





ELE



CLOSE GATE
BEFORE
OPERATING
MACHINE

ELE



USEFUL CONVERSION FACTORS

1.0 kN axial load = 1.973 MPa

for 1.0 inch diameter steel samples

1.0 kN axial load = 0.880 MPa

for 1.5 inch diameter steel samples

1.0 kN axial load = 0.490 MPa

for 2.0 inch diameter steel samples

1.0 MPa = 10 bar = 145.04 psi

Dr. Shamsol Ghani
Mech. Workshop & Laboratory





Dr. Musaed Al-Awad
King Saud University

Oil & Gas
Science and
Technology

ELE

CE

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SAFETY

INSTRUCTIONS

READ CAREFULLY

BEFORE USE

TO AVOID ACCIDENTS

AND INJURIES

PLEASE FOLLOW THESE

INSTRUCTIONS

AT ALL TIMES









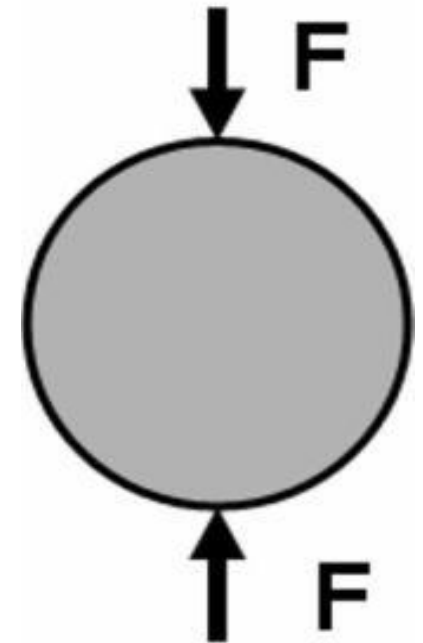
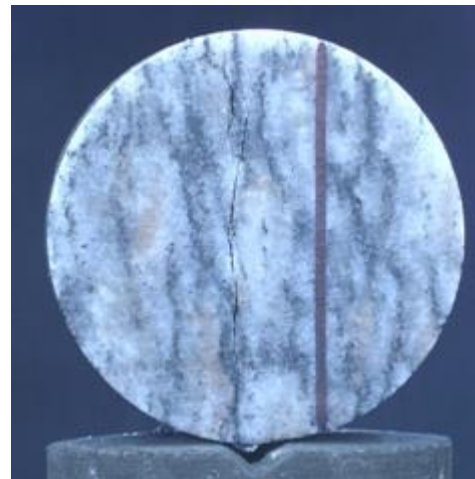
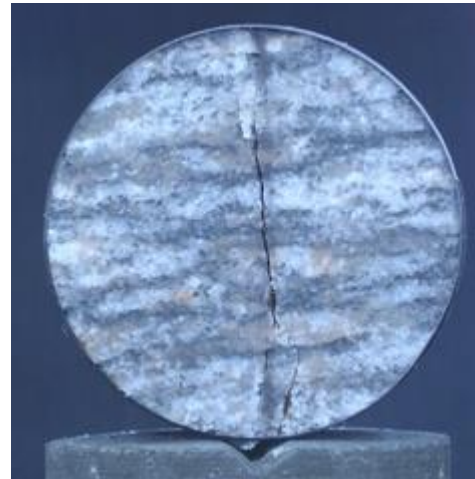
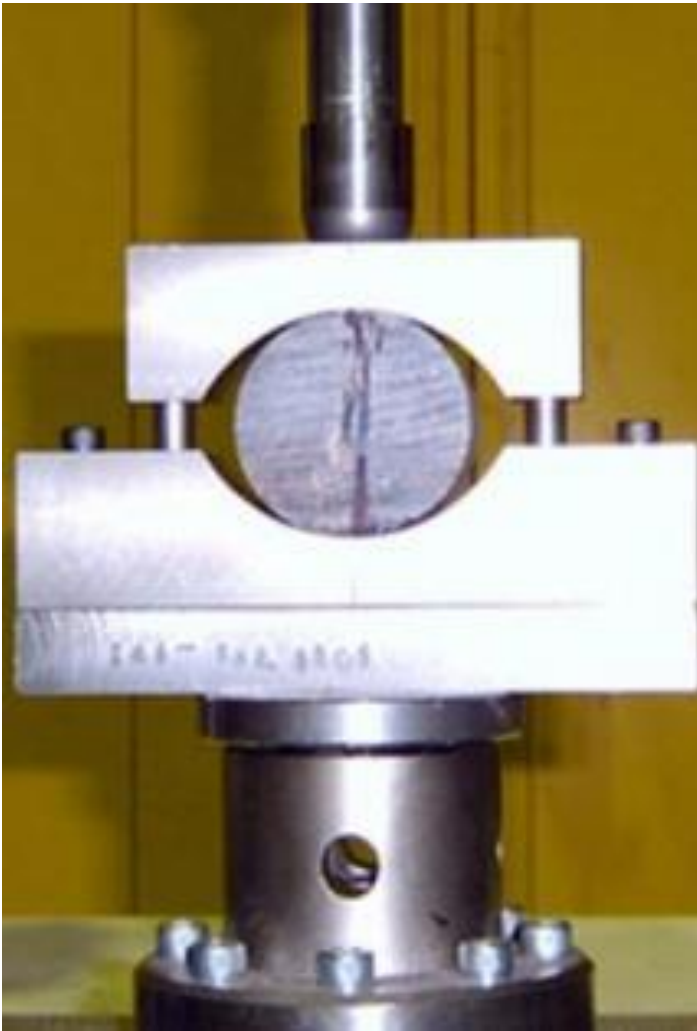


