

공학기술의 종합응용: 석유평학

J. Choe

Dept. of Energy Resources Engineering
Seoul National University

September 16, 2008

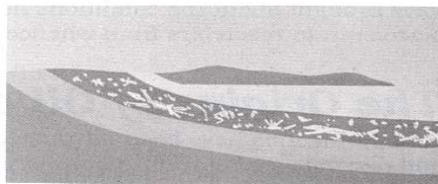


석유의 기원



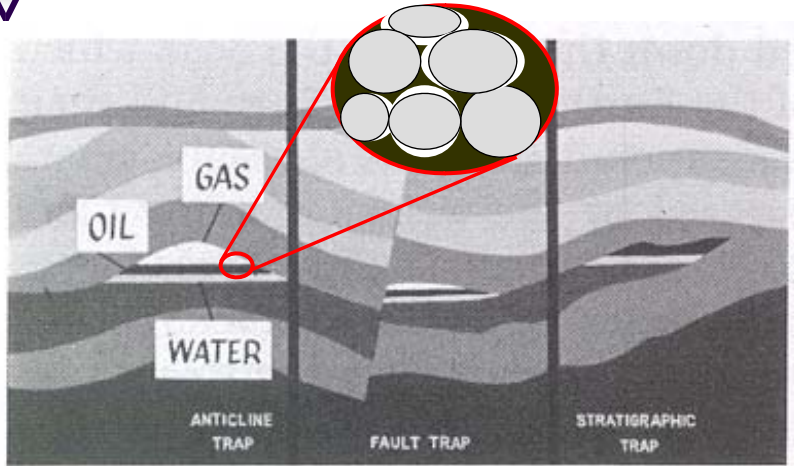
Figure 2-4 Organic theory of origin of gas and oil. Some scientists believe petroleum formation began millions of years ago, when tiny marine creatures abounded in the seas (courtesy API).

Figure 2-5 The marine plants and animals, held in clay, sand, and silt, were changed to gas and oil, probably by gradual decay, heat, pressure, and possibly bacterial and radioactive actions (courtesy API).





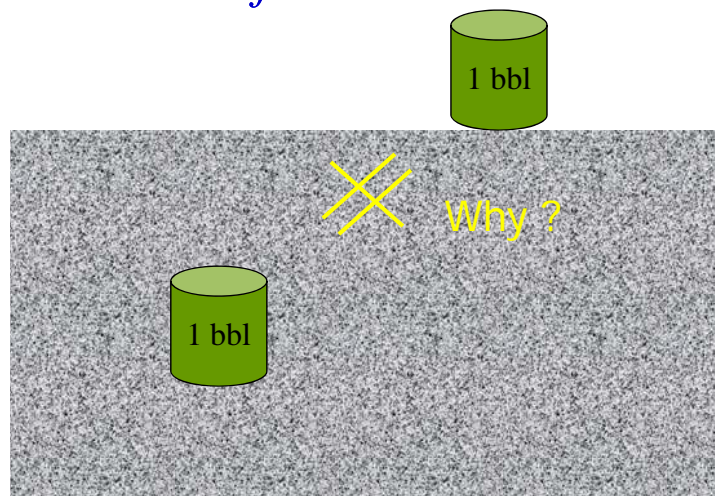
저류층 (Reservoir)



