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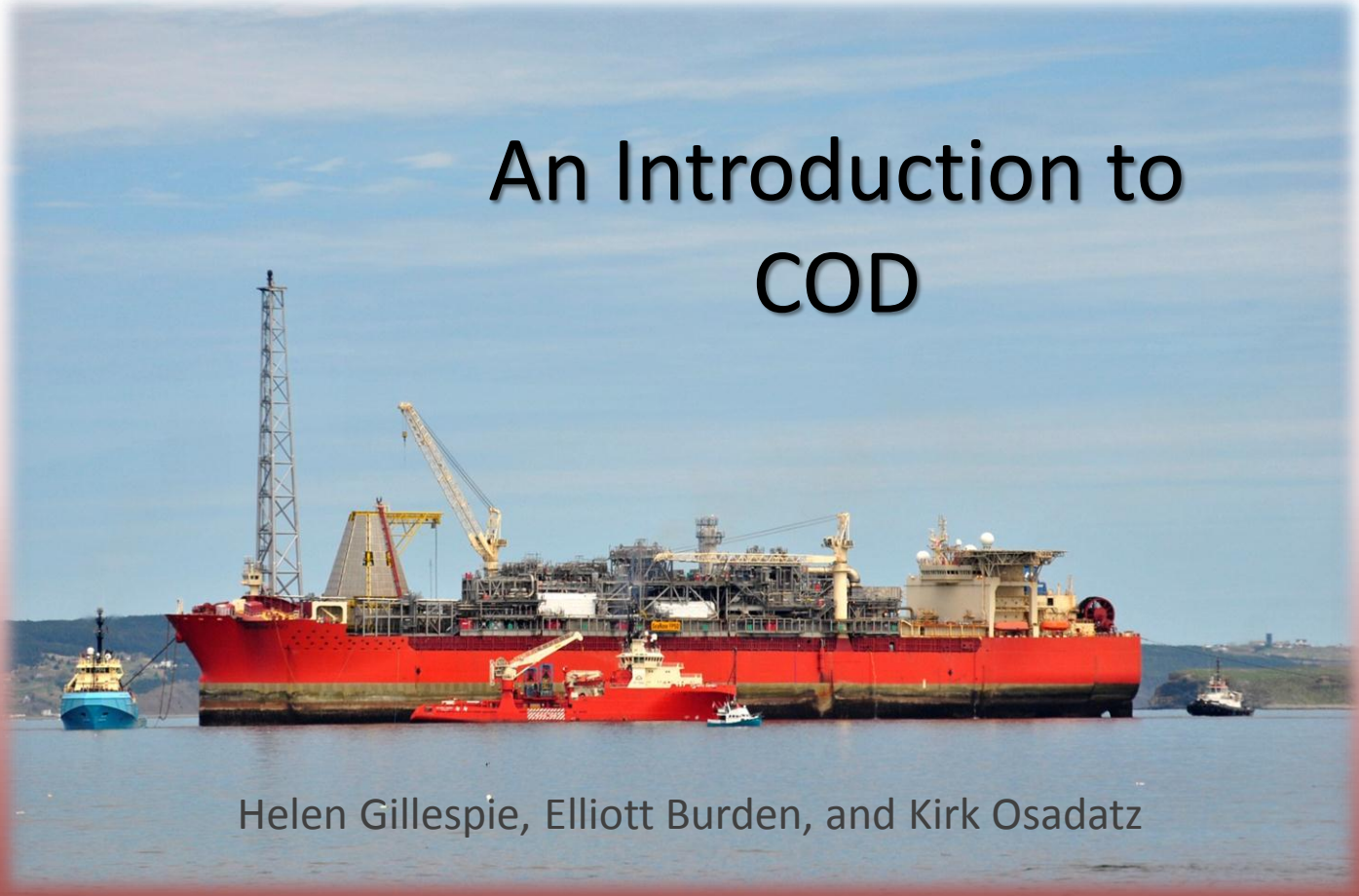
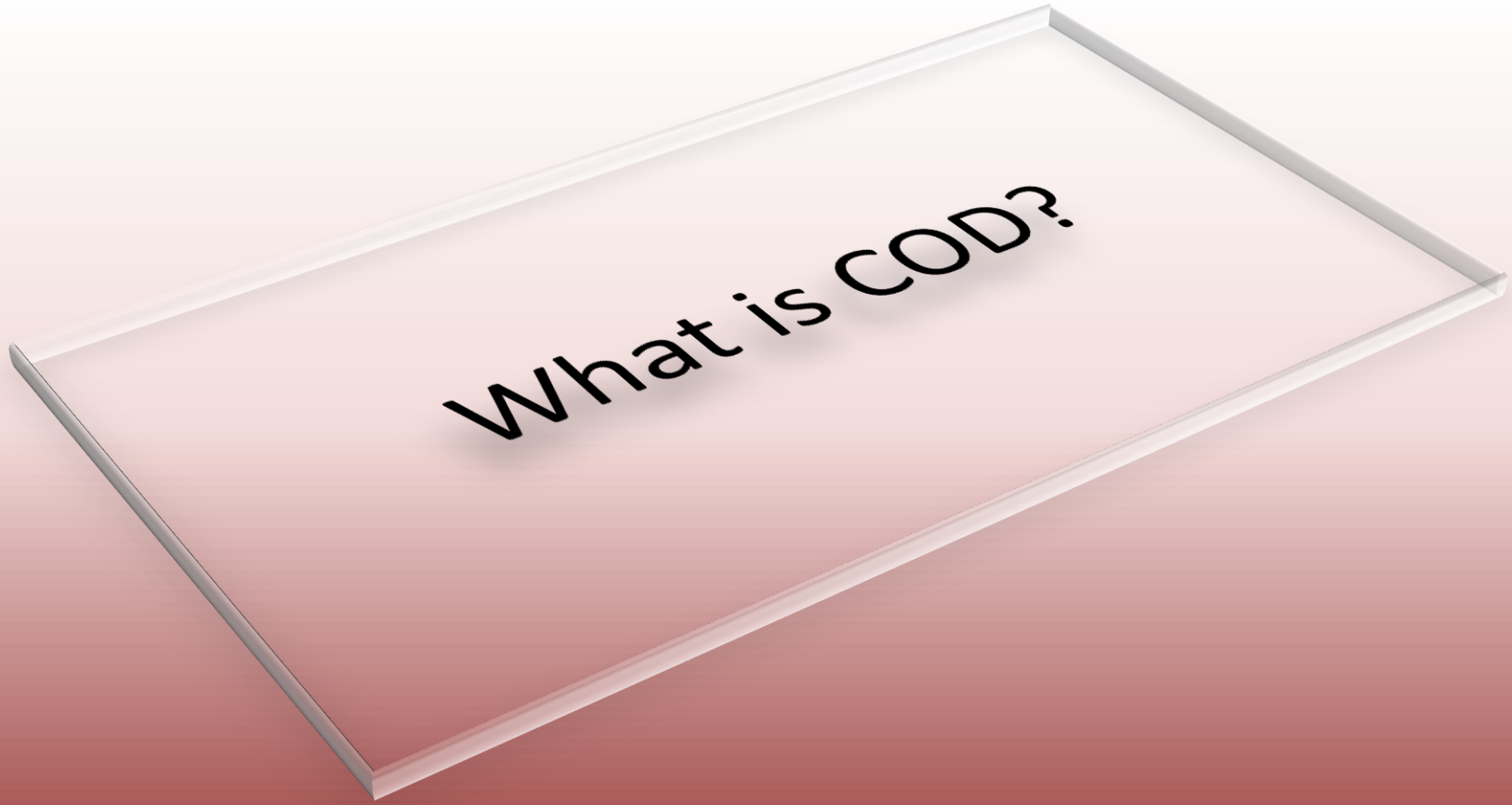