Punch Shear Test



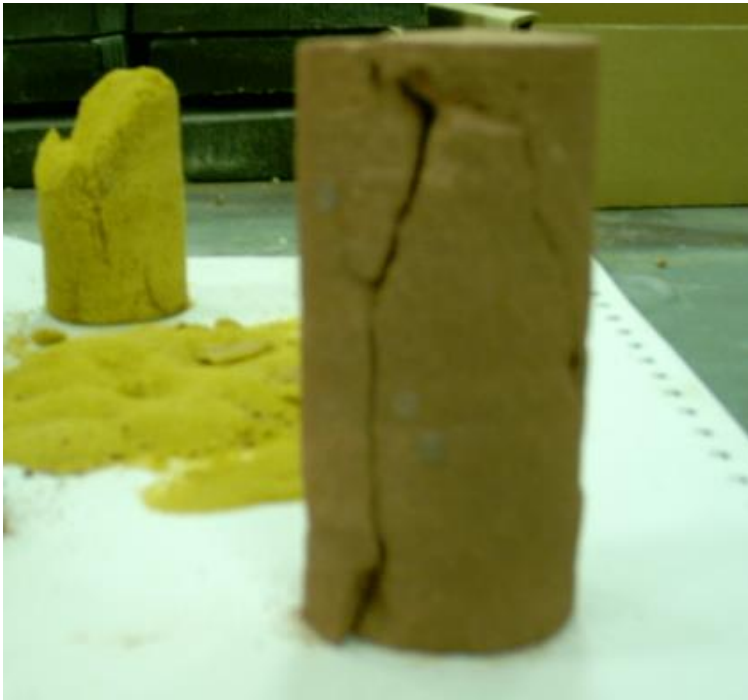






Brazilian Indirect Tensile Test

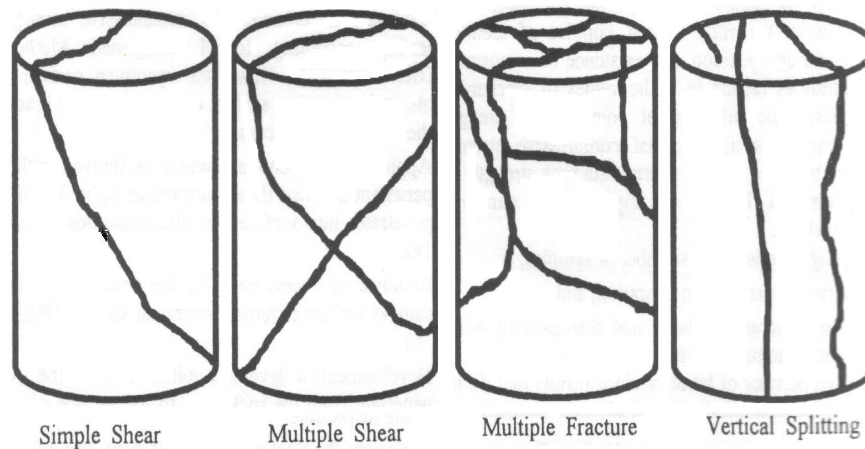




**Uniaxial Compression Test
(Vertical Splitting Failure)**



**Triaxial Compression Test
(Simple Shear Failure)**



A Training Short Course On

Sand Control and Mitigation

Implementing Theoretical and Laboratory knowledge to Enhance Sand Control Experience

