



Lecture Three



Formation Evaluation

Petroleum & Mining Engineering Collage

Reservoir Engineering Department / Third Year

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Collecting Samples

Collecting Samples

When the cuttings arrive at the shale shaker, they are covered in mud, unsorted by size, and generally unidentifiable.

The cutting samples are two types:



Washed Samples



Unwashed Samples



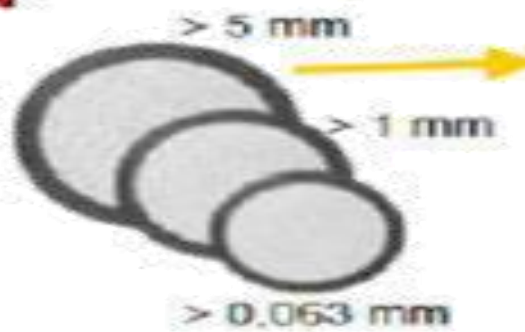
Washed Samples



Sampling



Cleaning
& Sieving

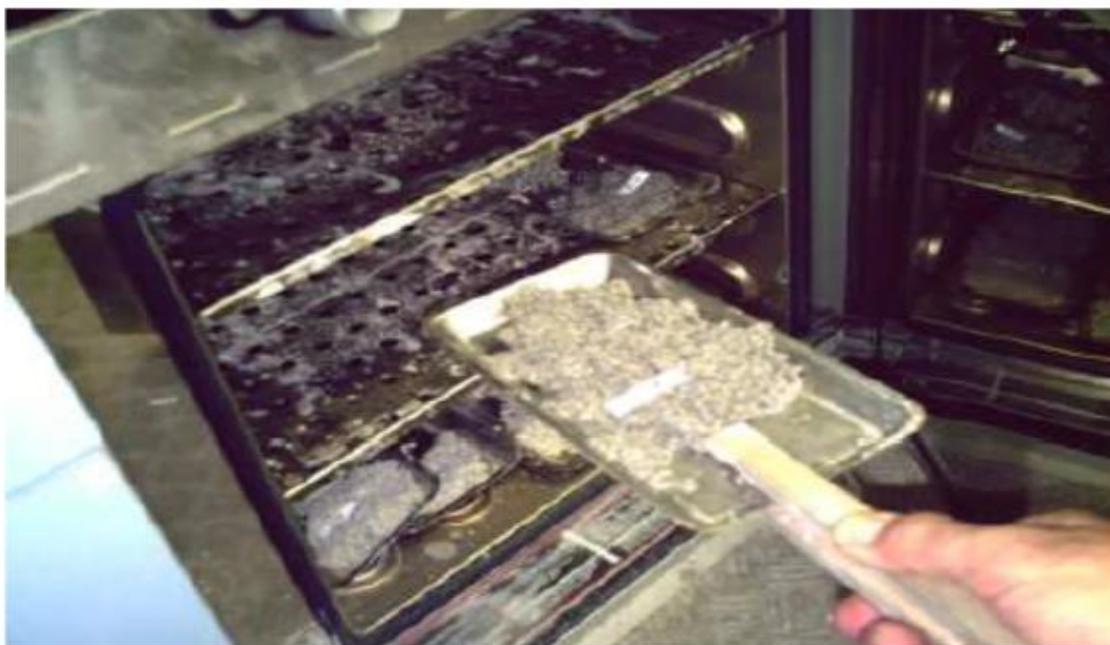


Drying









Cuttings Sample Description

Rock name

