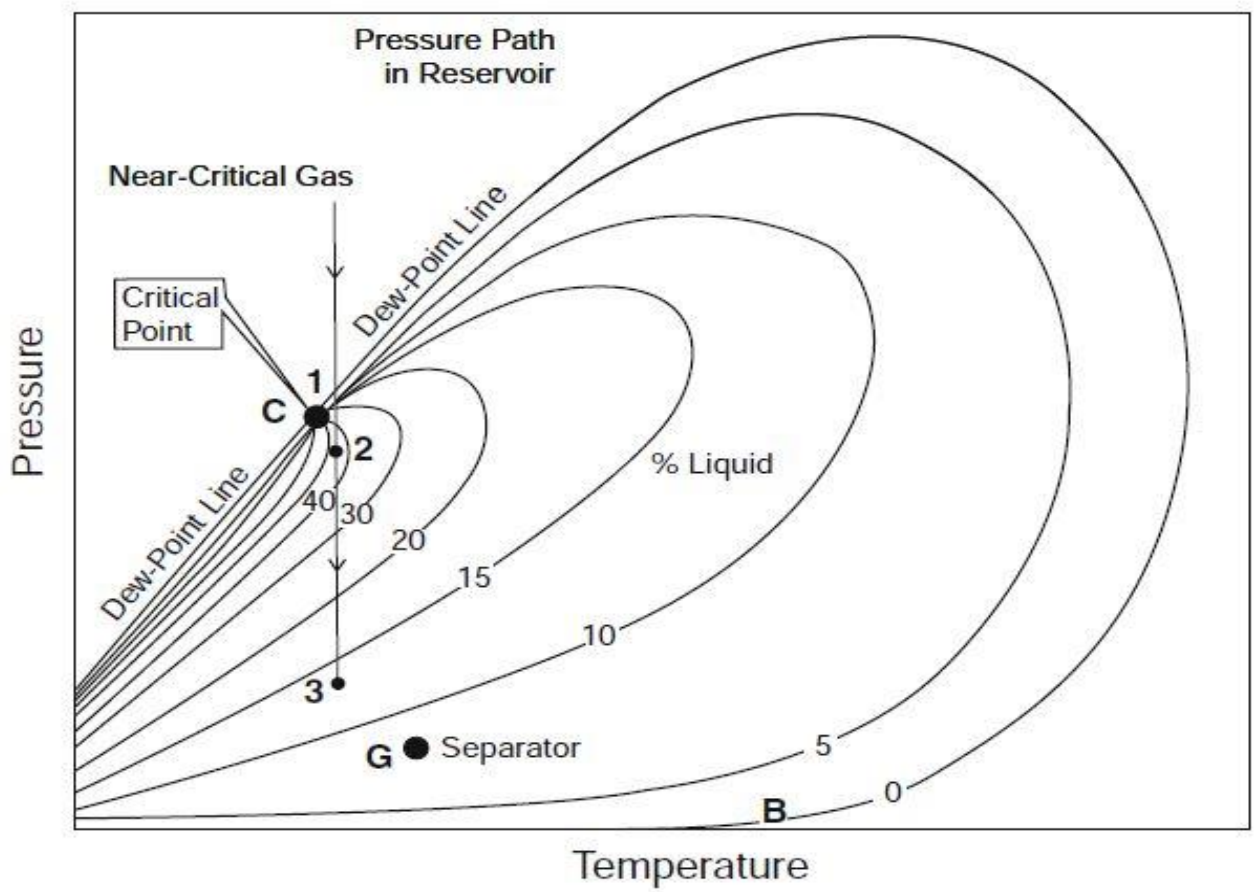
Multicomponent System

Near-Critical Crude Oil



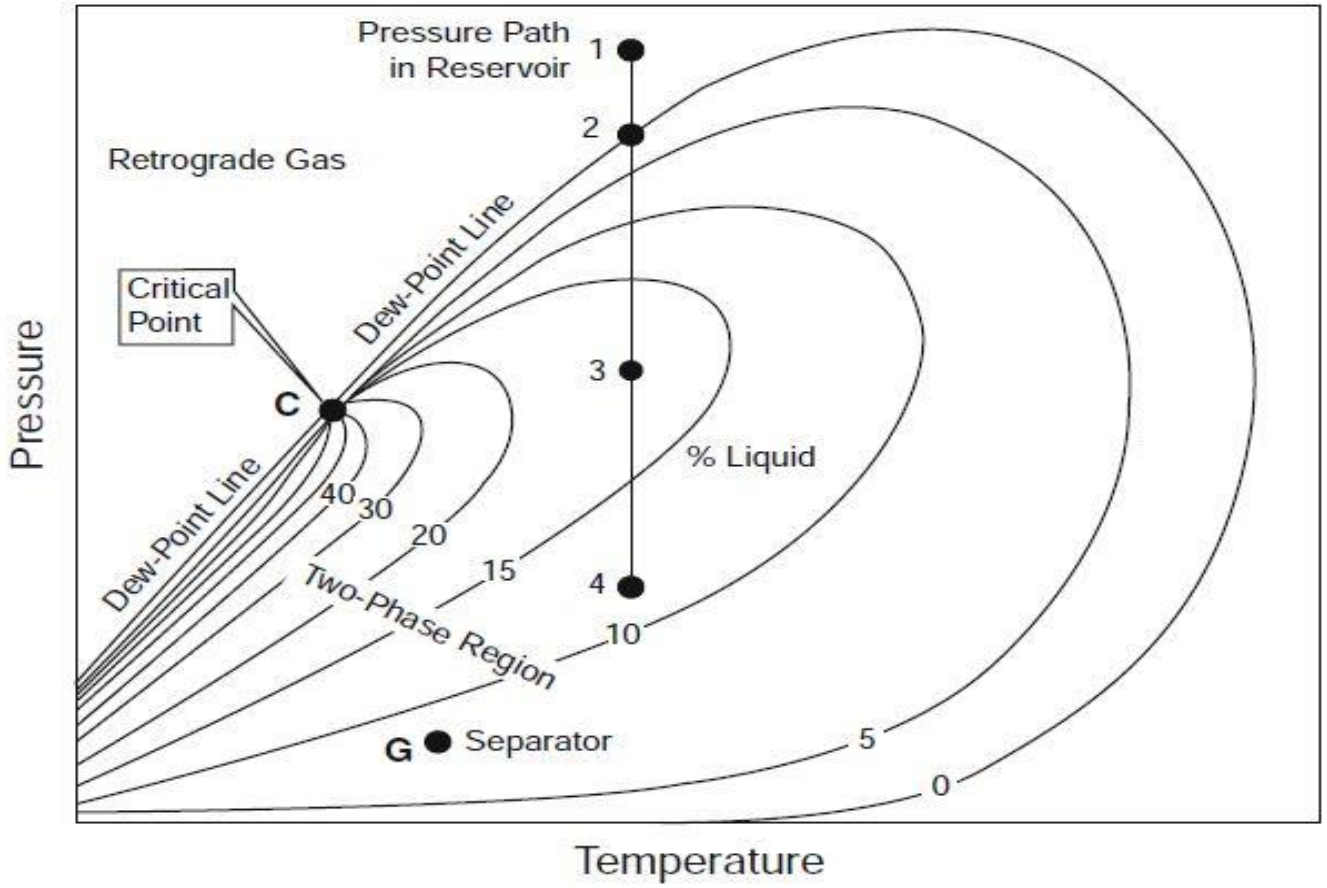
Multicomponent System

Near-Critical Gas



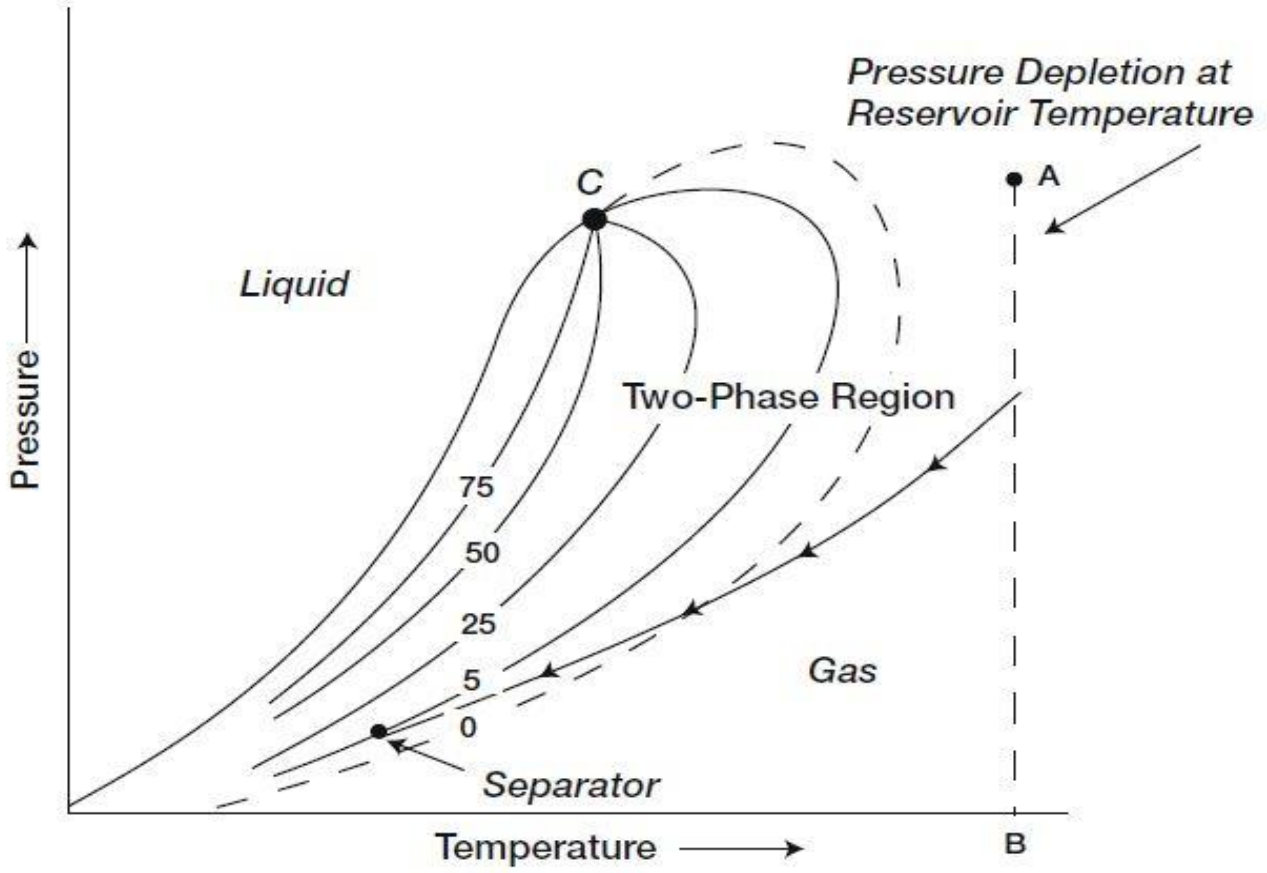
