

# **Petrographic Analysis of a Carbonate Reservoir, Leitchville/Bone Creek Pools and Surrounding Area, Lower Shaunavon, Southwest Saskatchewan**

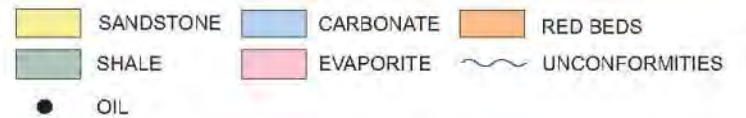
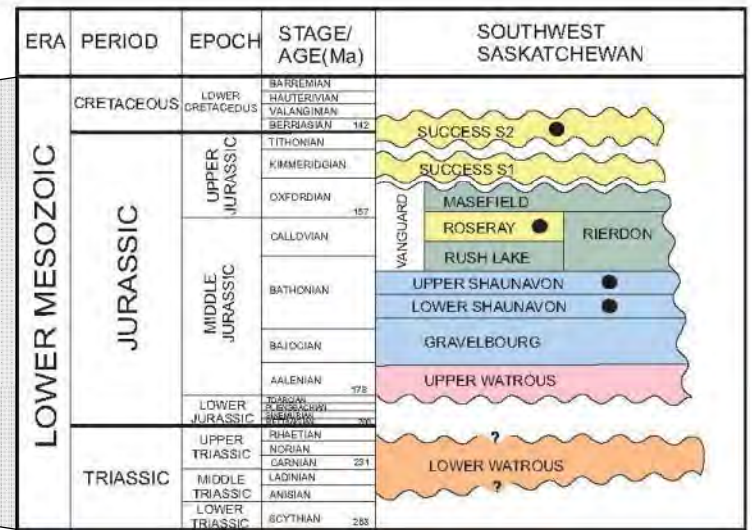
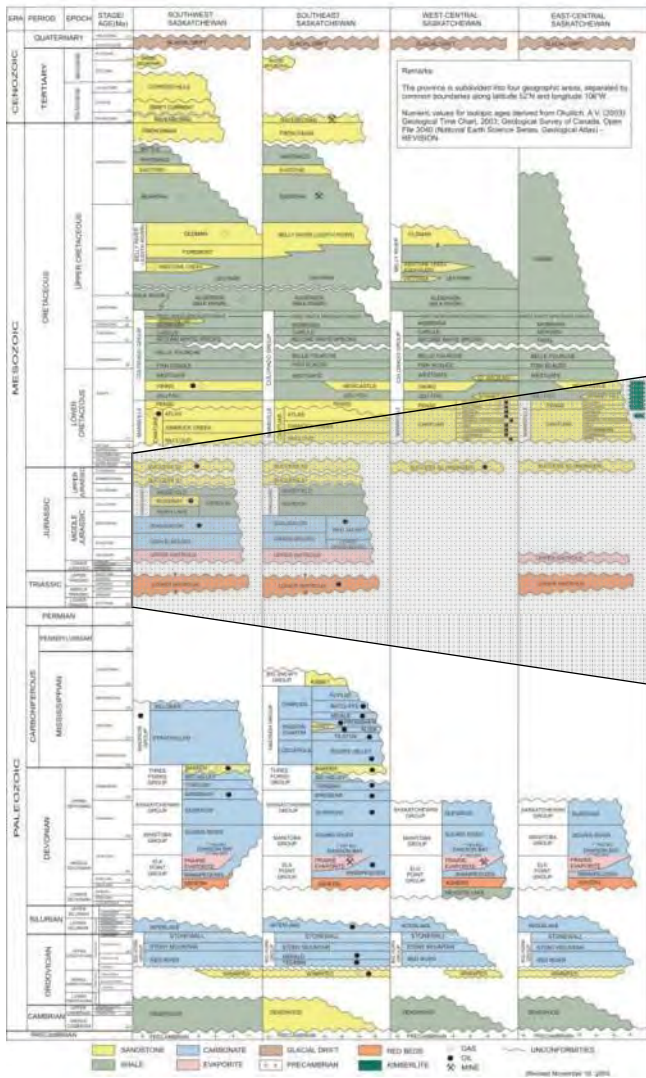
Wanda Grisak, U of Regina, PetroBakken Energy

