— University of Mosul —
College of Petroleum & Mining Engineering

"Reservoir modelling and simulation"

Applications on some parameters of petroleum simulation

Lecture …(4)….

Dr. Nabhan Abdulkareem Al-Bazzaz

Petroleum and Refining Engineering Department

Email: nabhanabdul@uomosul.edu.iq

LECTURE CONTENTS

- Introduction.
- The steady-state pressure distribution.
- The flow rate reservoir model.
- The permeability.
- The (Dupuit–Thiem equation) .
- Properties of Reservoirs.

Example:

Consider a reservoir of thickness H and horizontal permeability k as a figure below, fully penetrated by a vertical well of radius R. Assume that at some radius Ro, the pressure remains at its undisturbed value, Po. If we pump oil from this well at a rate Q, what will be the steady-state pressure distribution in the reservoir?

Discussion

- **If fluid is pumped from the well, then (mathematically) Q is negative because the fluid is flowing in the direction opposite to the direction of the radial coordinate, R. Hence, P(R) will be less than Po for any R<Ro.**

- **The amount by which P(R) is less than Po is called the pressure drawdown.**

- **The only reservoir parameter that affects the pressure drawdown is the "permeability-thickness" product, kH.**