01

*Grain
Properties*

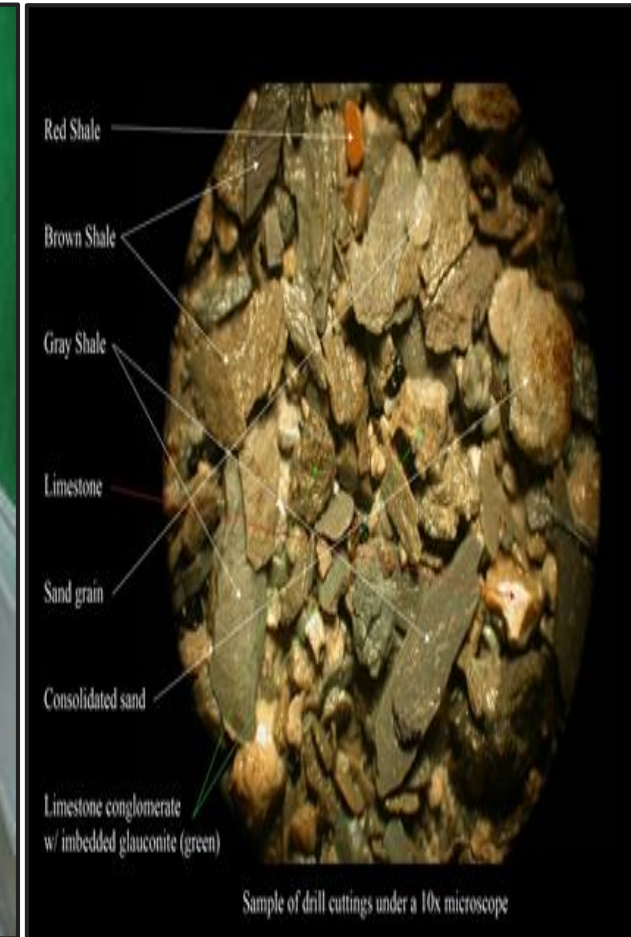
02

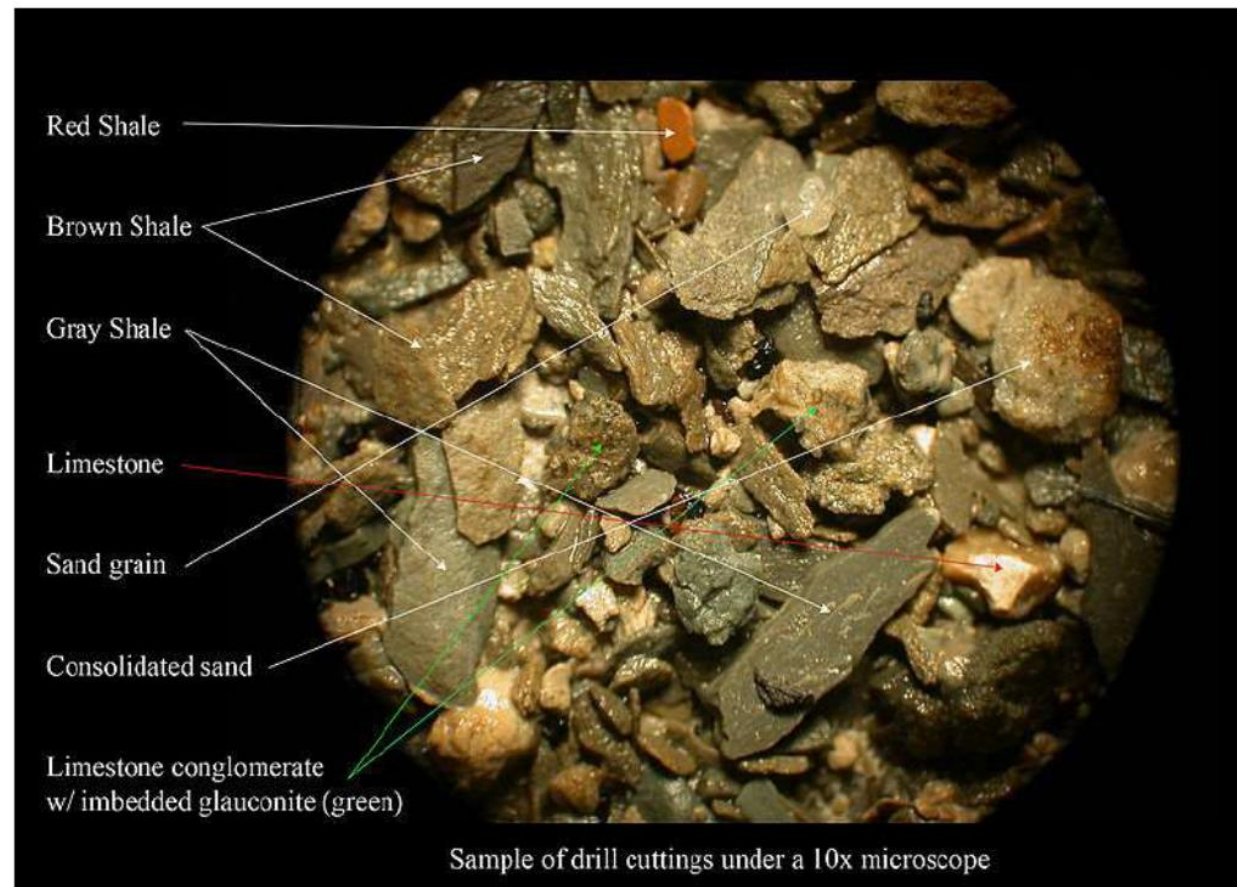
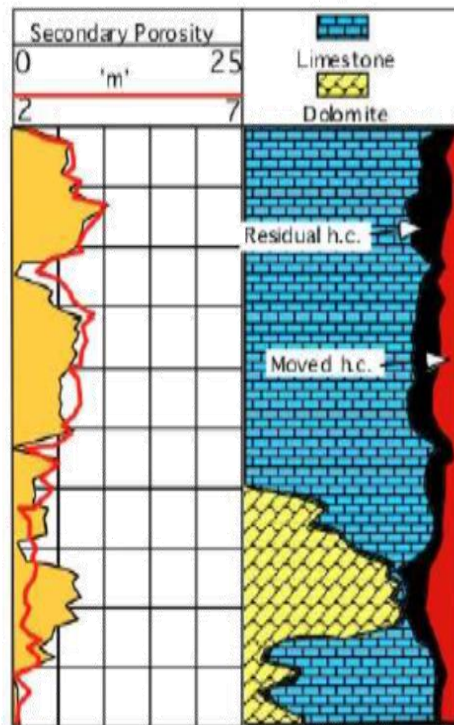
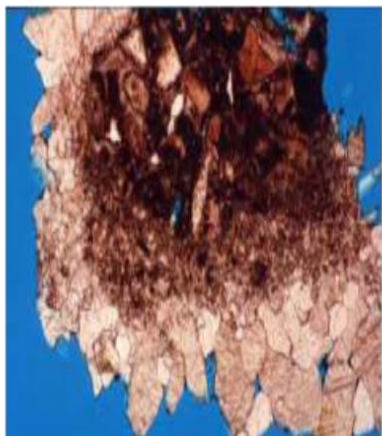
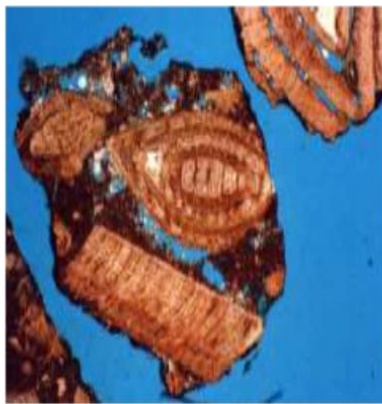
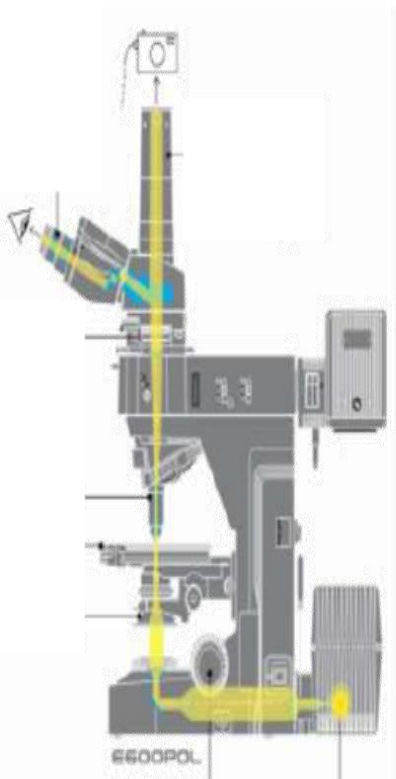
*Porosity &
oil shows*

