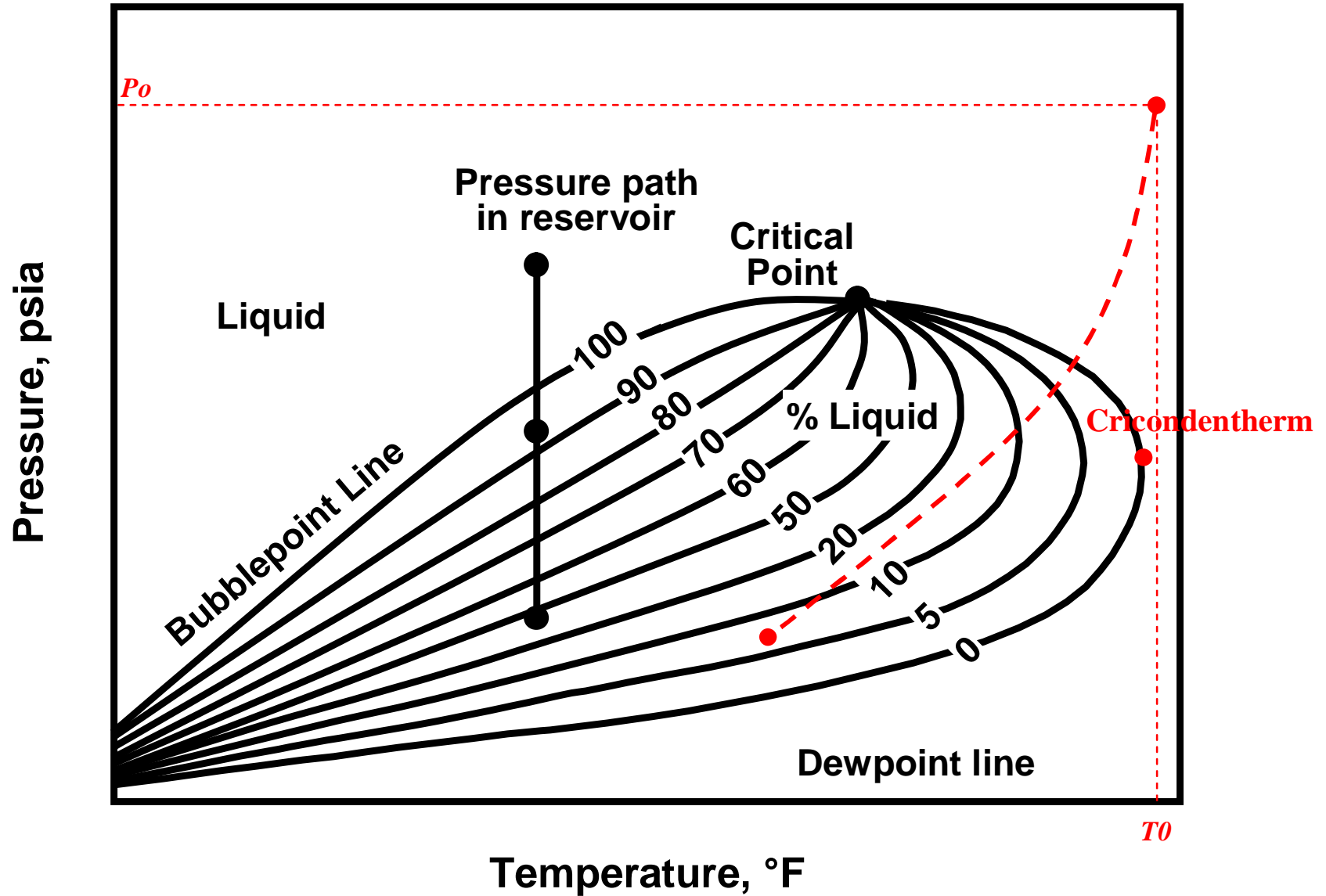


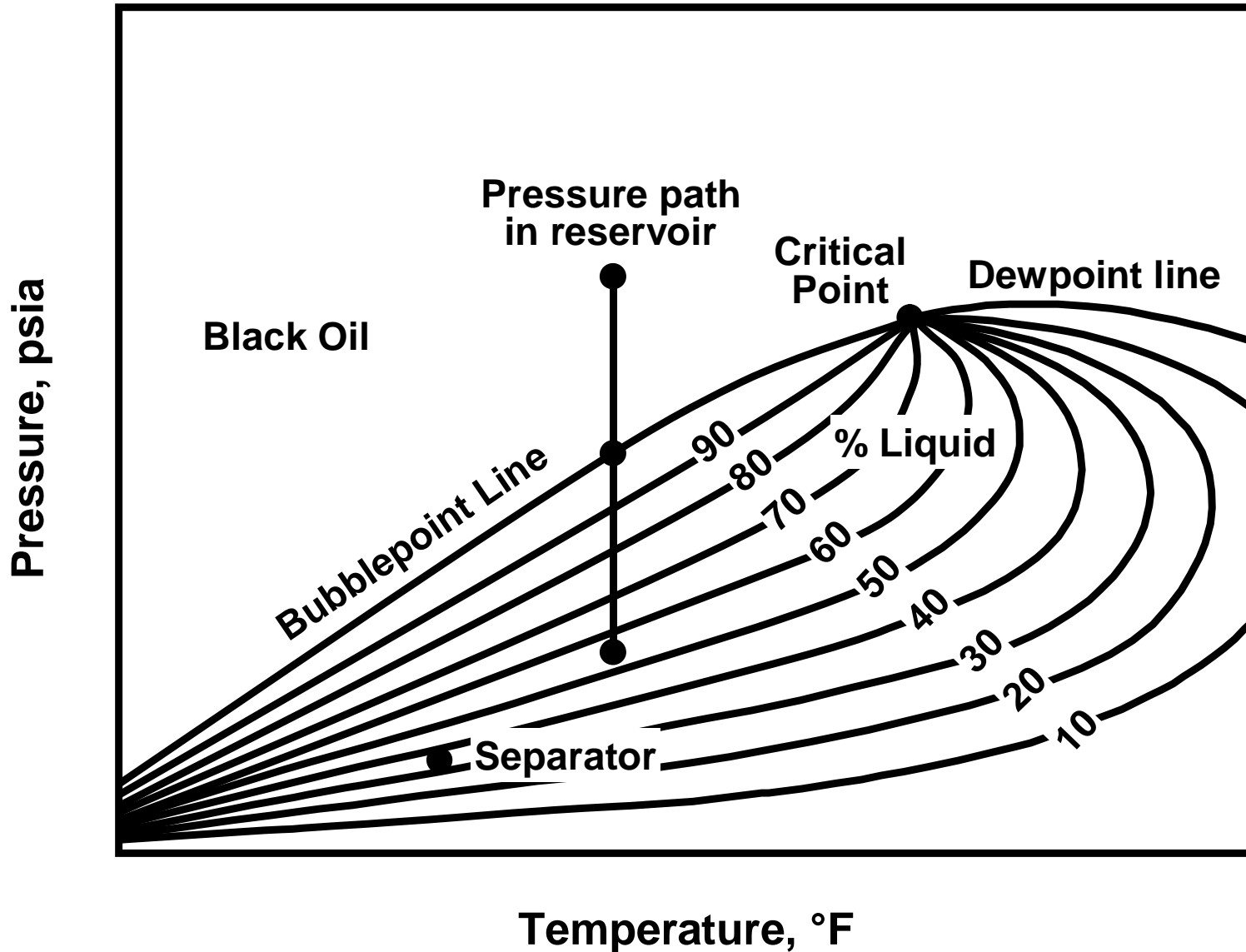
Typical Types of Reservoir Fluids

1. Phase behavior of reservoir fluids
2. Real gas