Multicomponent System

Retrograde Gas



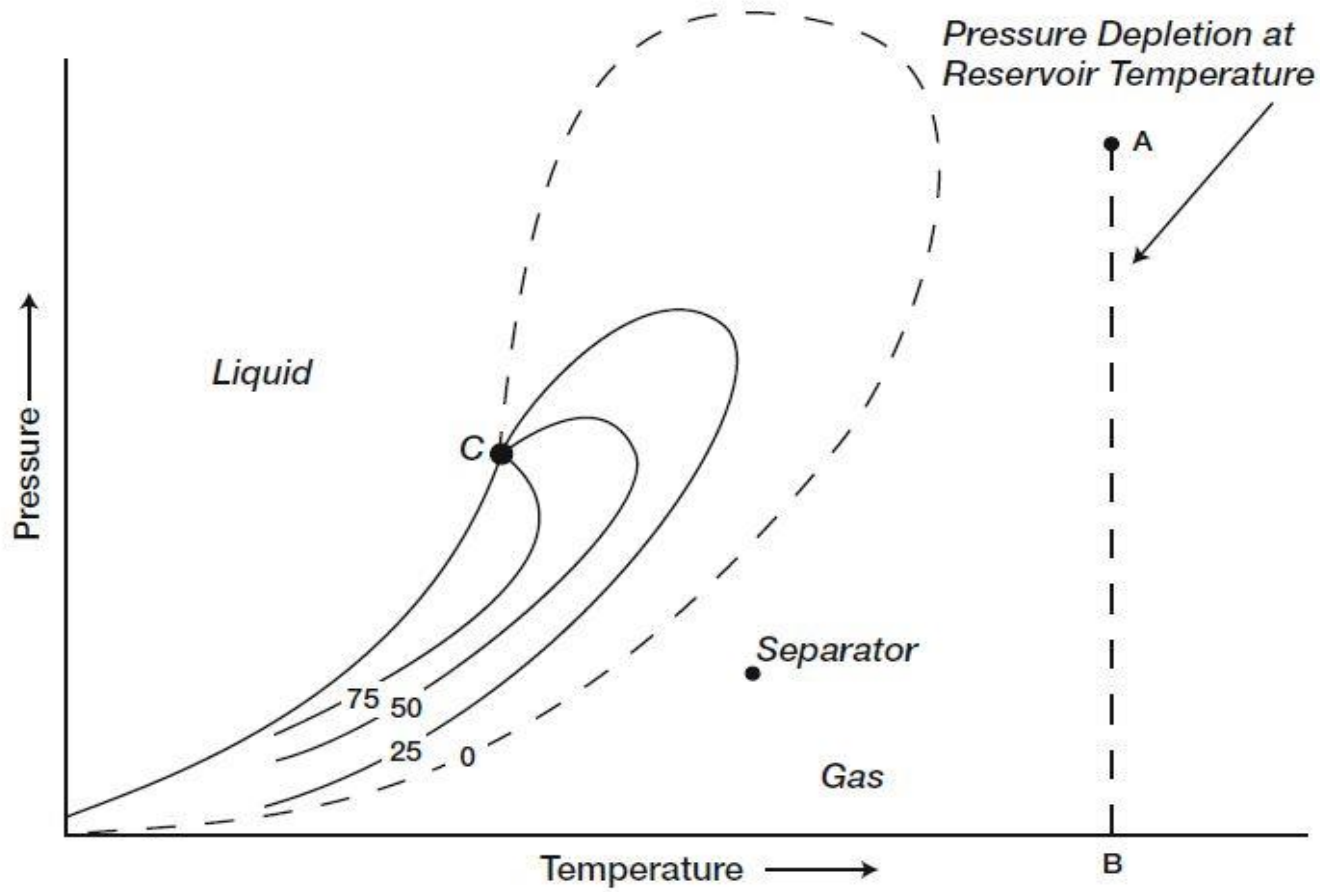
Multicomponent System

Wet Gas



Multicomponent System

Dry Gas



Multicomponent System

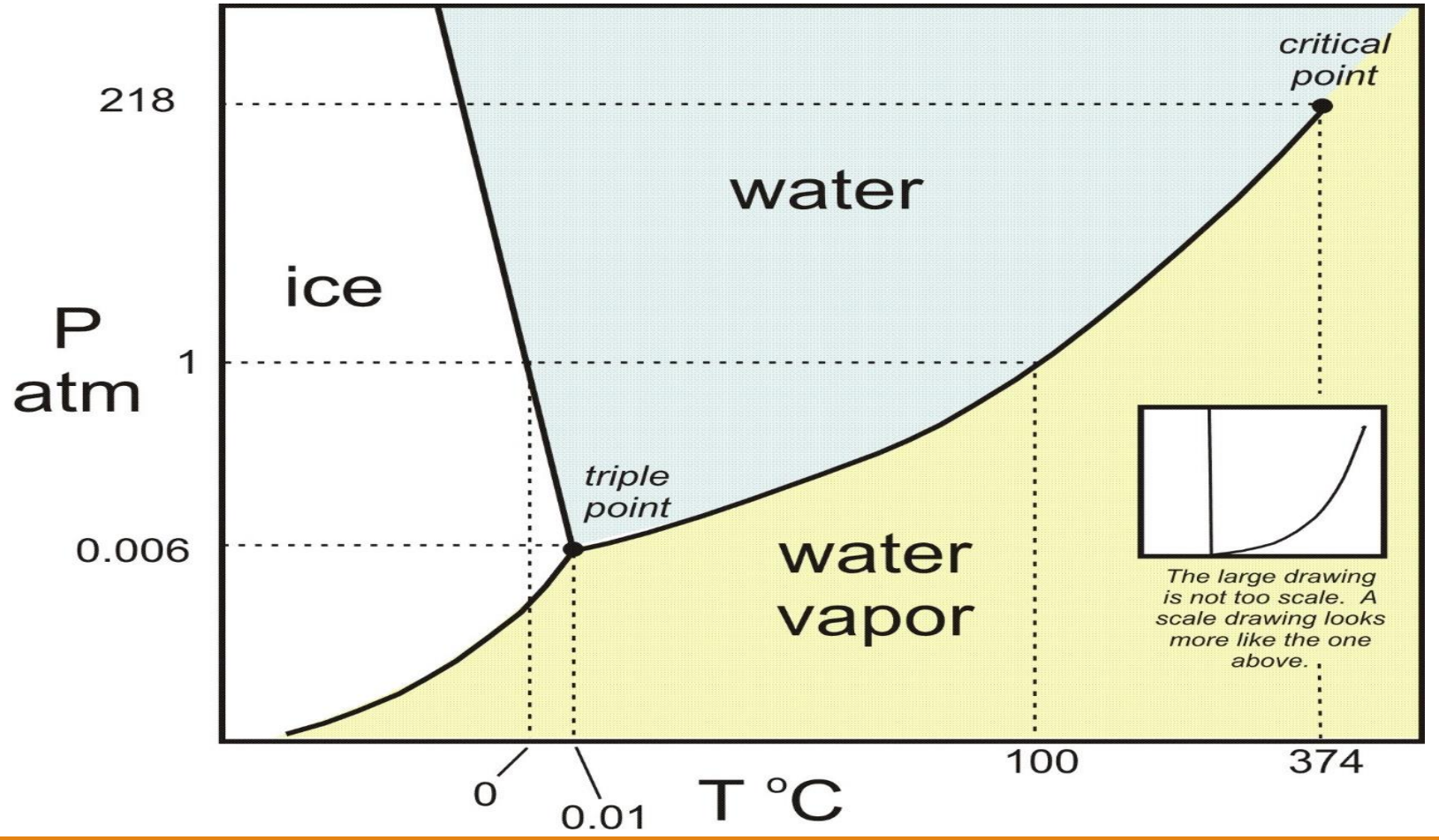
The Gibbs' phase rule:

- The number of phases that can coexist in equilibrium for a system under conditions of (T & P).
- $F = C - P + 2$
- F: the variance or the number of degree of freedom.
- C: the minimum number of components or chemical compounds required to make up the system.
- P: the number of phases that are present when the system is at equilibrium.

Note: The number of degrees of freedom is the number of independent intensive variable, i. e. the largest number of properties such as temperature or pressure that can be varied simultaneously and arbitrarily without affecting one another.