에너지환경 연구실



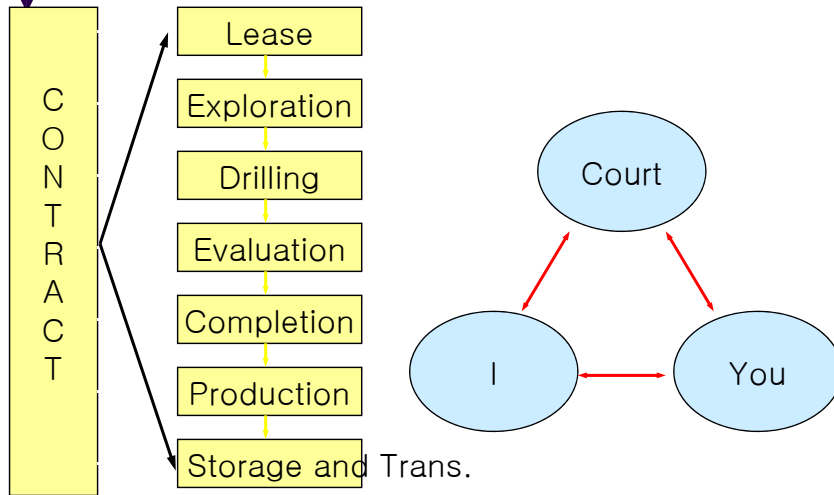
A Barrel of Oil



Petroleum Gas Eng. Lab



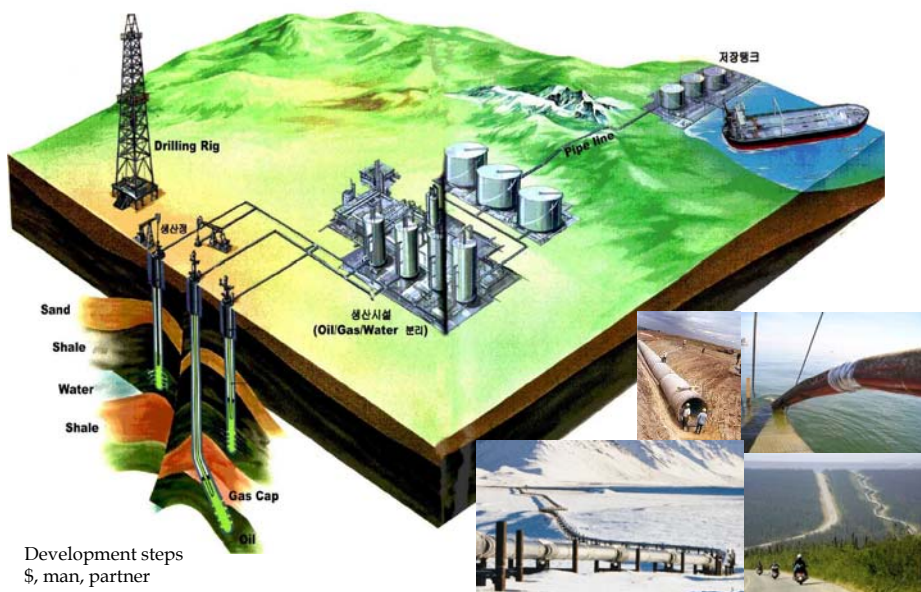
Petroleum Development Stages



Petroleum Gas Eng. Lab



Development and Transportation



Rotary Drilling System

Drilling program
(Prognosis)

ANNULAR BLOWOUT PREVENTERS

HEAD
WEAR FLANGE
PACKING UNIT
OPENING CHAMBER
CLOSING CHAMBER
PISTON
HYDRAULIC BOP IN OPEN POSITION

Derrick
Rotary Hose
Stand Pipe
Swivel
Bell Nipple
Blowout Preventer
Emergency Flow Line
Drill Pipe
Conductor Casing
Annulus
Drill Collars
Bit

Mud Pump

Earthen

Mobil

시추의 목적
시추의 원리
이수 목적
유정 제어

Riser System for a Floating Drilling Rig

Marine riser = drilling riser, get returns to surface, well control, communications link