3. Black oil
4. Water

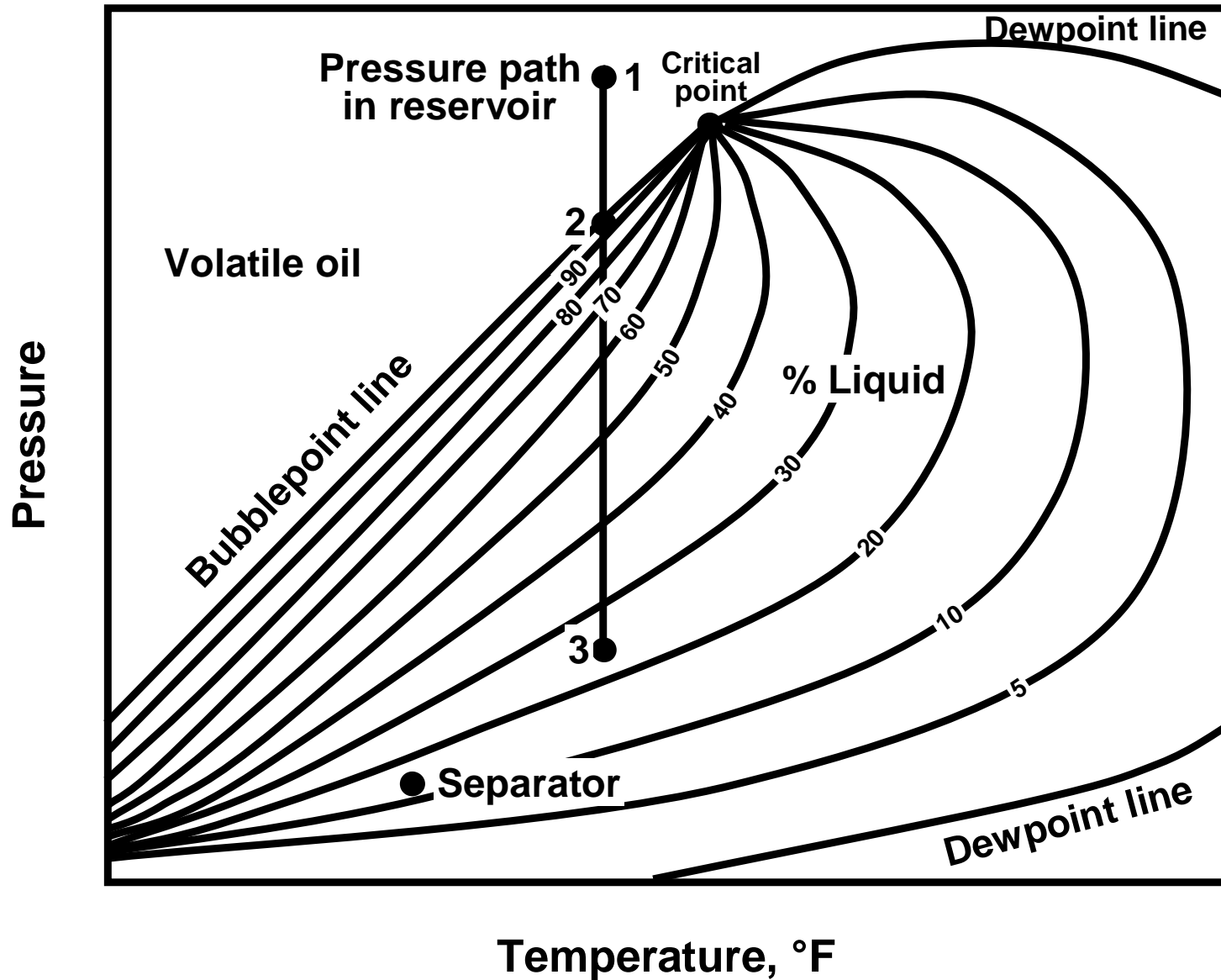
Phase Diagram of Reservoir Fluids



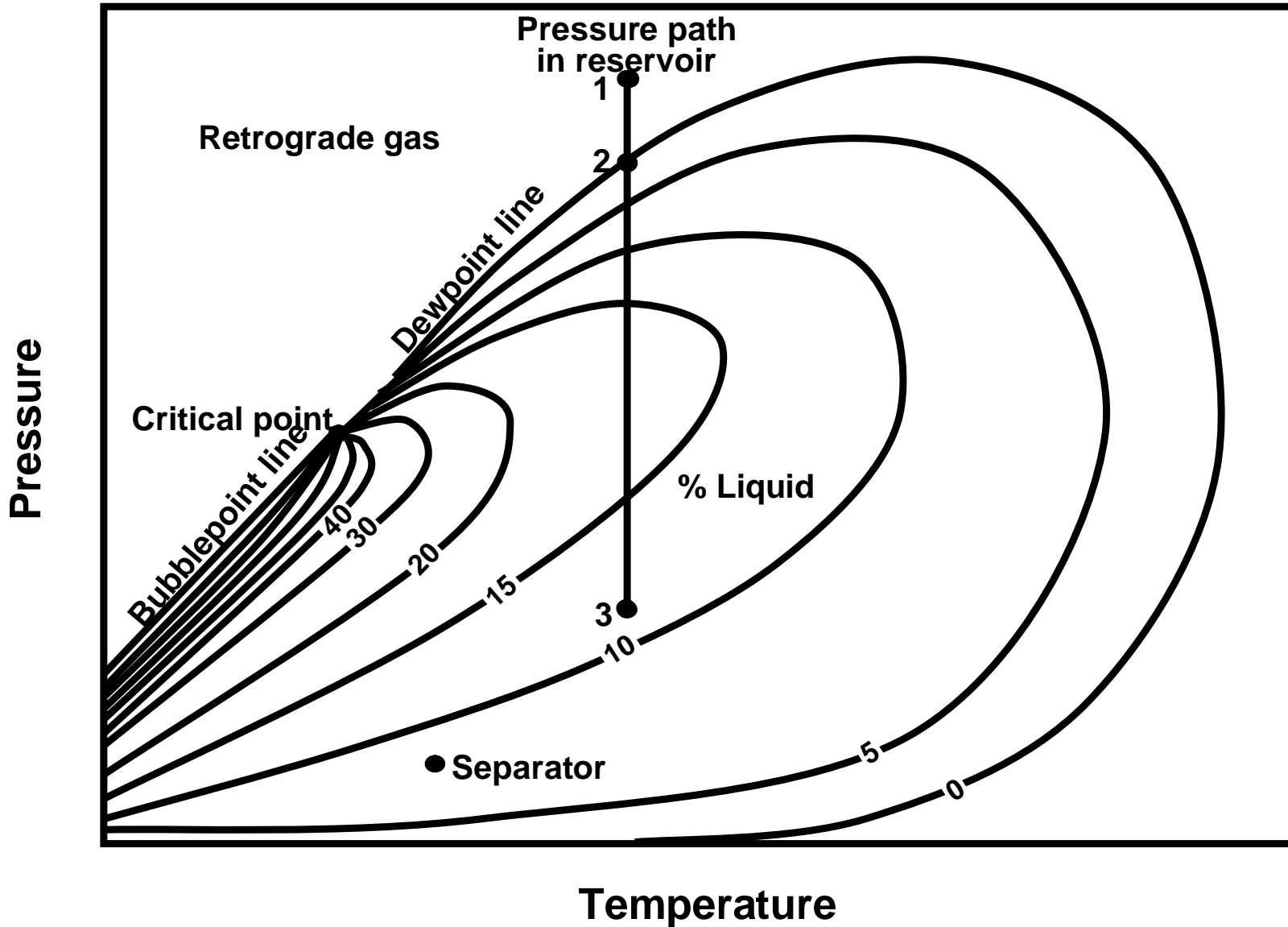
Phase Diagram of Black Oils