An Introduction to COD

Helen Gillespie, Elliott Burden, and Kirk Osadatz

Contents

- Brief explanation of what COD is
- Why did MUN develop it (application)
- What are the limitations
- Who can benefit
- Future work


What is COD?

COD is a Crude Oil Database

- COD was initially developed as a means to organize existing crude oil data
- Its information enables researchers at Memorial to use Fluorescence Microspectrometry as a tool to infer the oil quality of HFI

It contains a lot of information


List of providers
and their
contribution

Memorial University

- Sample Collection (129)
- Fluorescence Microspectrometry Analyses
  - Collected Fluorescence spectrograms
    - Determined quantitative information like λ_{max} and Q_{values}
- Developed the Database

CNLOPB

- Oil samples
- Sample Information
- Well location
- API^{O} gravity at time of drilling (DST)

Husky Energy

- Oil samples
- Sample information
- Well location

GSC (Calgary)

- Geochemical data
  - SARA data
  - GRGC
    - Graph
    - Report
  - SFGC
    - Graph
    - Report

Petroforma Inc.

- API^{O} gravity (new data, 2012) on the oil samples for Memorial


How do we access COD?

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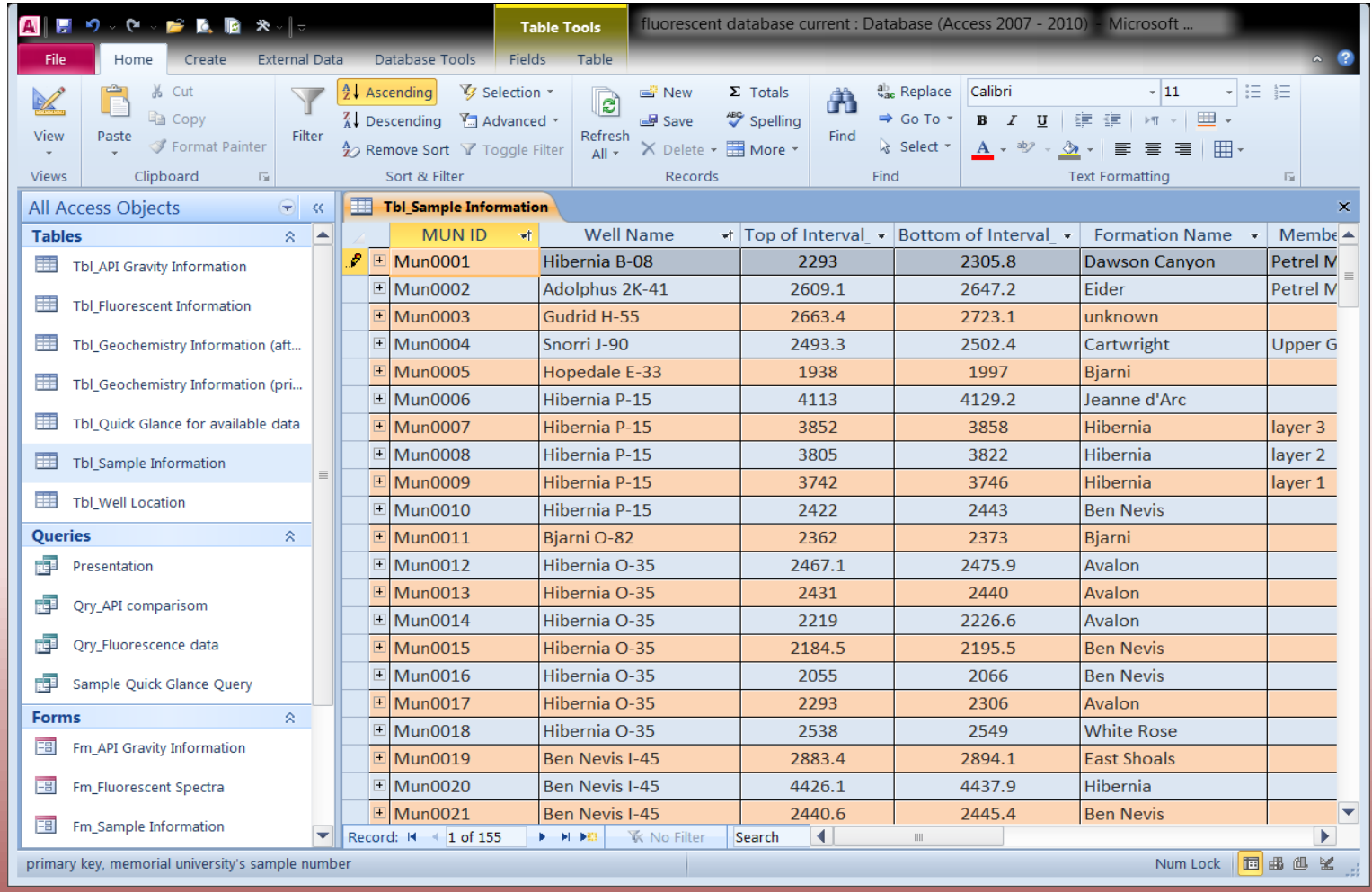
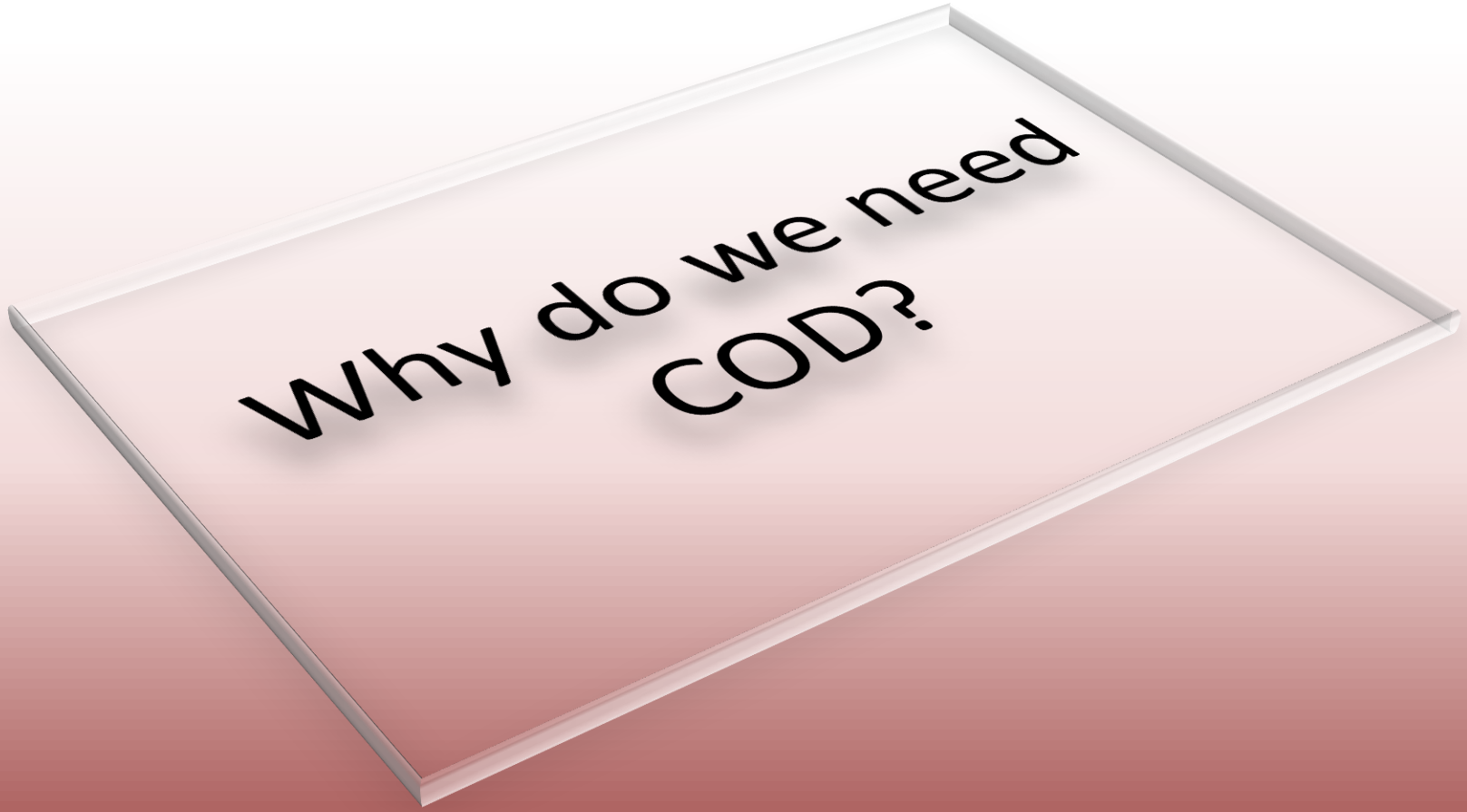