RISER TENSION

SLIP JOINT
INNER barrel

SLIP JOINT OUTER barrel

UPPER BALL JOINT

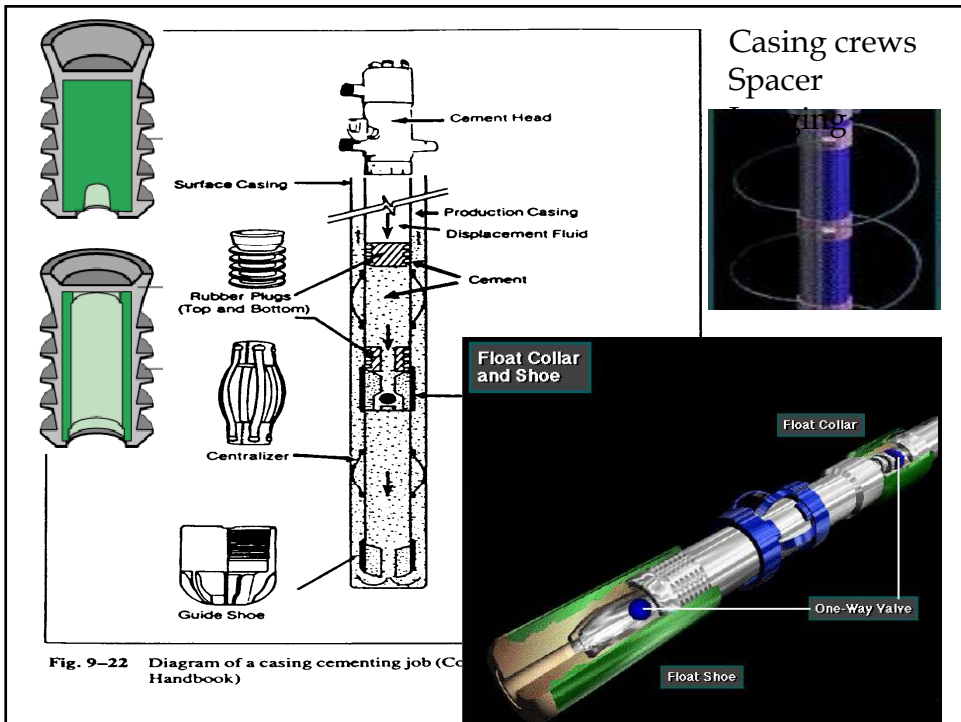
KILL AND CHOKE LINES

LOWER BALL JOINT

BOP

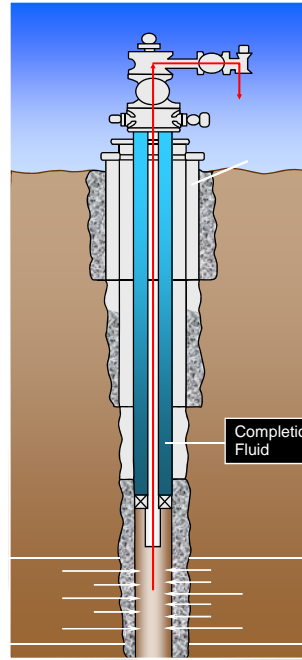
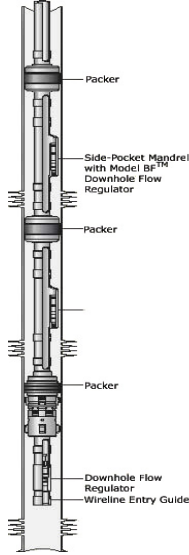
Mudline

BOP REENTRY FUNNEL ASSEMBLY
BOP STACK
CHOKE & KILL VALVES
H-4 WELL HEAD CONNECTOR
GUIDE FRAME

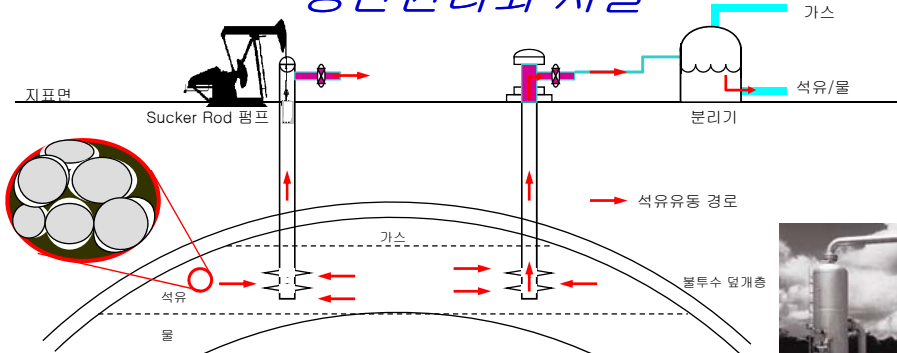




Well Completion

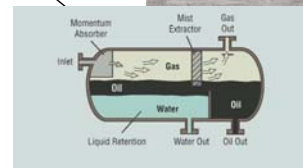


생산원리와 시설



Primary production
 - Solution gas drive
 - Gas cap drive
 - Water drive
 Waterflooding
 EOR