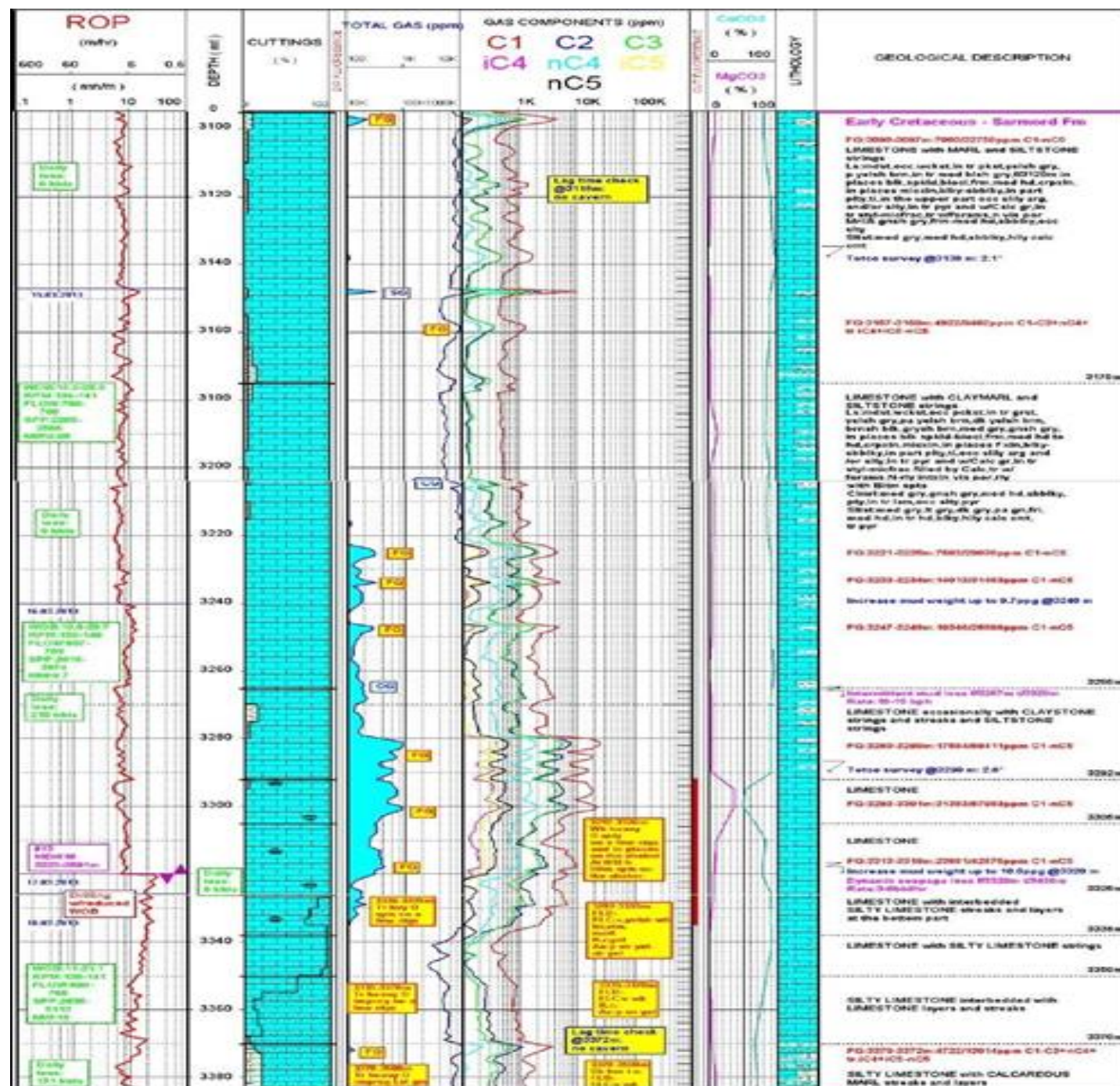
03

*Hydrocarbon
indication*

04











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Show Evaluation

Show Evaluation

Show evaluation is the complete analysis of the hydrocarbon- bearing formation with respect to lithology and type of hydrocarbon present.