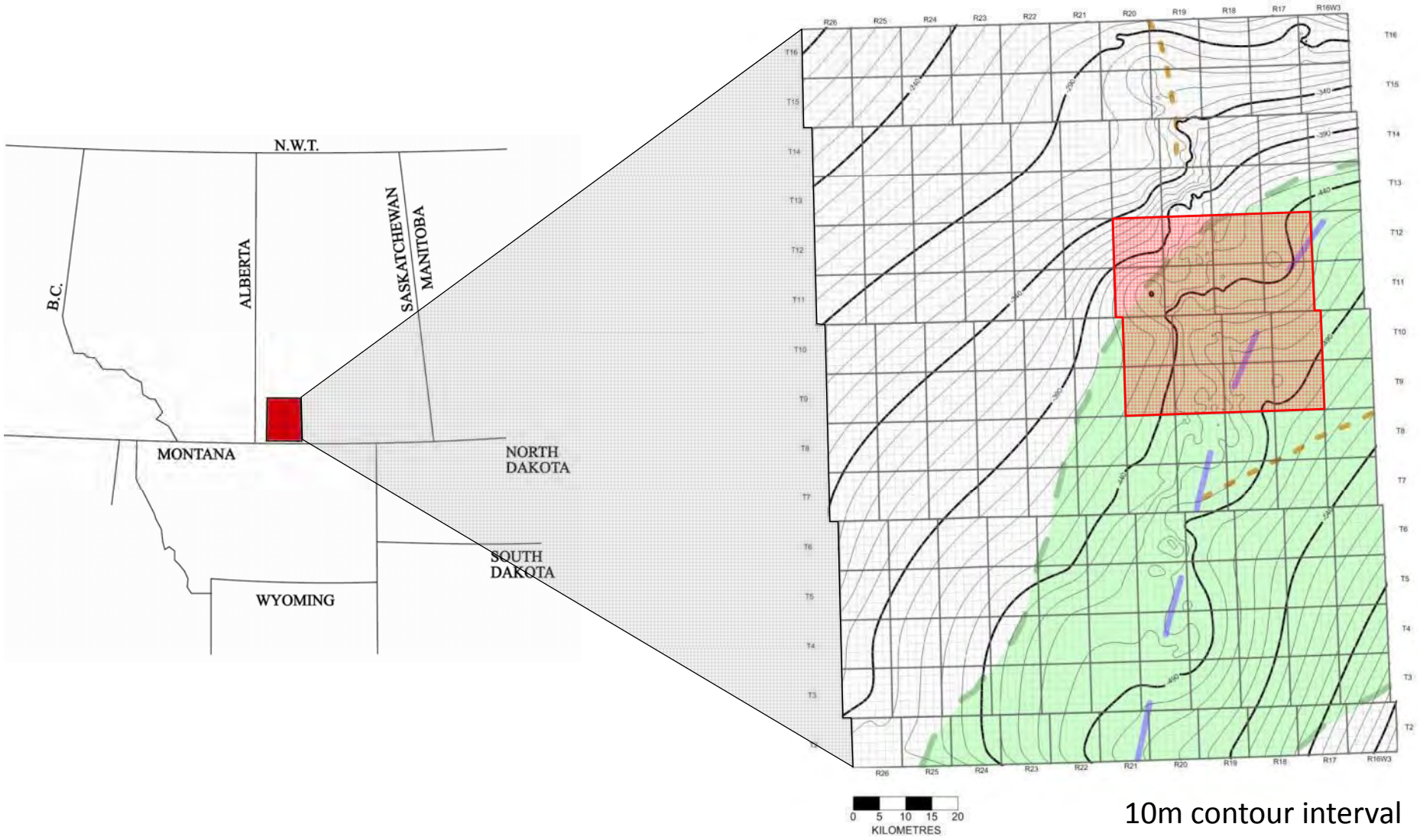
Arden Marsh, Sask. Geological Survey

Dr. Hairuo Qing, Department Head, U of Regina

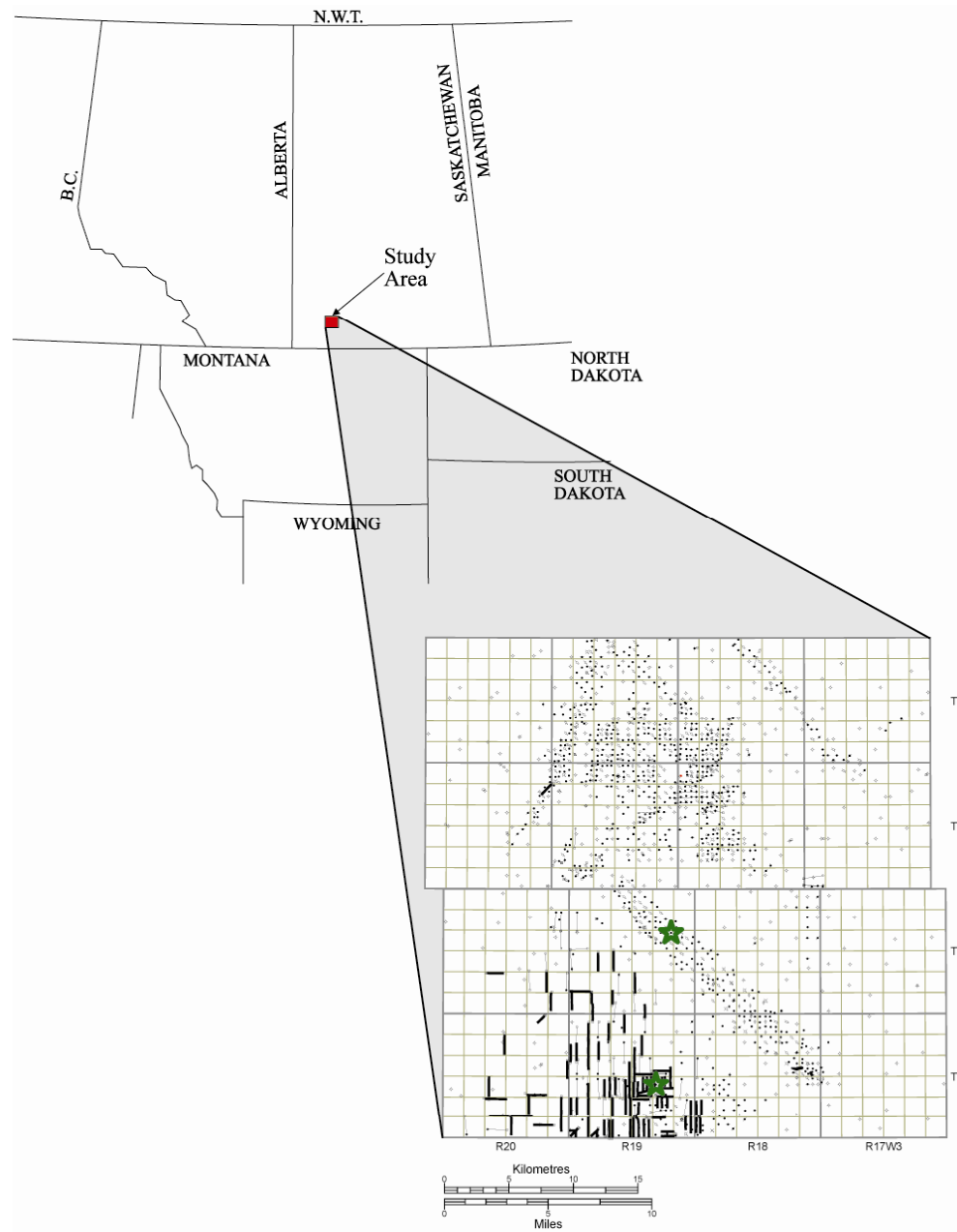


### Stratigraphic Correlation Chart

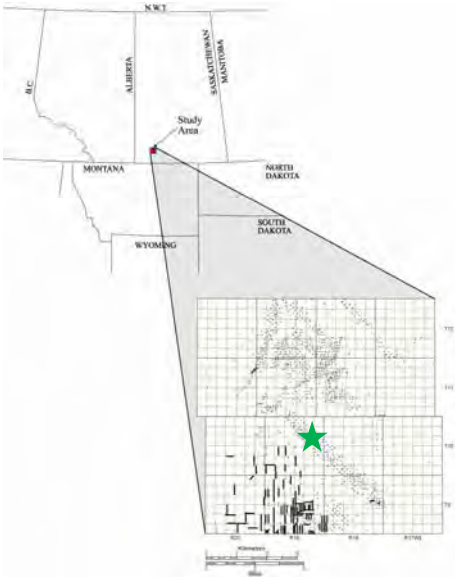
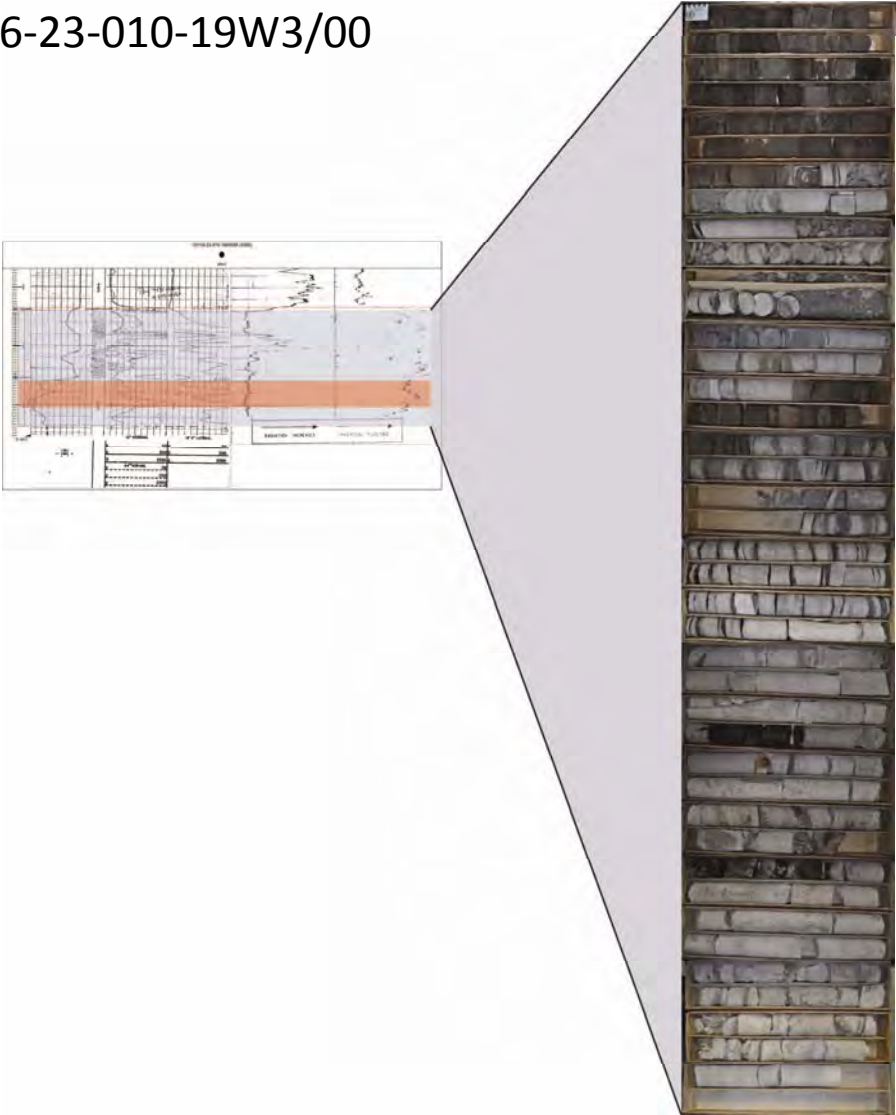