EOR:
 - Thermal
 - Polymer
 - Foam
 - Solvent
 - CO2 flooding



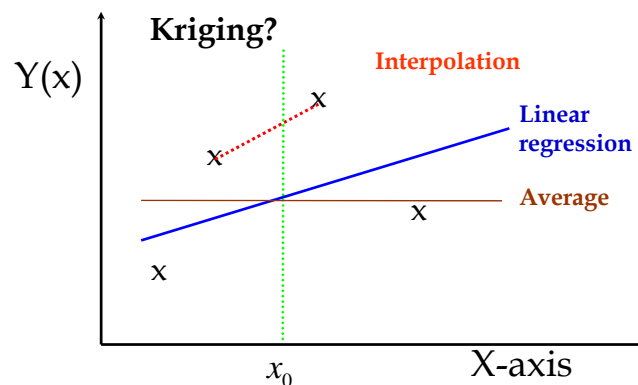


Classes by Choe

- ◆ 에너지자원과 미래
- ◆ 에너지자원 수치해석
- ◆ 지구통계학
- ◆ 해외자원투자 실습
- ◆ 시추공학*

Petroleum & Gas Eng. Lab

Typical Estimation Methods



$$y(x_0) = ?$$

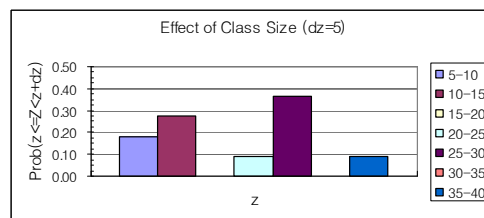


Plot Histogram using 11 data points given below:

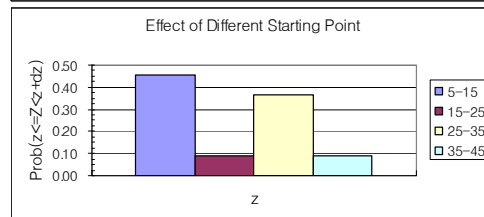
6.5, 37, 12.7, 25.5, 10.2, 13.5, 29.8, 26.5, 27.3, 7.4



Class size
= 10



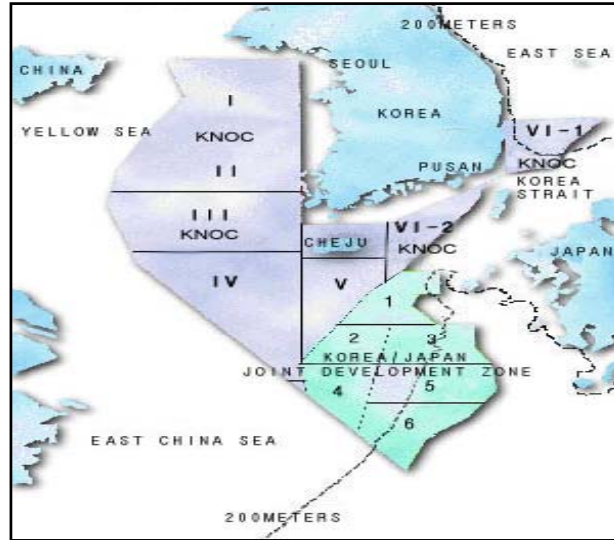
Class size
= 5



Starting point
= 5



국내 대륙붕 광구



Petroleum & Gas Eng. Lab



Any Questions?
johnchoe@snu.ac.kr