Microsoft Office® Access ™ 2007


Why do we need COD?

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We need COD Information to help us Infer Oil Quality


How do we
infer oil quality?

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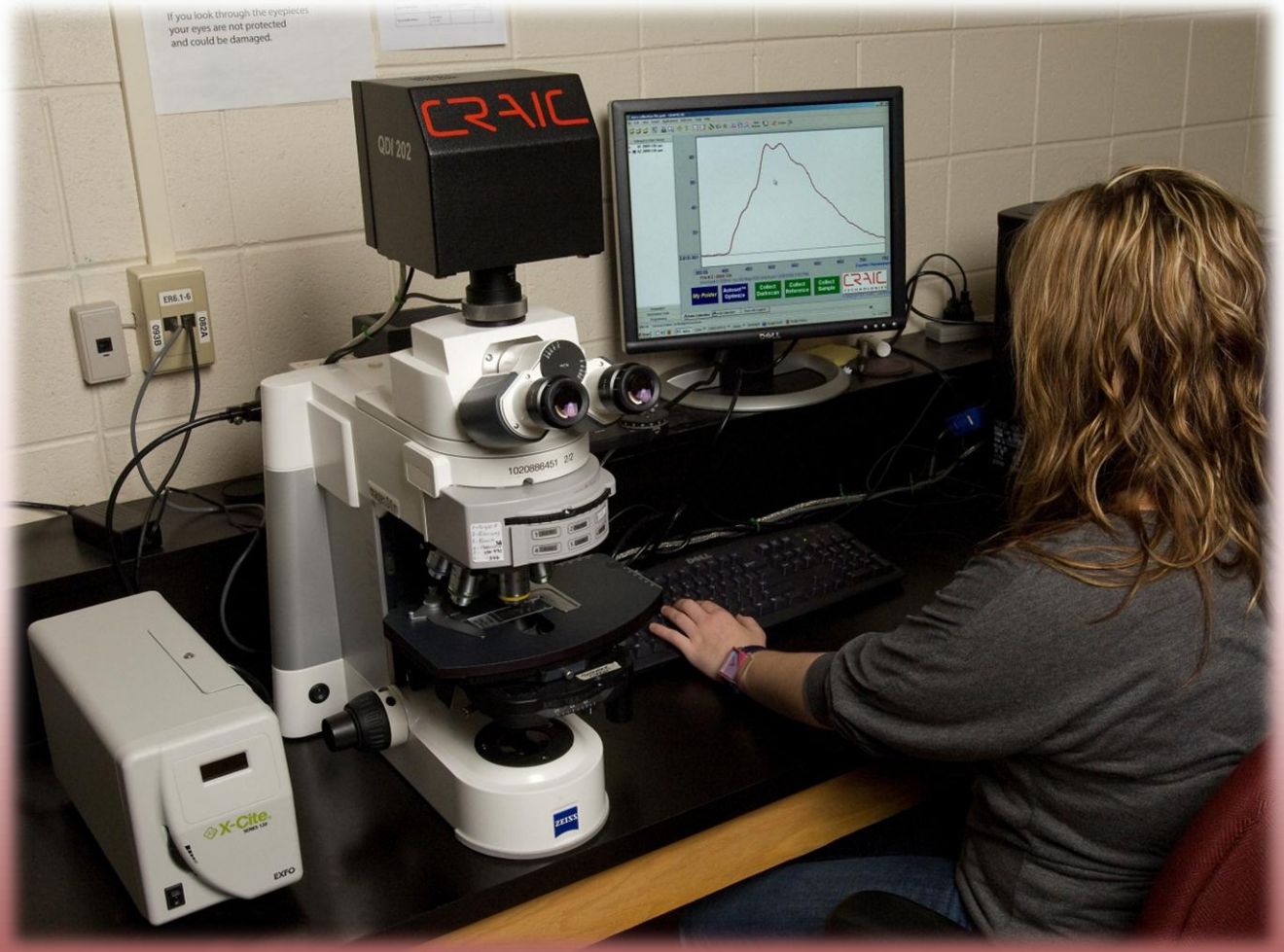
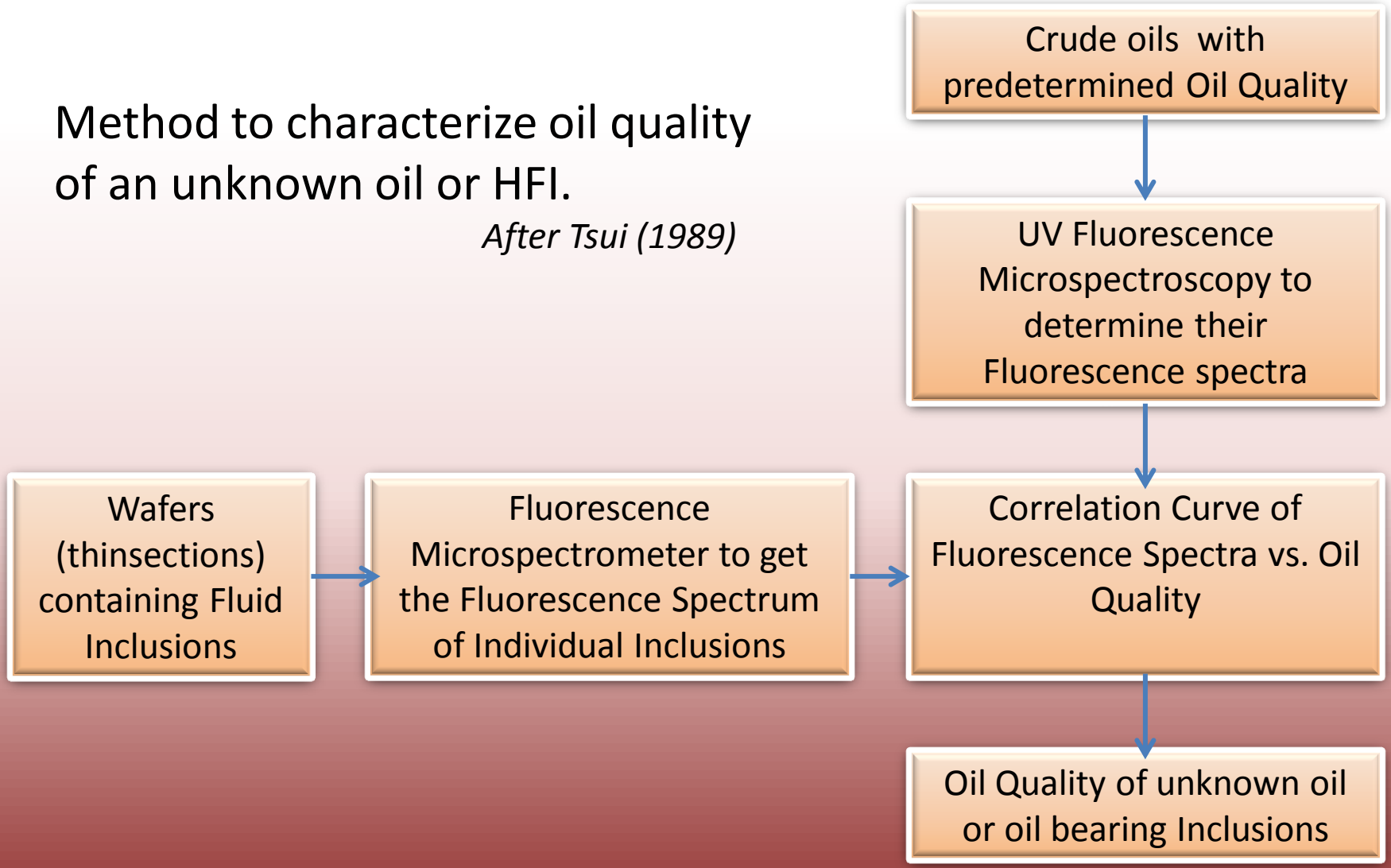
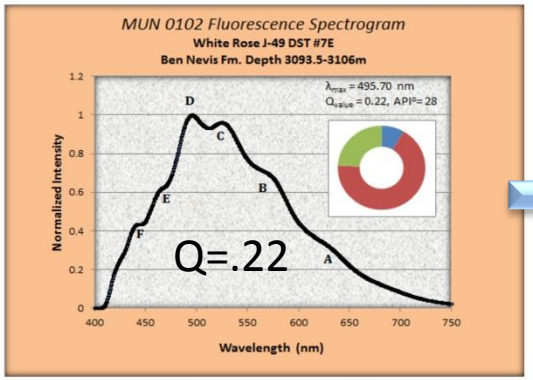