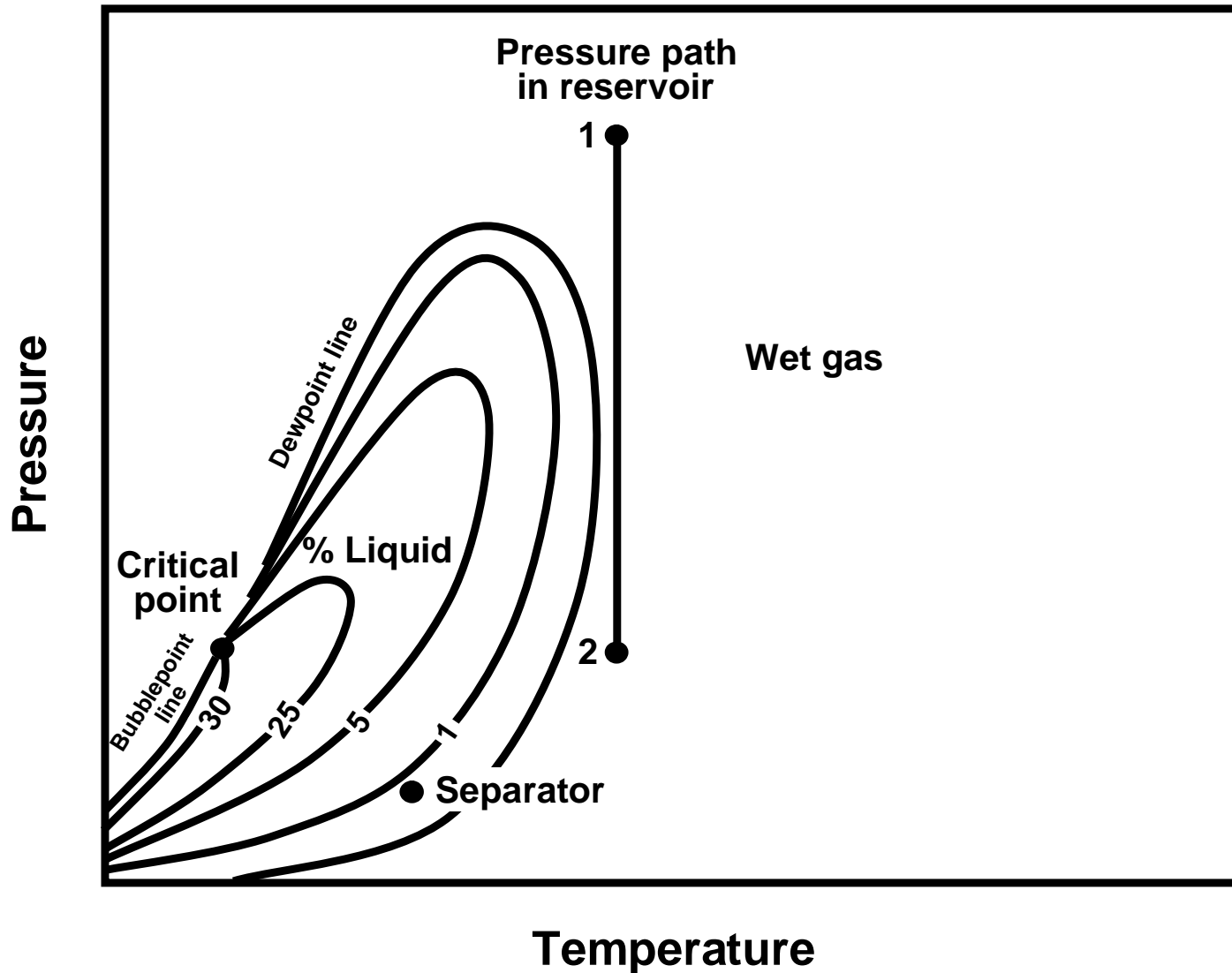
Phase Diagram of Volatile Oils



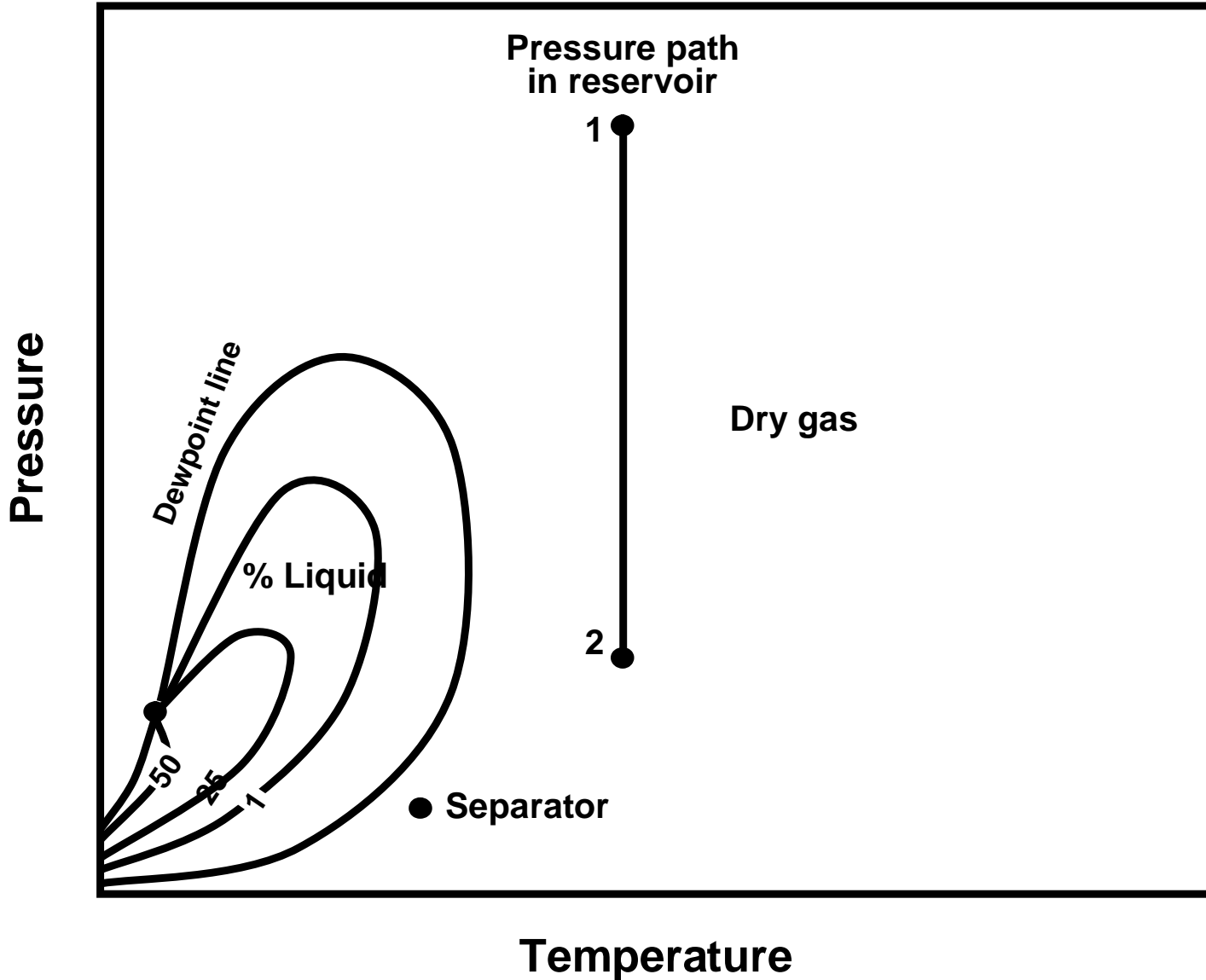
Phase Diagram of Retrograde Gases



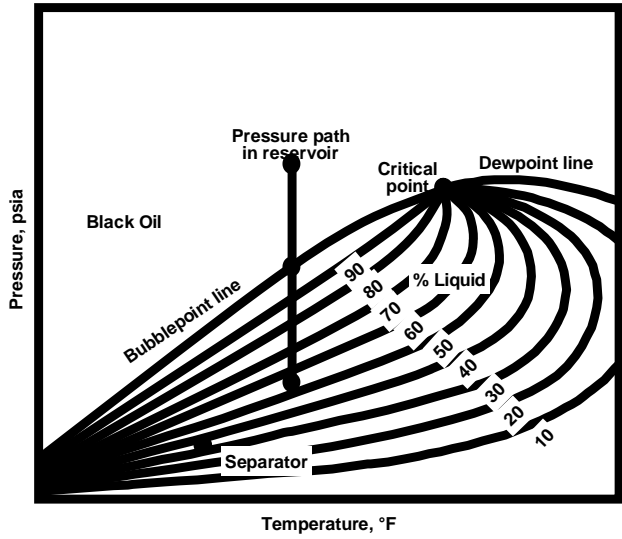