Multicomponent System

The Gibbs' phase rule:



Multicomponent System

The Gibbs' phase rule:

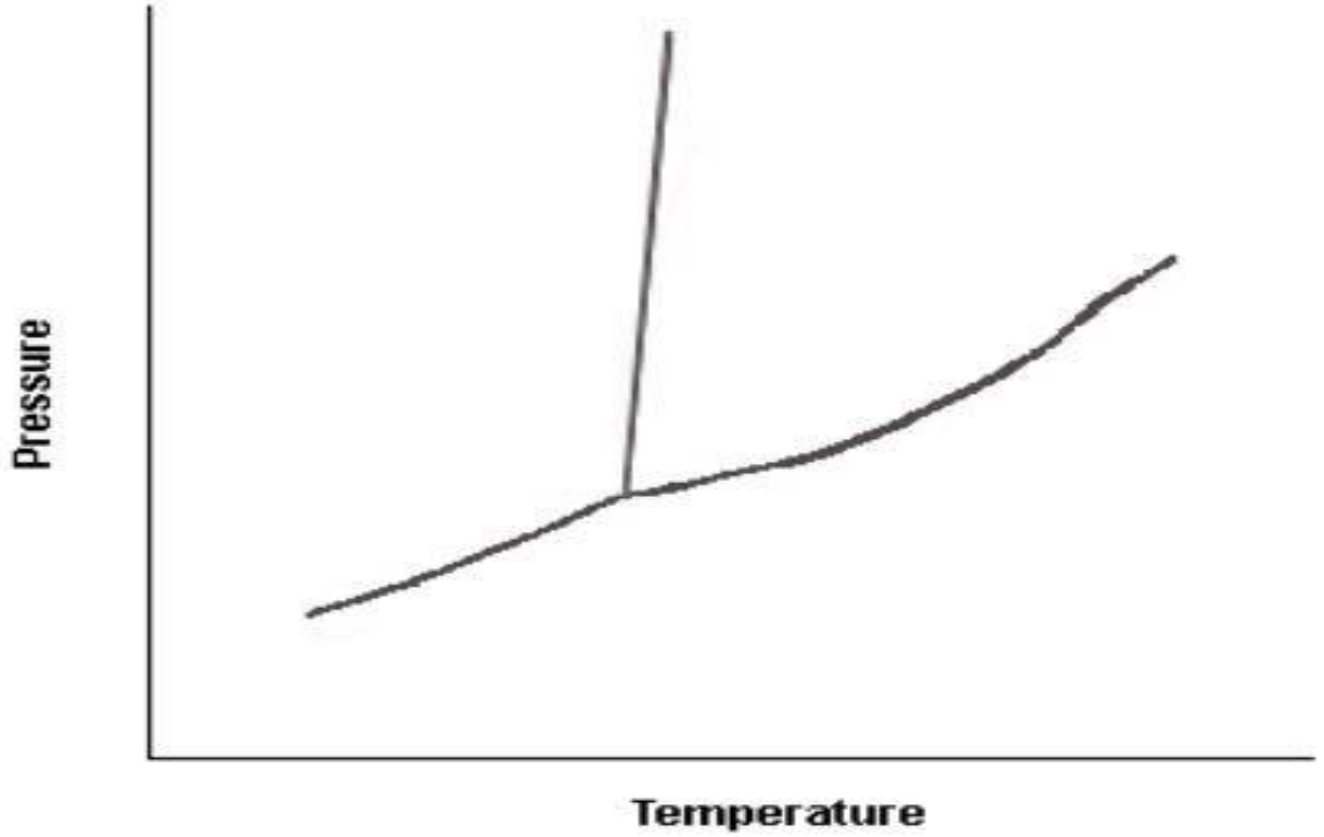
One component

$F = C - P + 2$

$C = 1$

$F = 1 - P + 2$

$F = 3 - P$



Multicomponent System

The Gibbs' phase rule:

One component

$$F = 3 - P$$