10m contour interval

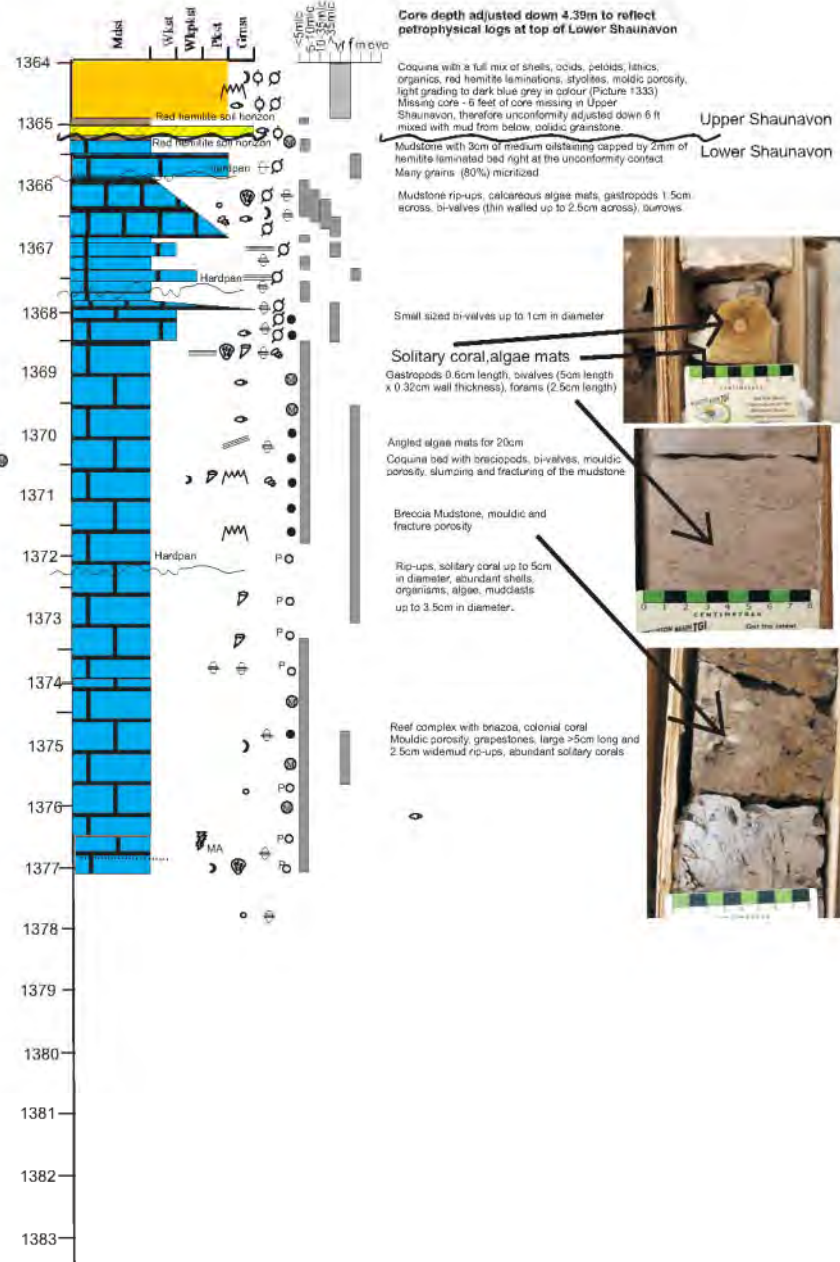


101/16-23-010-19W3/00

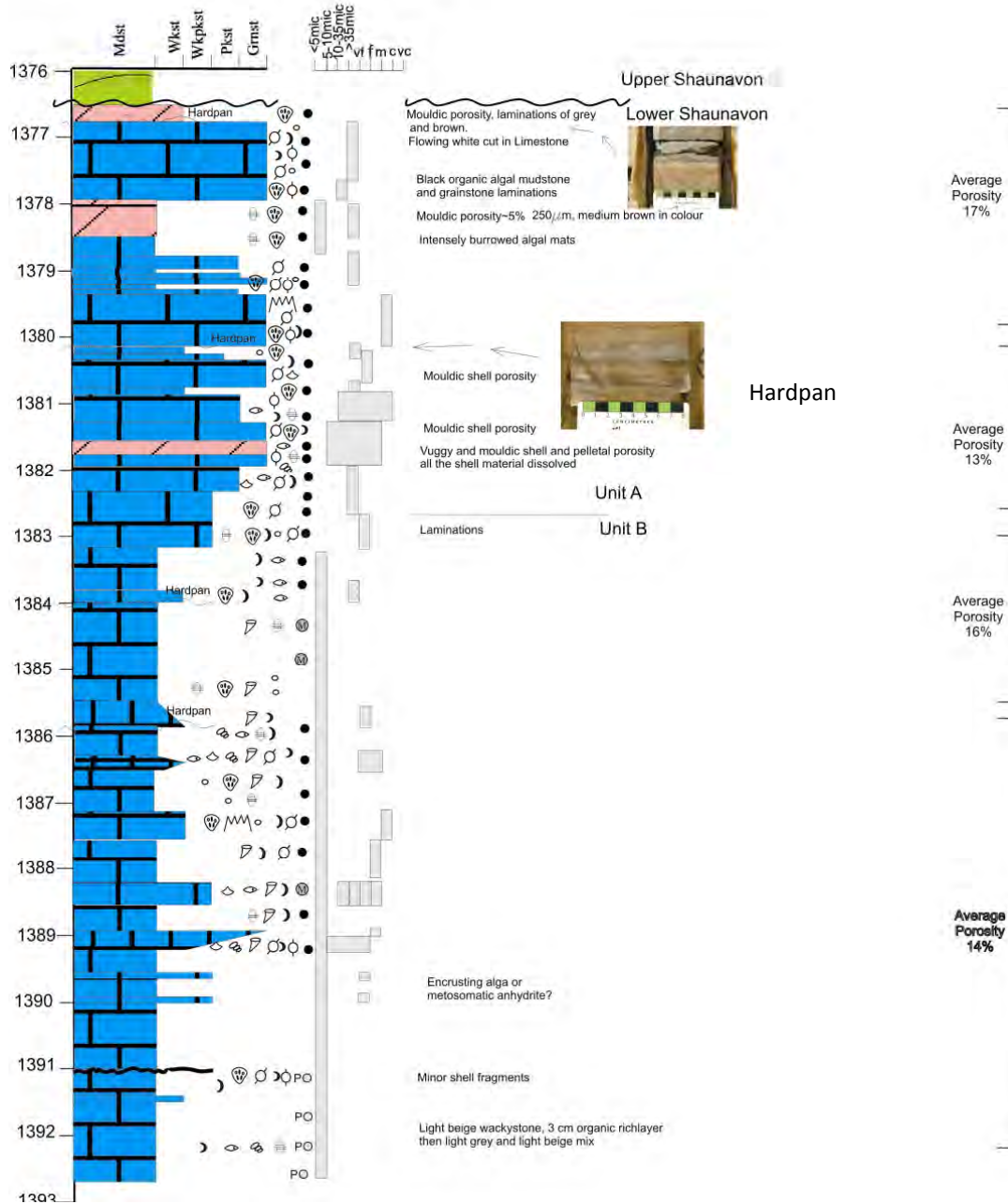


16-23-010-19W3

Crystal/Grain Sizes



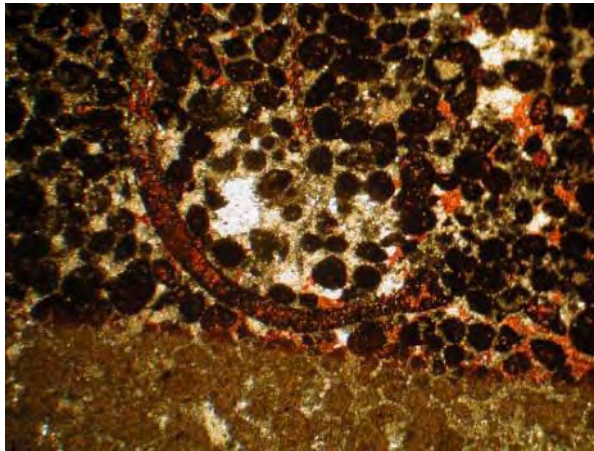
Crystal/Grain Sizes



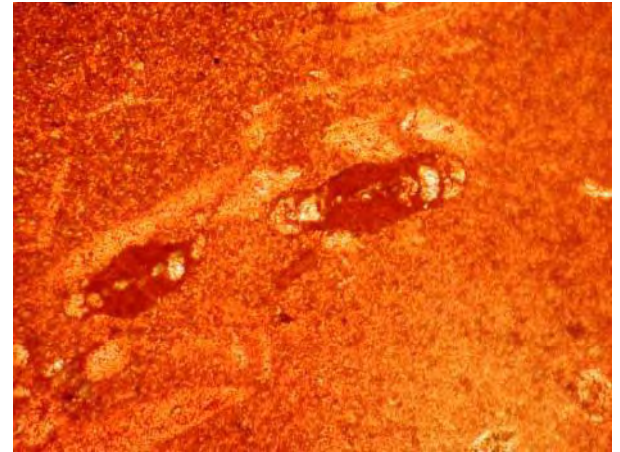
141/16-35-009-20W3/00



4x magnification  
Alizarin Red Stain  
Plain light

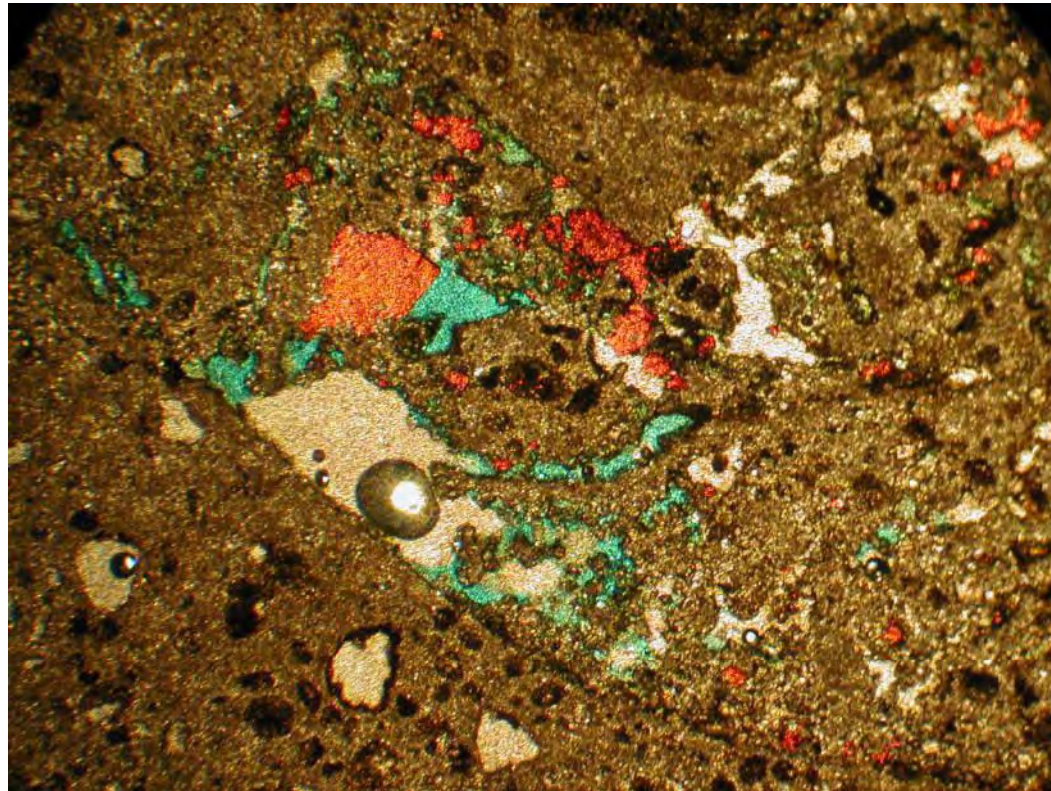


4x magnification  
Alizarin Red Stain  