Phase Diagram of Wet Gases



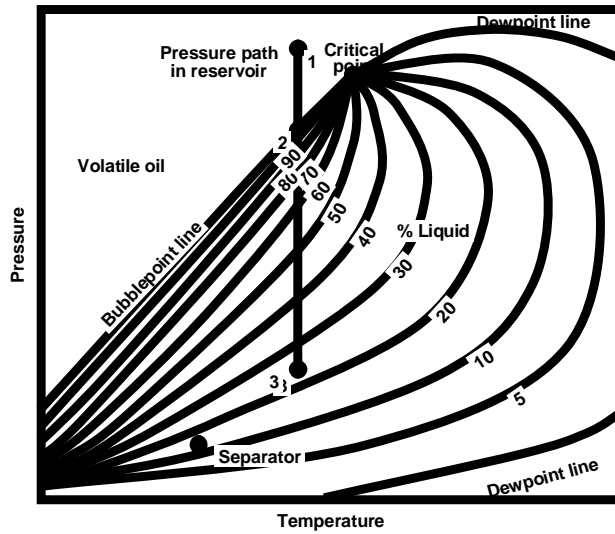
Giản đồ pha của Dry Gas



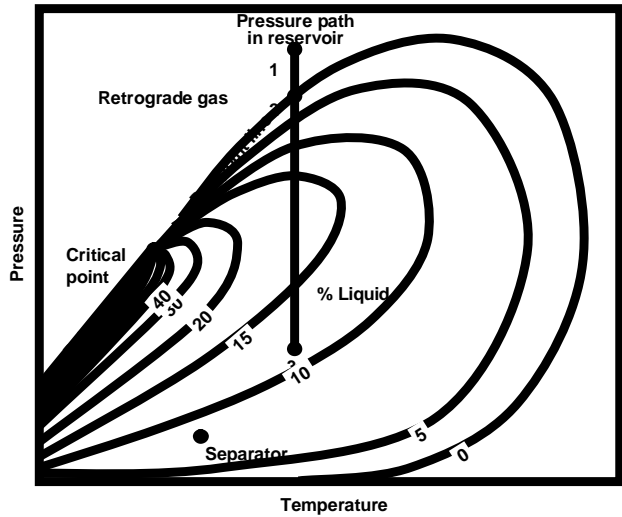
Black Oil