JW Marriott Hotel, Kuala Lumpur, Malaysia • 26th - 28th July 2010

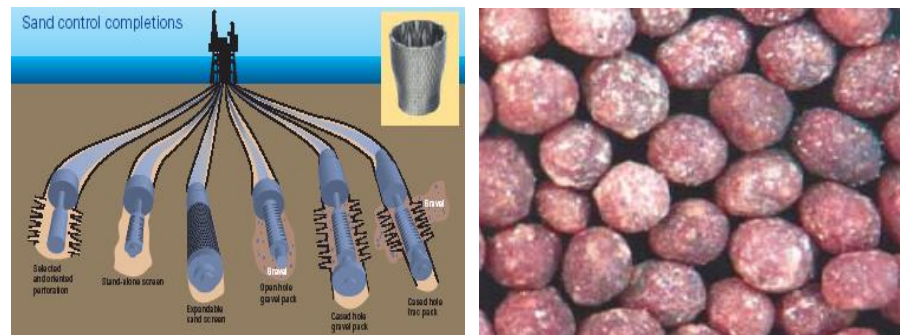
Facilitator

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Riyadh, Saudi Arabia



Uniaxial Compressive Strength: ISRM Standard Terminology



**Hard – V. Hard
Sandstone**
UCS \geq 100-250 MPa

**Soft-Medium
Strength Sandstone**
UCS = 5-100 MPa

**Unconsolidated
Sand**
UCS = 0 MPa

High

Rock Strength



Low

Screening Sandstones for Potential Sand Production

Instability Increase

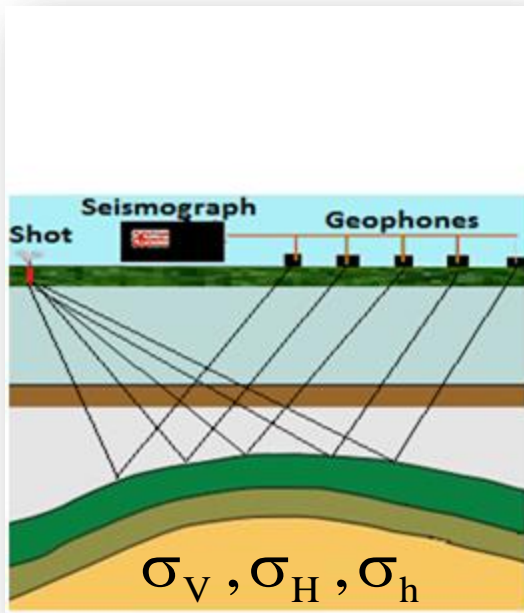
Stable Strata



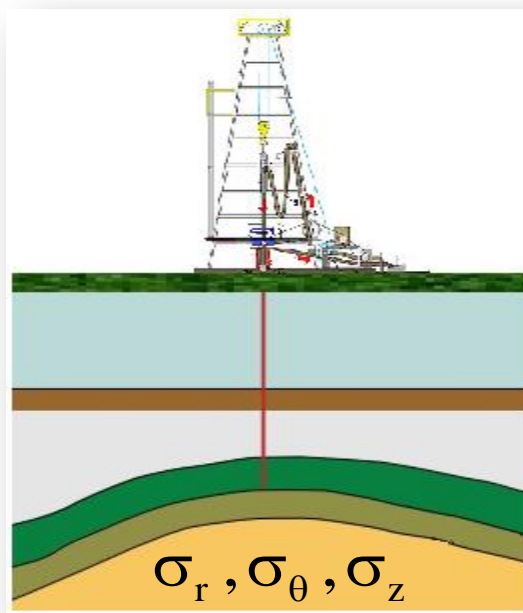
Rocks Removal



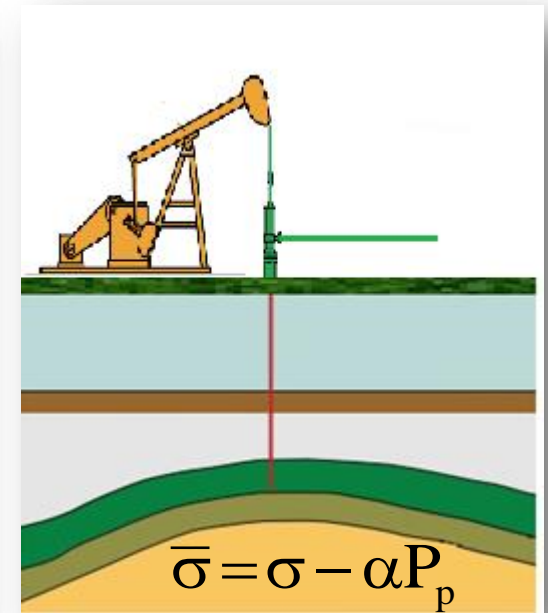
Fluids Extraction



Exploration



Drilling



Production

Drilling or Producing may disturbs reservoir rock stability:

**Induced
(re-distributed)
stresses (A)**

**Near-Wellbore
Intrinsic rock
strength (B)**

Unstable wellbore

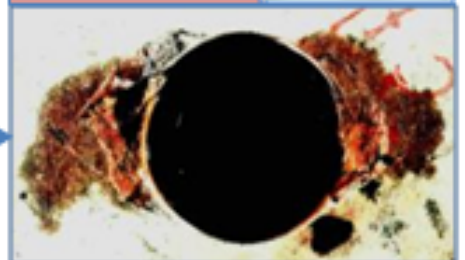
(A) > (B)

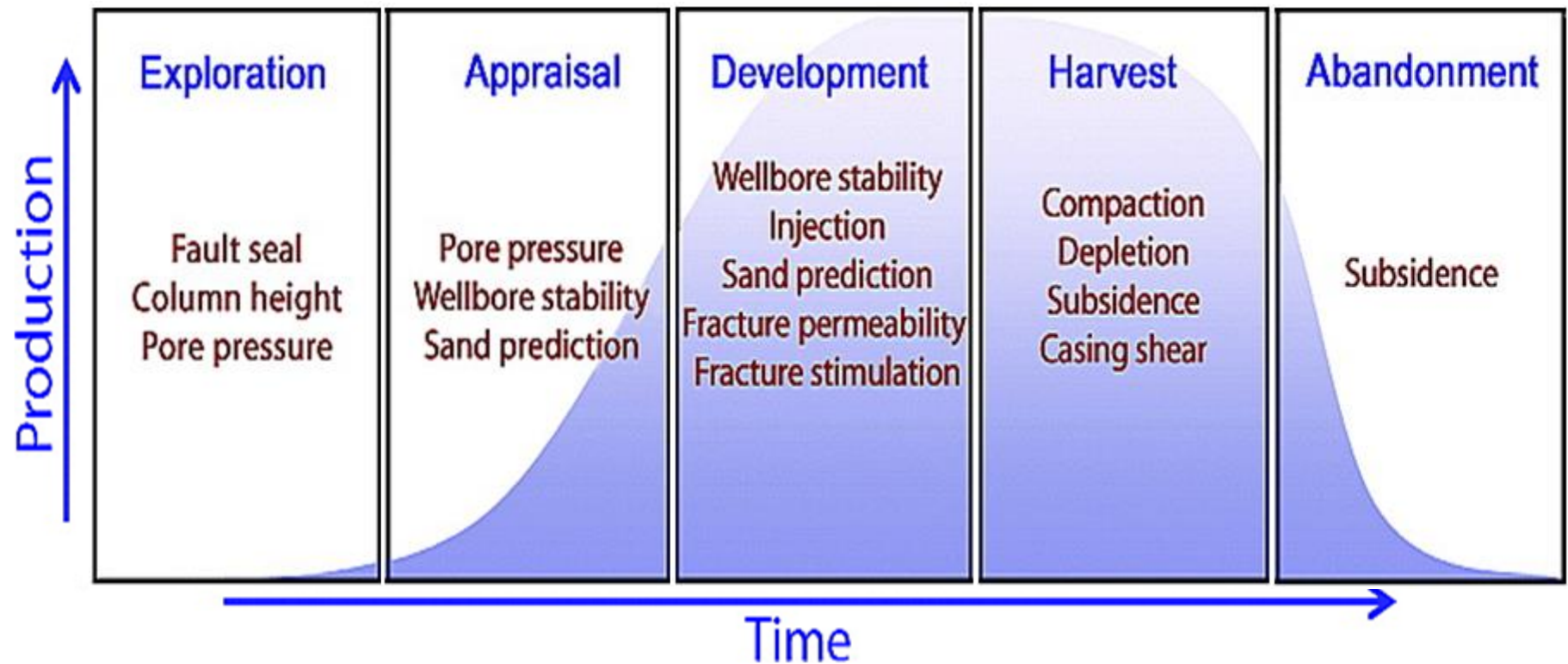
Stable wellbore

**Sand
production**



**Wellbore
instability**





Geomechanics Applications in Petroleum Reservoir Life