plain light



20x magnification,  
Alizarin Red Stain  
Plain light

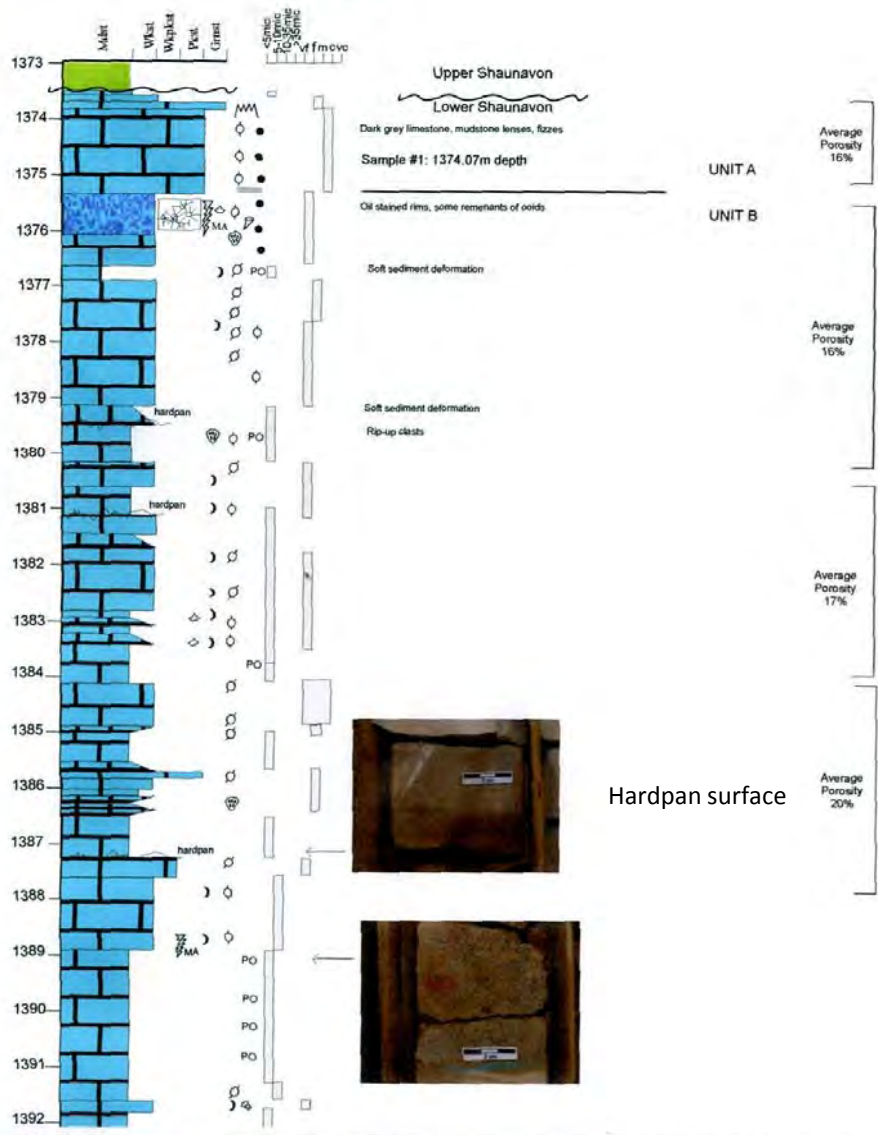
141/16-35-009-20W3/00



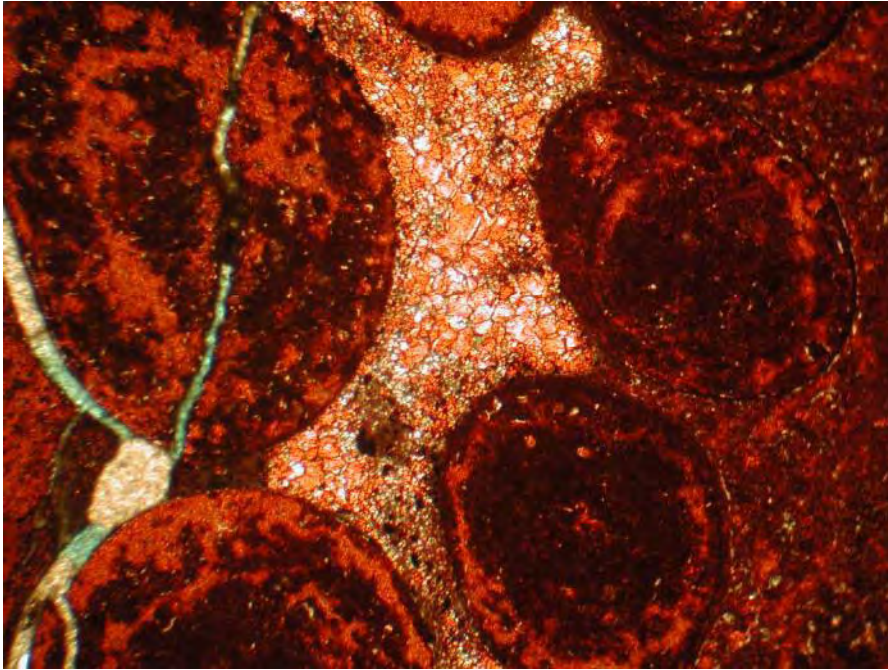
4x magnification  
Alizarin Red Stained

15-16-009-19W3

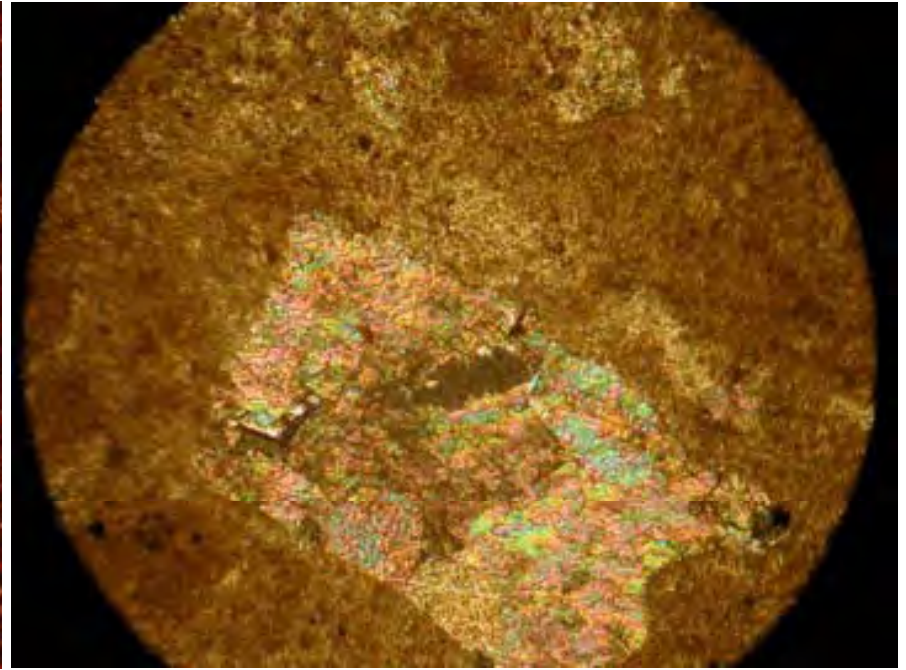
Crystal/Grain Sizes



121/15-16-009-19W3

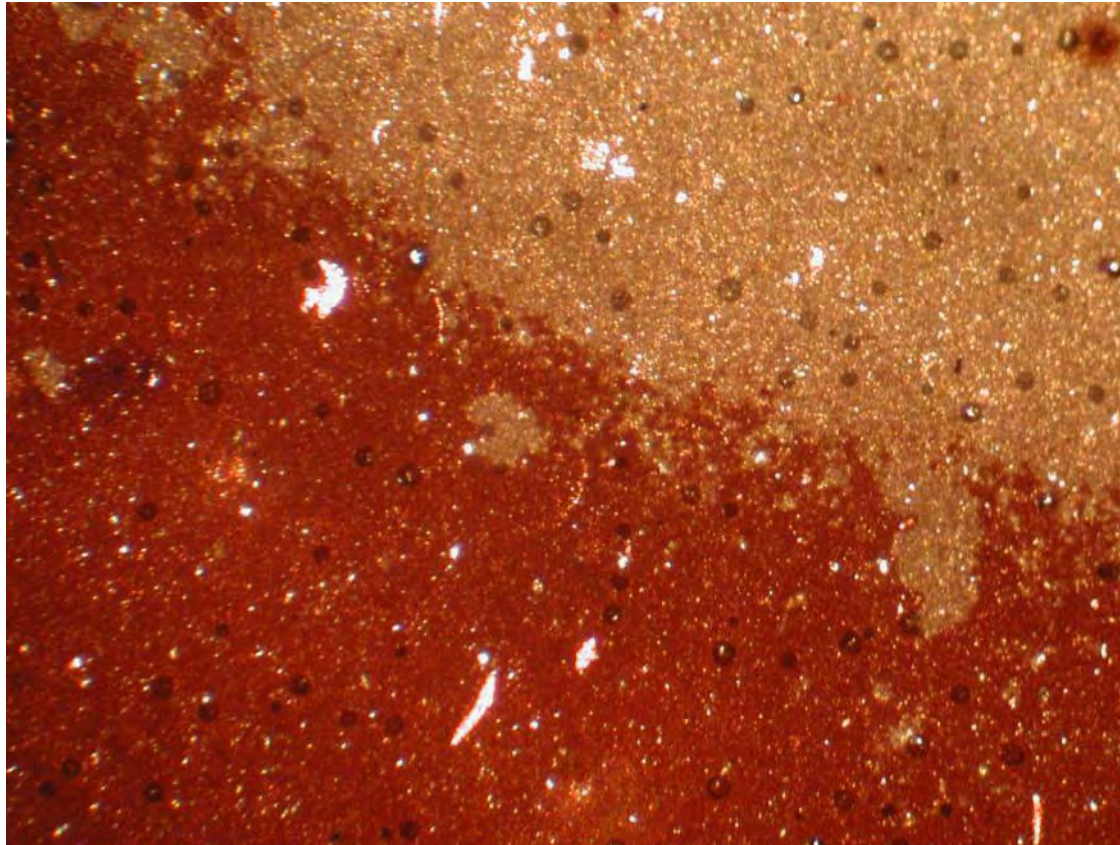


10x magnification  
Alizarin Red Stained



20x magnification,  