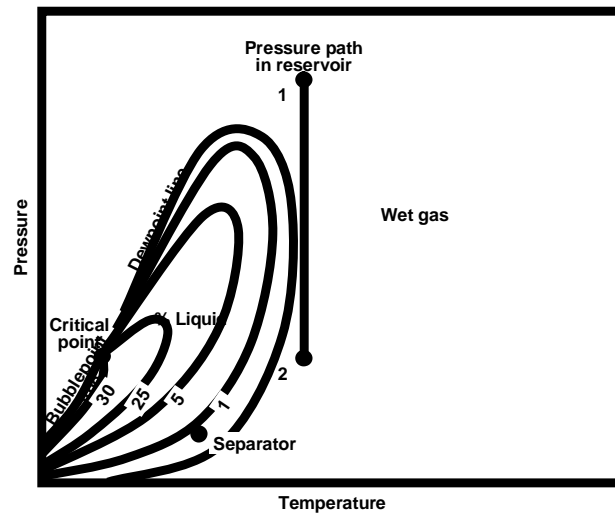
Volatile Oil



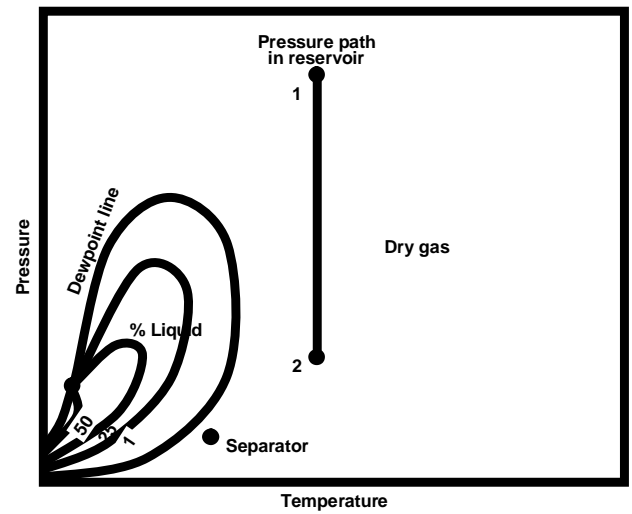
Five Reservoir Fluids



Retrograde Gas



Wet Gas



Dry Gas

Field Identification