A Complete Show Evaluation Identifies:

-  The presence and type of hydrocarbon,
-  Determines the depth and thickness of the show
-  Assesses the porosity and permeability,
-  Indicates the potential productivity of the formation.

Types of Shows

There are two types of shows are recognized: gas and oil:

01

Gas Show

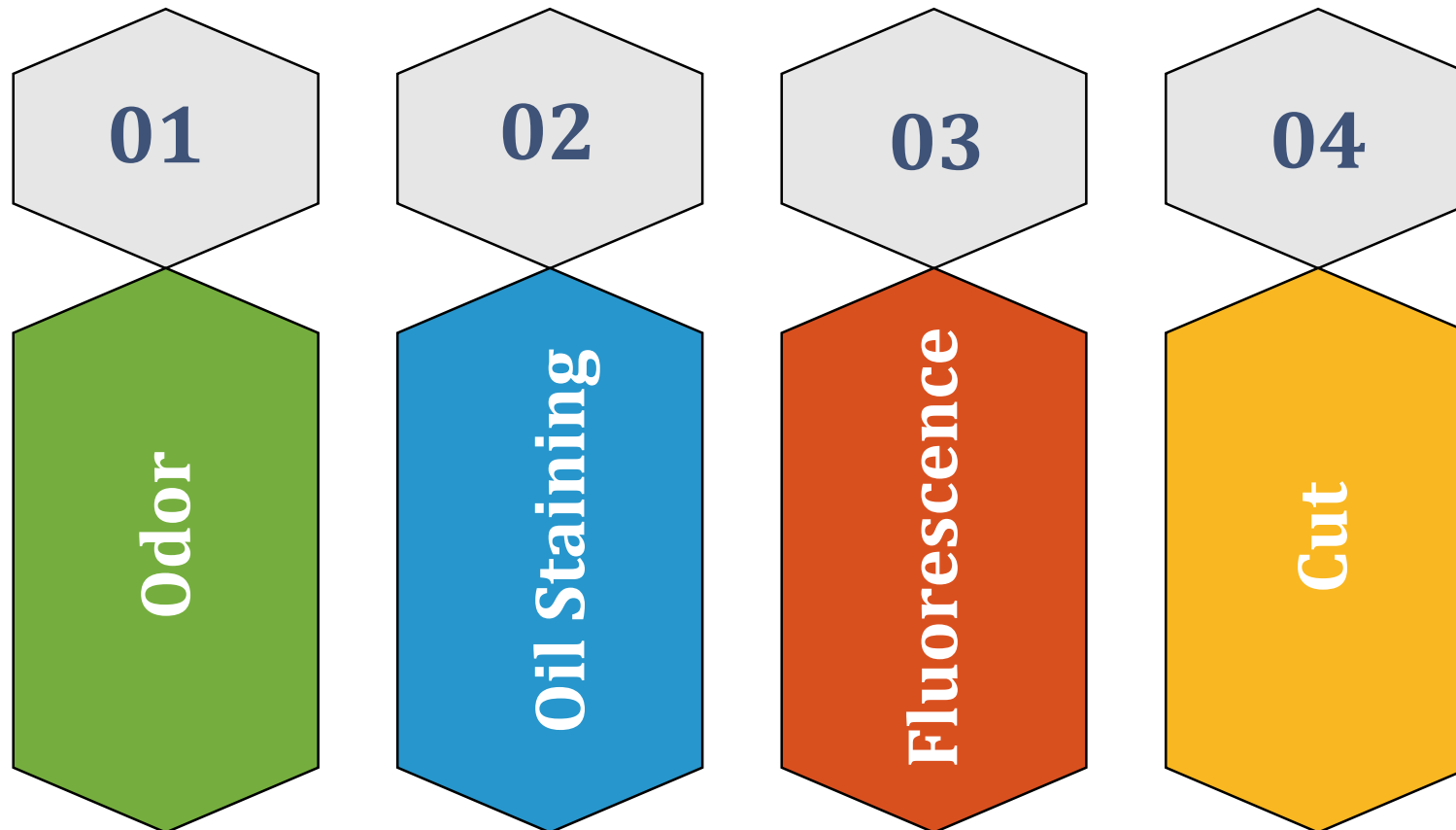
02

Oil Show

Identification of Hydrocarbon Show

Tests and visual inspection should be performed on the mud, unwashed and washed bulk cuttings, as well as individual grains.