X-polars

15-16-009-19W3



4x magnification  
Alizarin Red stain

# Permeability vs. Porosity and Depth

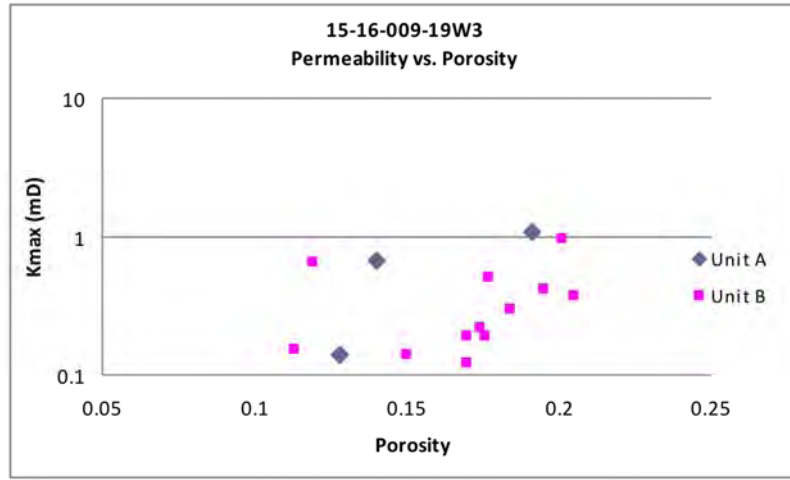


Figure 4.54: Permeability vs. Porosity for WAVE LEITCHVILLE 15-16-009-19W3 Lower Shaunavon Formation . Data from core analysis posted in ACCUMAP IHS 2009.

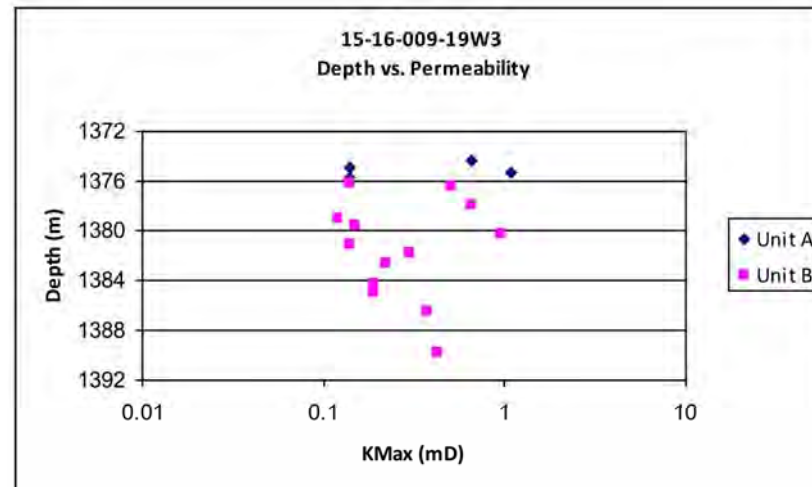
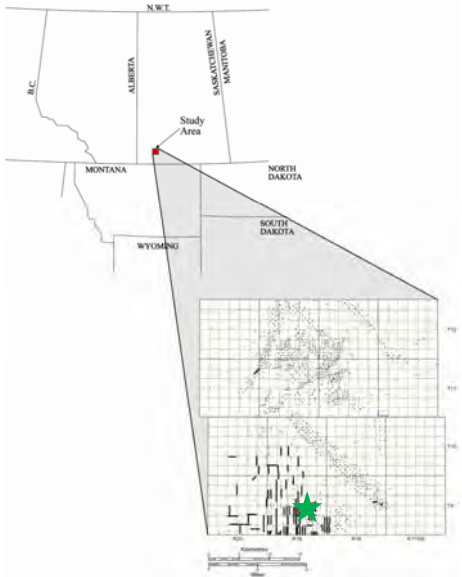
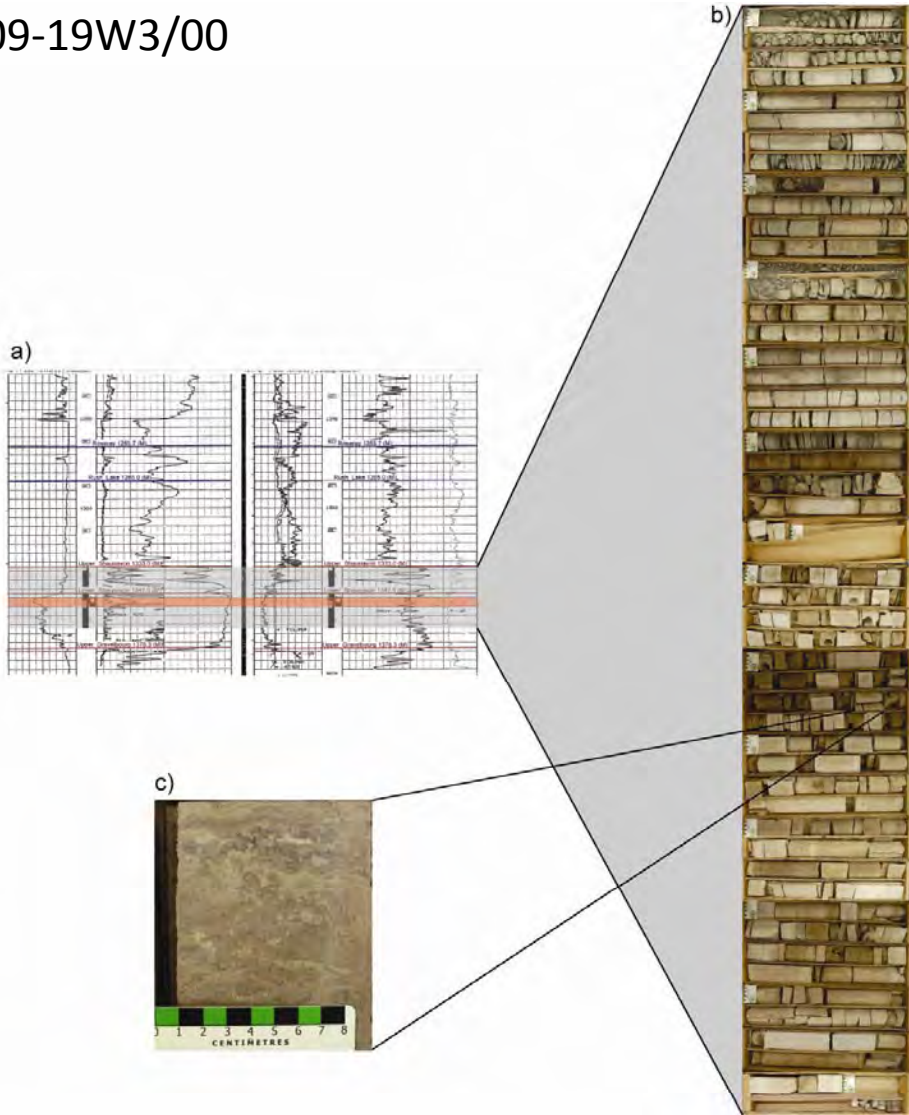