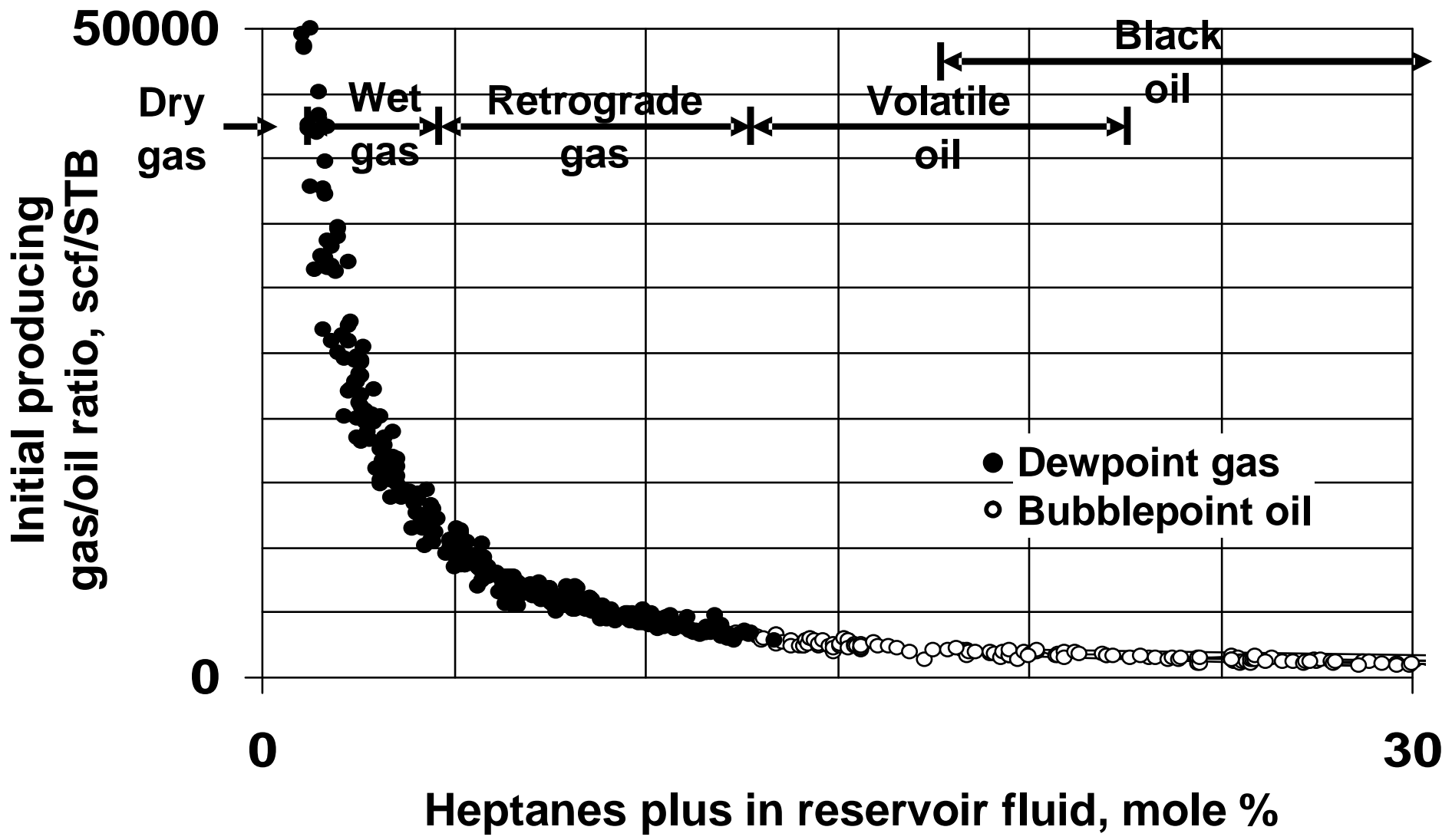
	Black Oil	Volatile Oil	Retrograde Gas	Wet Gas	Dry Gas
Initial Producing Gas/Liquid Ratio, scf/STB	<1750	1750 to 3200	> 3200	> 15,000*	100,000*
Initial Stock-Tank Liquid Gravity, °API	< 45	> 40	> 40	Up to 70	No Liquid
Color of Stock-Tank Liquid	Dark	Colored	Lightly Colored	Water White	No Liquid