Four tests are used to detect hydrocarbons from drilling cutting and drilling fluid:



01

1- Odor

poor, slight, fair, or strong.

02

2- Oil Staining

- No visible oil stain
- Spotty oil stain
- Streaky oil stain
- Patchy oil stain
- Uniform oil stain

03

3- Fluorescence

Intensity is subdivided into none, poor, fair, or strong

04

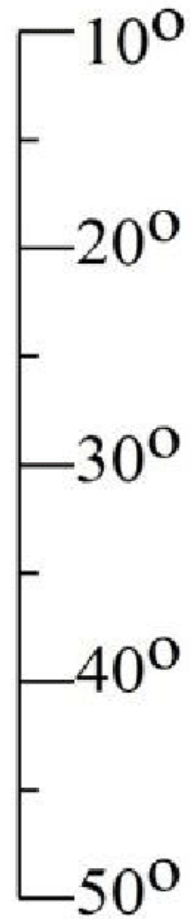
4- Cut

defines the leaching of oil from a sample by a solvent

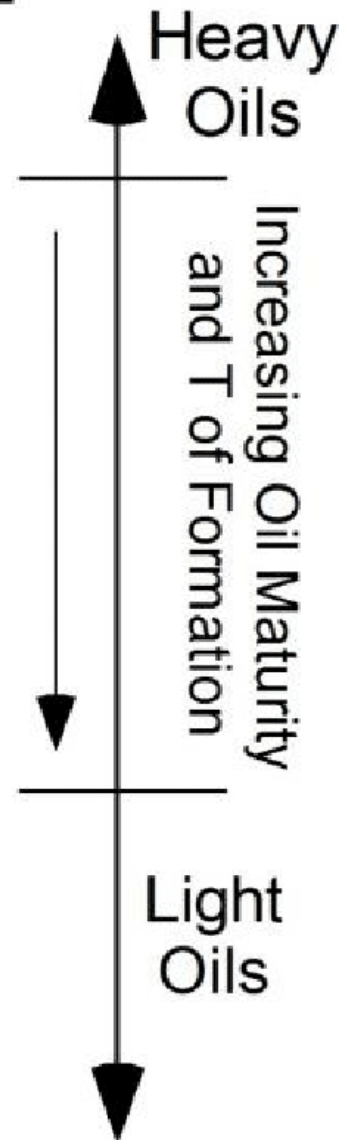
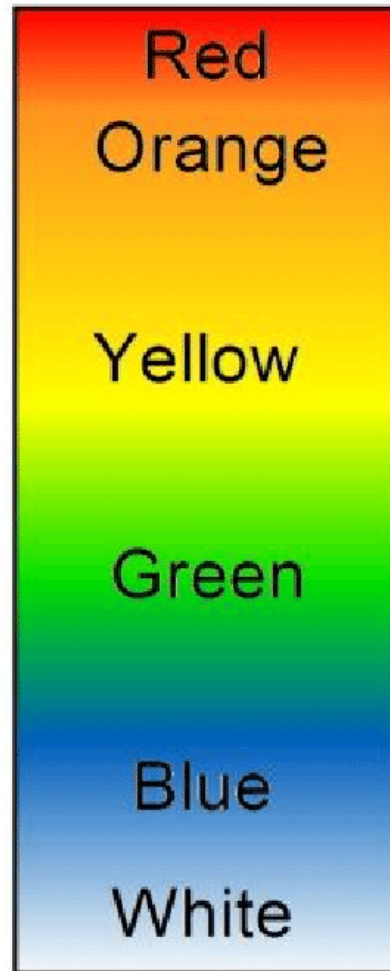