Figure 4.55: Depth vs. Permeability for WAVE LEITCHVILLE 15-16-009-19W3 Lower Shaunavon Formation. Data from core analysis posted in ACCUMAP IHS 2009

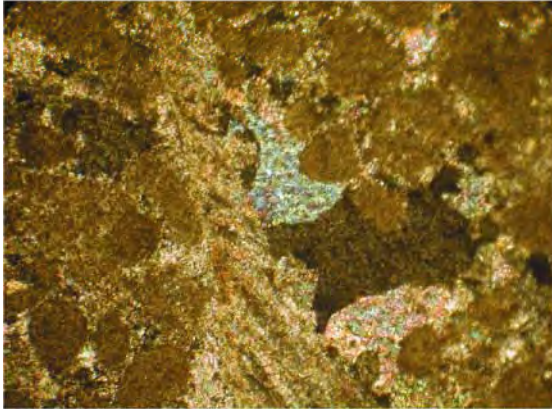
101/12-14-009-19W3/00



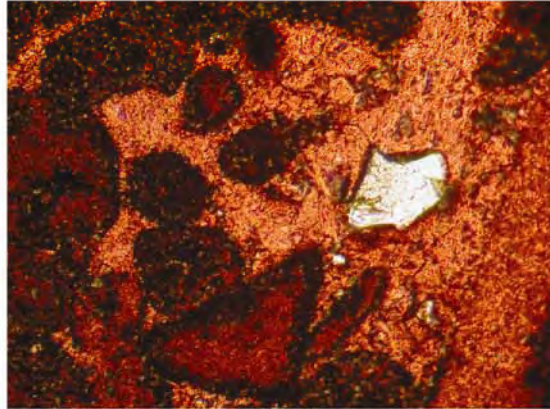


101/12-14-009-19W3/00

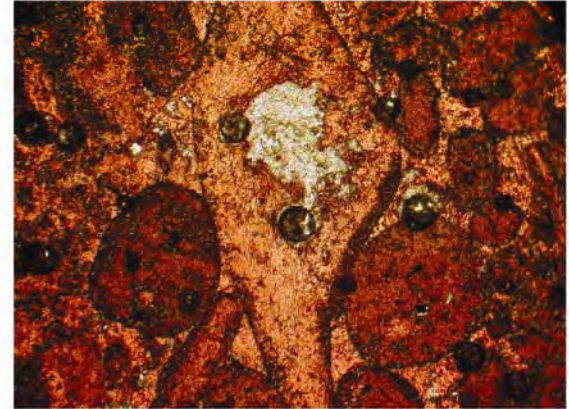
a)



b)



c)



10x magnification  
For all 3 slides

Alizarin Red stain

# Permeability vs. Porosity and Depth

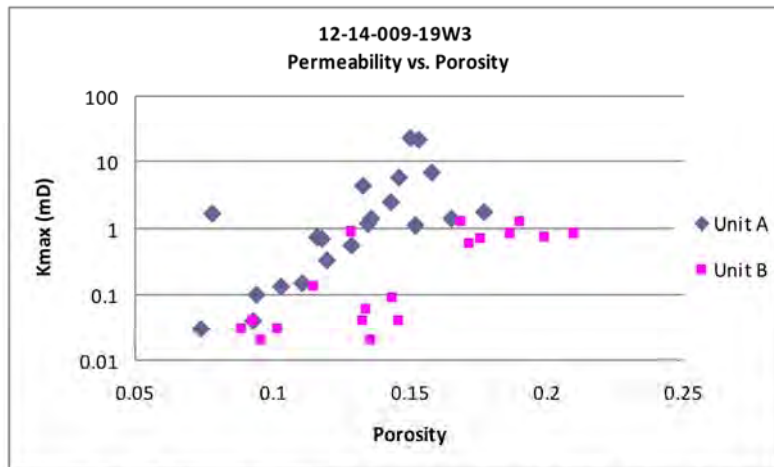


Figure 4.24: Permeability vs. Porosity for 12-14-009-19W3 CANYON CREEK LEITCHVILLE. Data from core analysis posted in ACCUMAP IHS 2009.

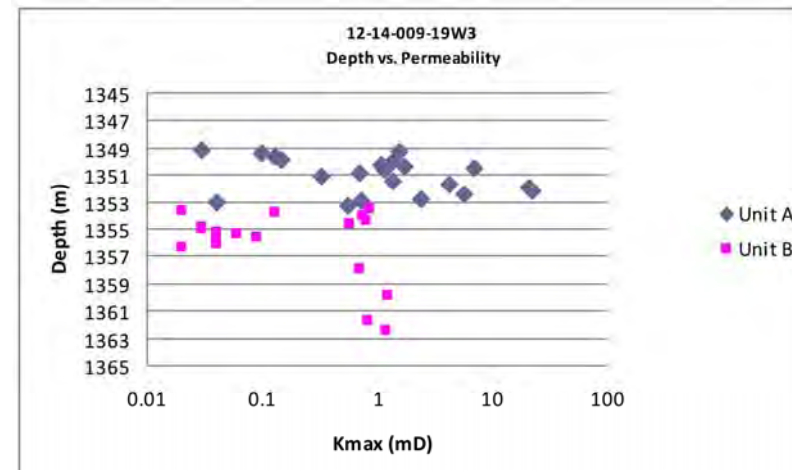
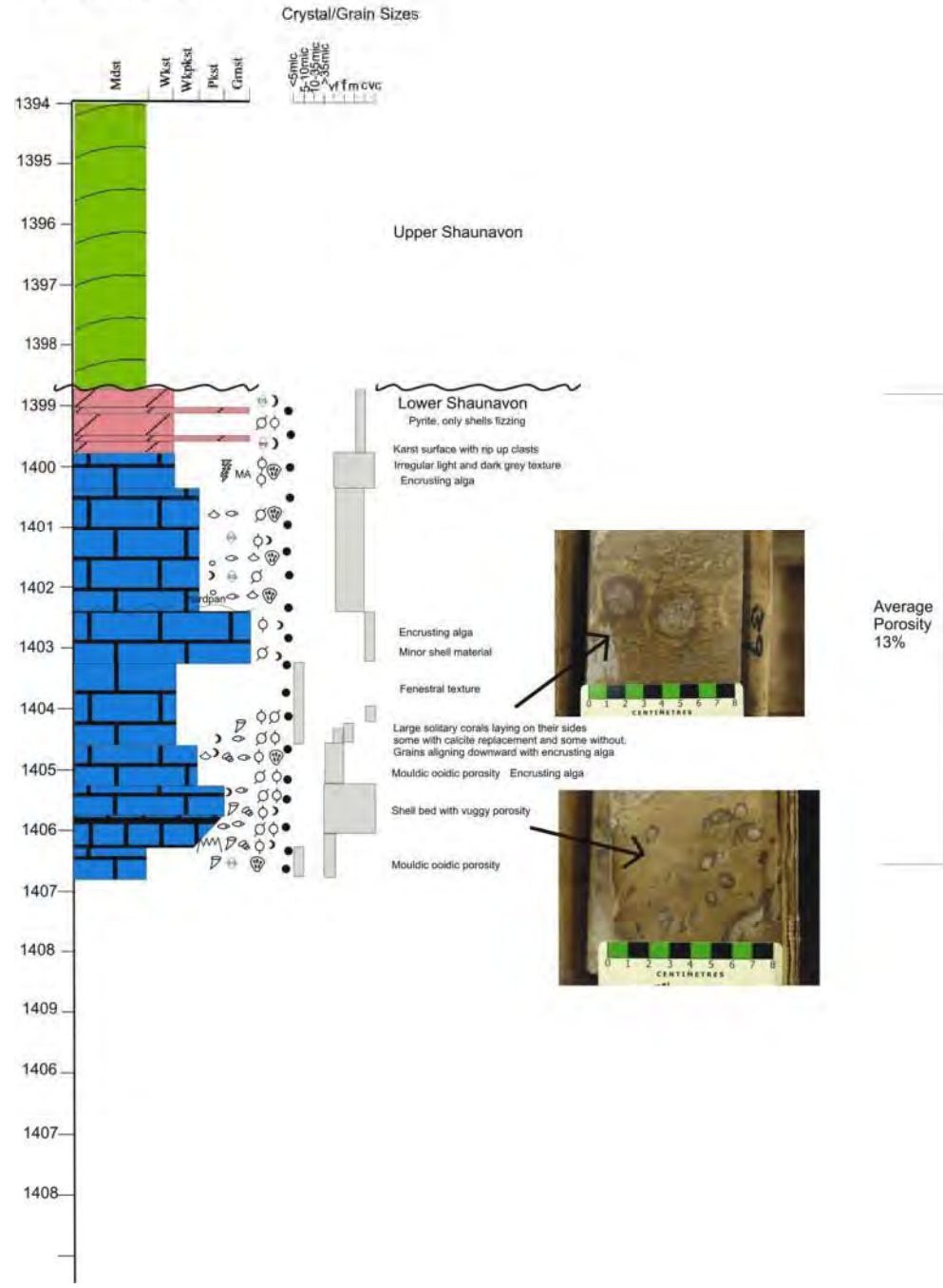
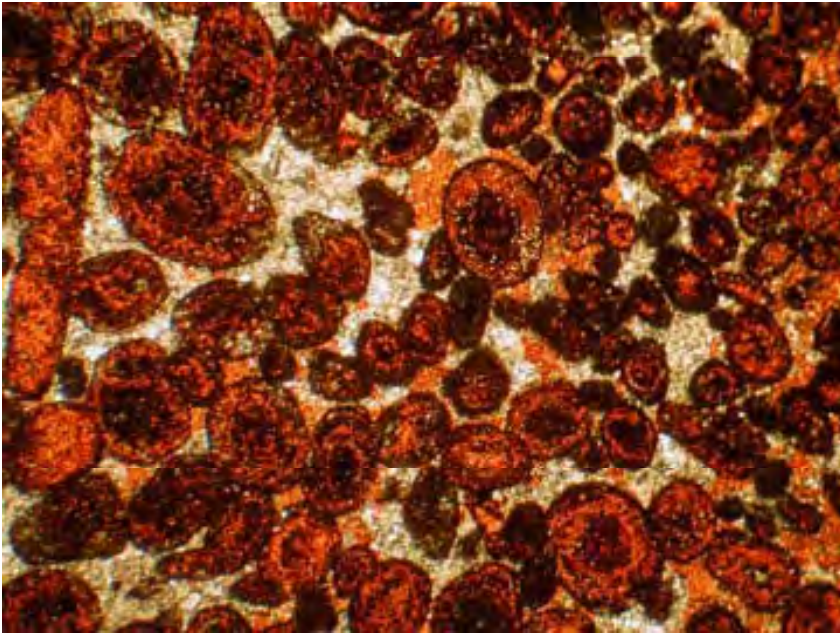