***For Engineering Purposes**

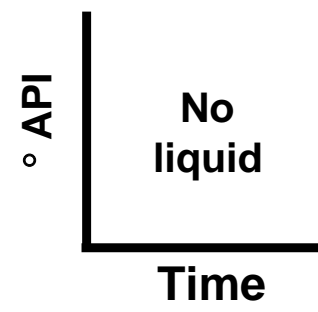
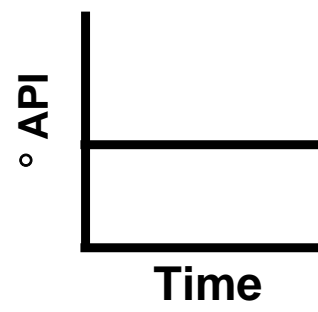
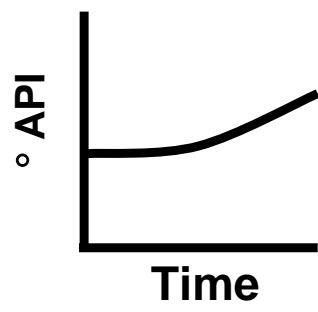
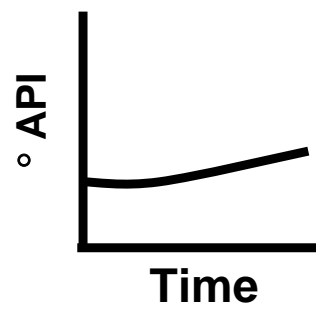
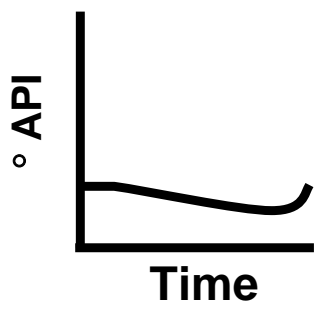
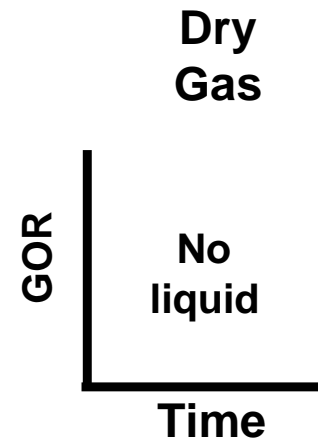
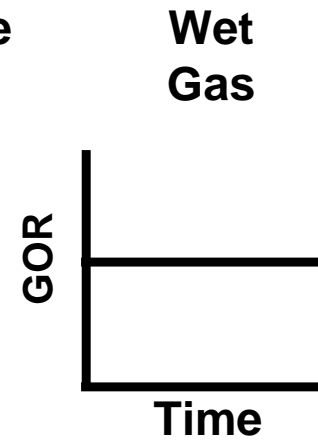
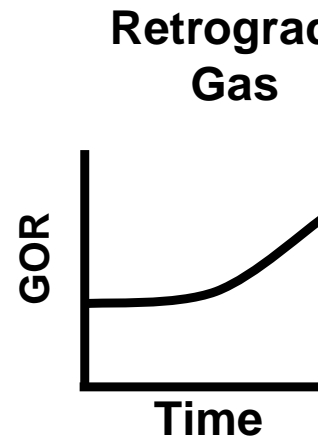
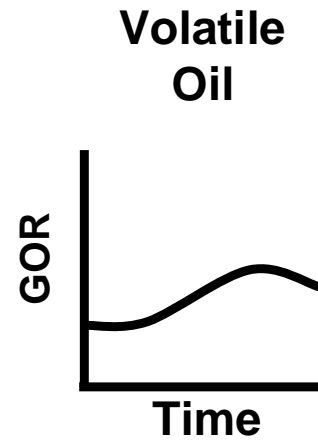
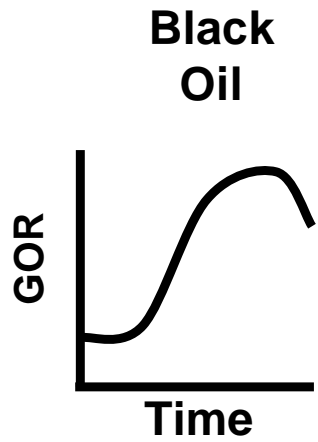
Laboratory Analysis

	Black Oil	Volatile Oil	Retrograde Gas	Wet Gas	Dry Gas
Phase Change in Reservoir	Bubblepoint	Bubblepoint	Dewpoint	No Phase Change	No Phase Change
Heptanes Plus, Mole Percent	> 20%	20 to 12.5	< 12.5	< 4*	< 0.8*
Oil Formation Volume Factor at Bubblepoint	< 2.0	> 2.0	-	-	-

***For Engineering Purposes**



Primary Production Trends



Exercise 1

Identify the reservoir fluid with the production data:

Time	GLR scf/STB	API
Dec-1967	23000	54
July-1969	78946M/1987	58
May-1972	2000M/30	59

Solution to Exercite 1

Retrograde Gas Condensate

(Can be treated as Wet Gas)

Exercise 2

Classify the reservoir fluid according to the production data

Year	GOR (scf/STB)	API
1956	2000	51.2
1959	29000	63

Solution to Exercise 2

I Volatile oil