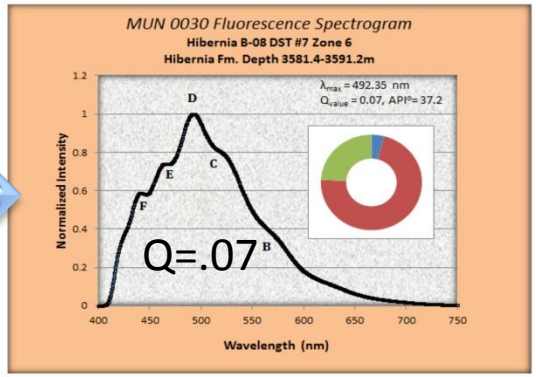
Fluorescence Microspectroscopy

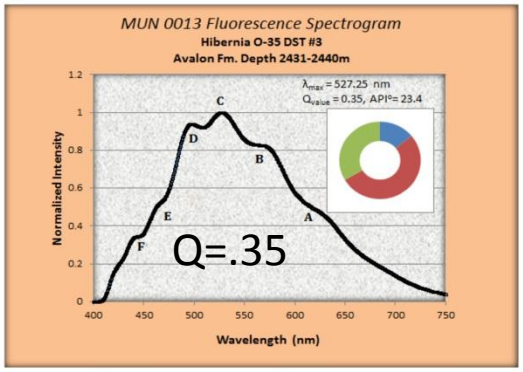
Method to characterize oil quality of an unknown oil or HFI.

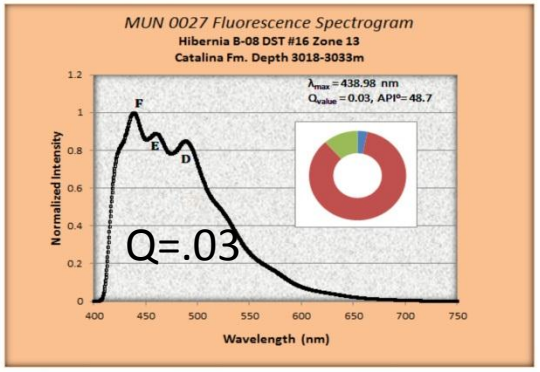
After Tsui (1989)

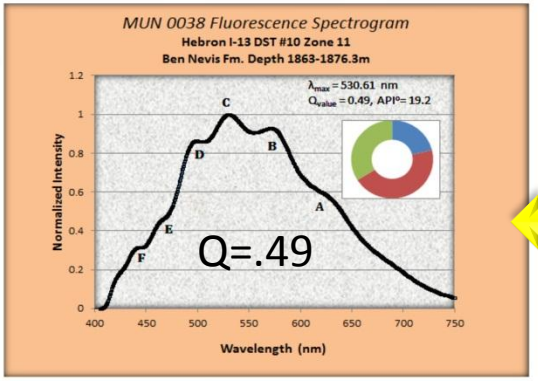


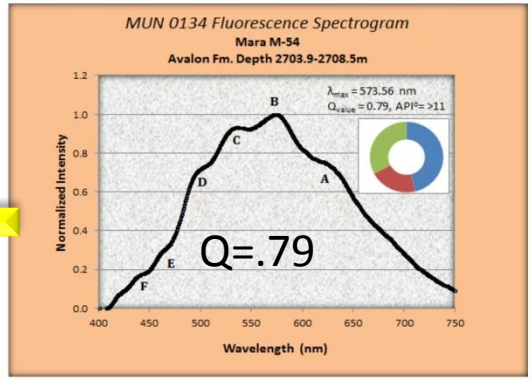












API=23.4°

S=49.8

Increasing Thermal Maturity

API=48.7°

S=85.1

API=<11°

S=21.2

Gillespie/2012

An illustration of how fluorescence spectra is influenced with changes in oil quality

Data Limitations

- Age and condition of the samples
- We can only used the maturation diagram to infer oil quality
- We do not know if the changes we are seeing in the fluorescence are a function of petroleum system characteristics or if these changes are actually universally applicable


Users/
Future Work

Users

- Anyone with in interest in oil exploration or basin analyses studies: Industry, Government or Academia

Future Work

- We recommend that the study be expanded to consider other petroleum families such as those in Western Canada. This would enable us to understand if the changes we are seeing are a function of petroleum system characteristics or if they are universally applicable.

- Fresh samples

Summary

- **Functional Database**
  - Well information, API^{o} gravity, Geochemistry, Fluorescence
- **Easily accessible** (down loadable to a home computer)
- **Can be used for basin analyses or other oil related studies**
- **Limited** by the quality and location of the oils collected to date
- **Users** anyone with an interest in oil exploration
- **Future work** test the fluorescence maturation diagram on other petroleum families within Canada

Acknowledgements

I would like to thank the Department of Natural Resources for their financial support and my employer, CREAIT Network, for their encouragement to pursue this project.


Questions
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Thank-you