Figure 4.25: Depth vs. Permeability for 12-14-009-19W3 CANYON CREEK LEITCHVILLE. Data from core analysis posted in ACCUMAP IHS 2009.

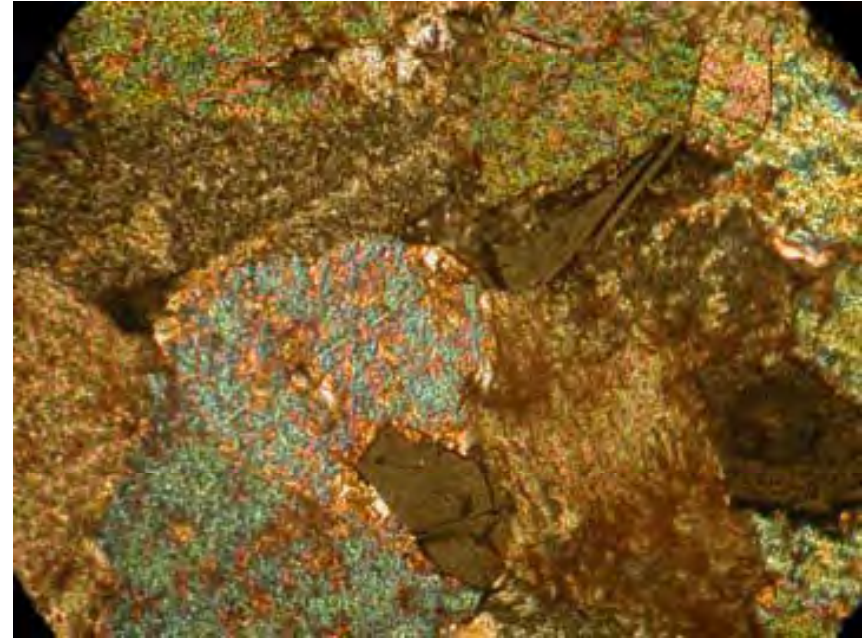
08-07-009-18W3



111/08-07-009-18W3/00

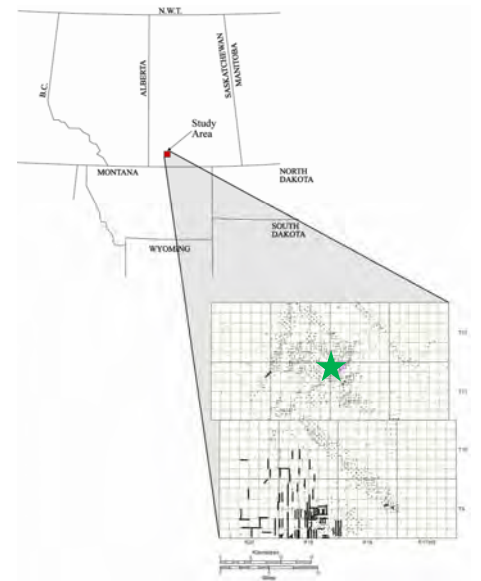
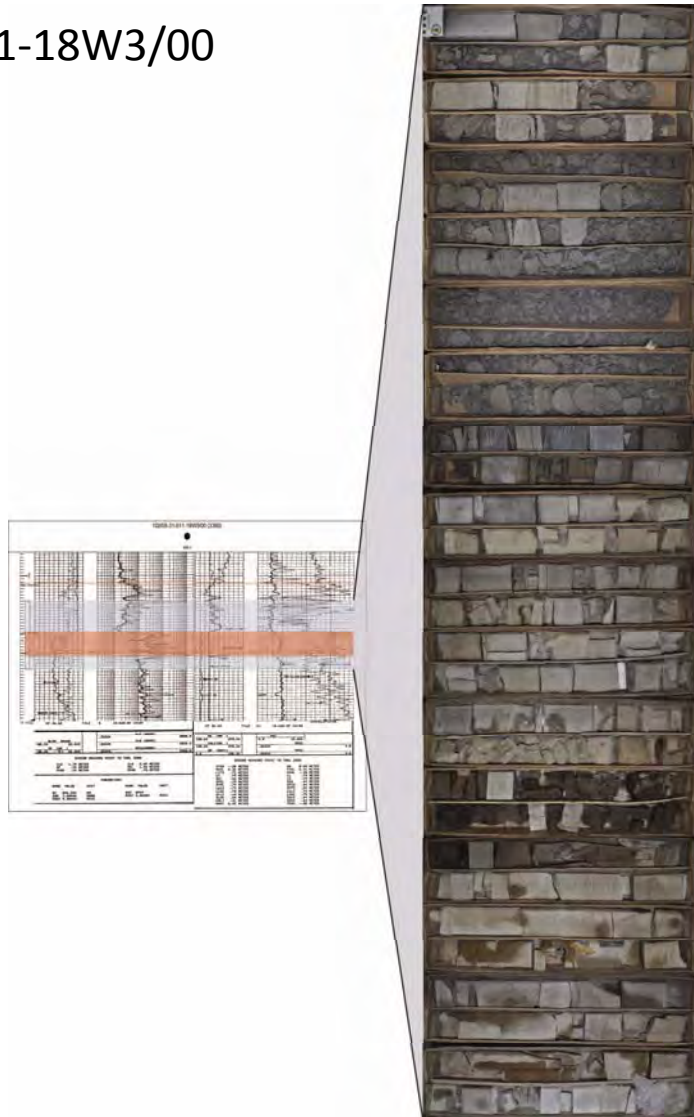