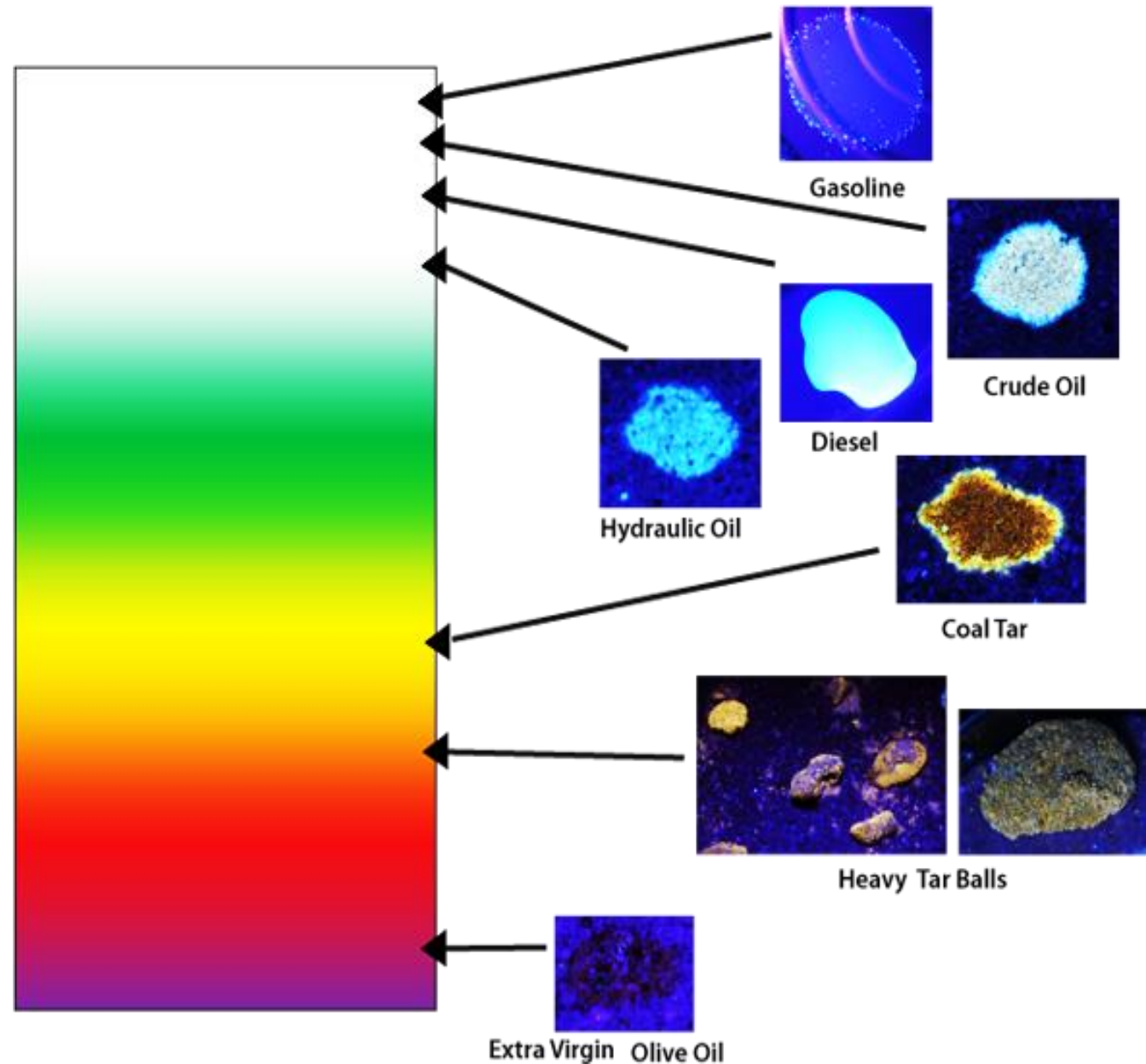
API Gravity

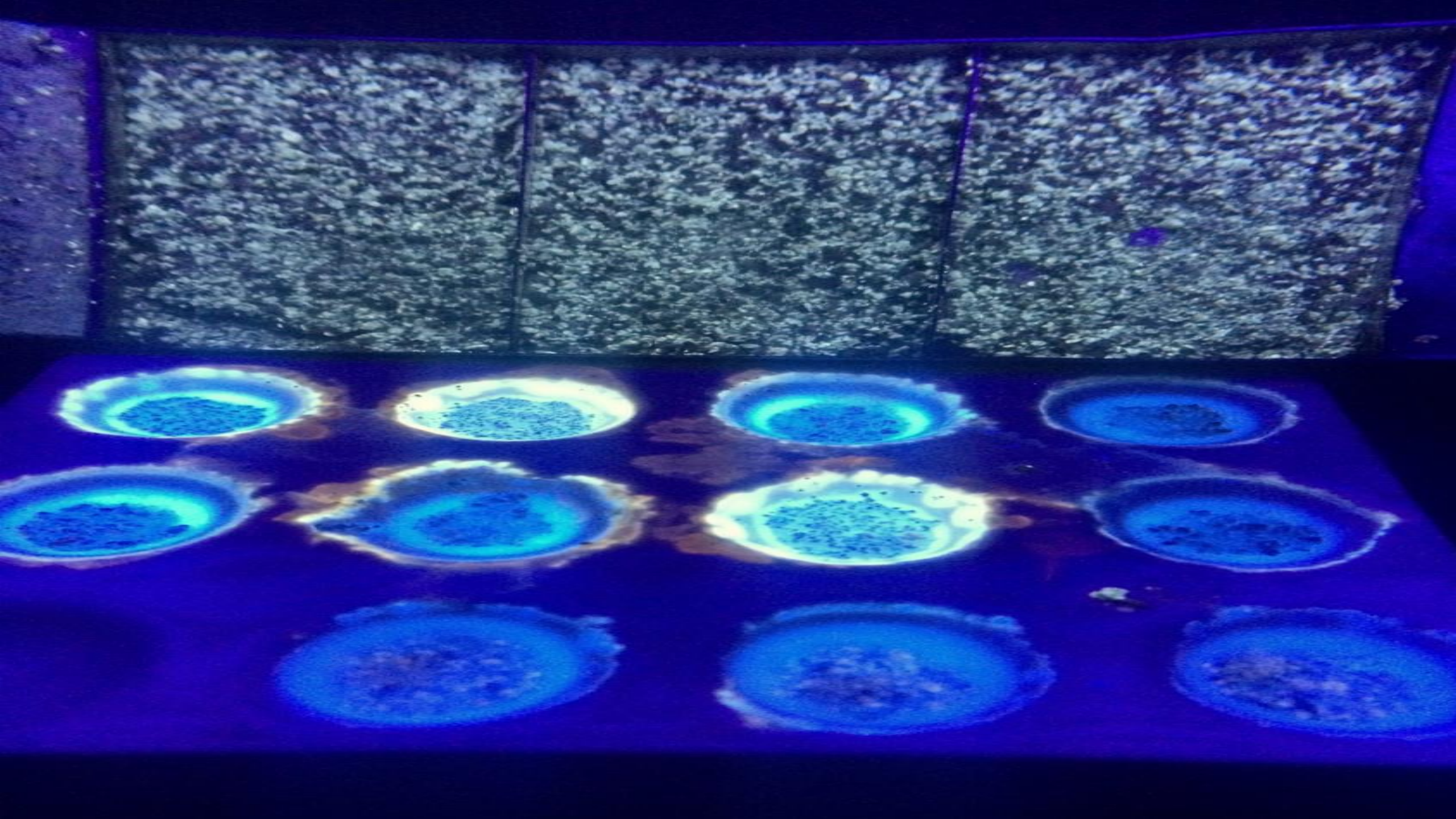


Fluorescence Emission



Hydrocarbon Contaminant Color Chart





Application of Show Evaluation



Identify the presence of hydrocarbons



Make recommendations for coring and testing programs



Show evaluations correlated with offset wells and wireline logs can assist in reservoir interpretation.