4x magnification,  
plain light  
Alizarin Red stain



20x magnification  
x-polars

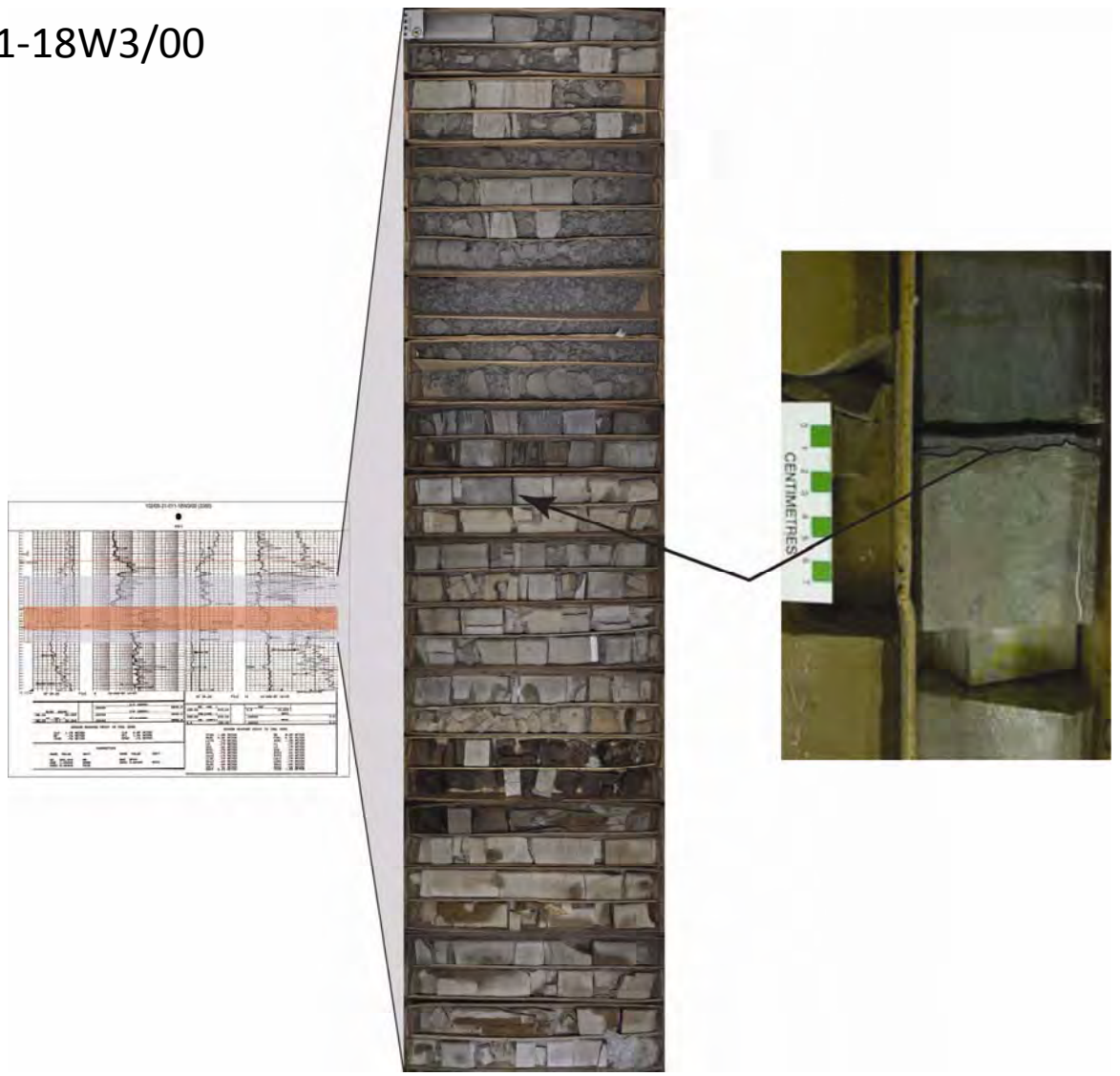
102/05-31-011-18W3/00



102/05-31-011-18W3/00

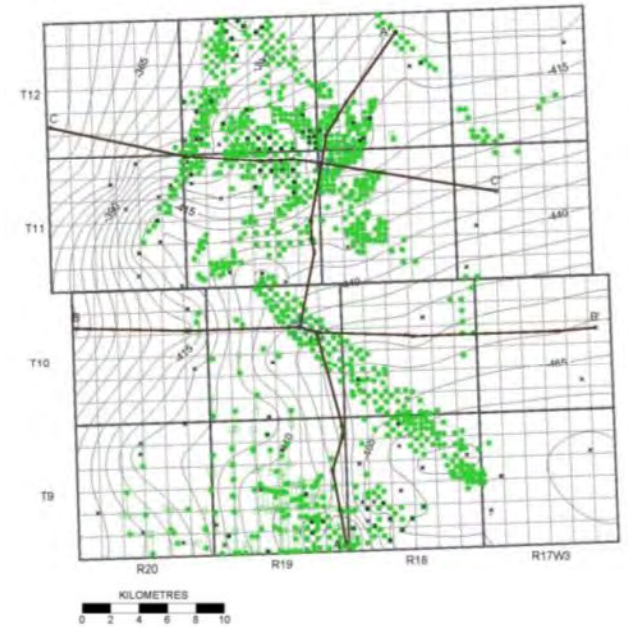


102/05-31-011-18W3/00

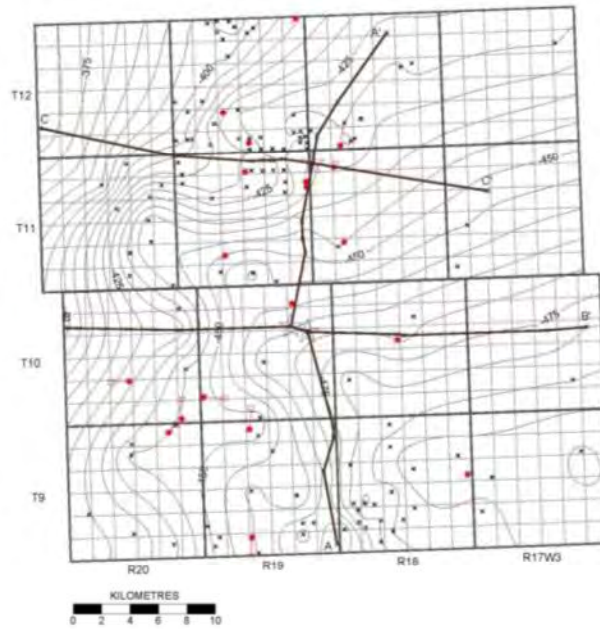


# Structure

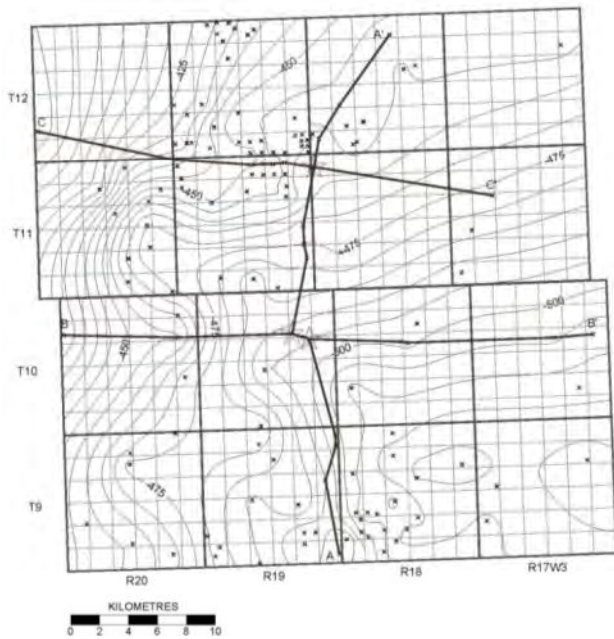
## Upper Shaunavon Formation



## Lower Shaunavon Formation



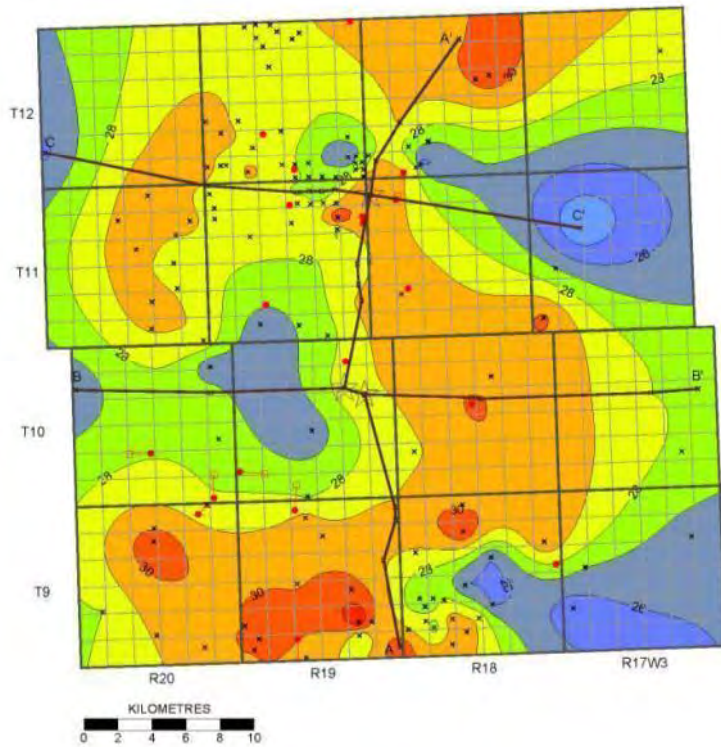
## Upper Gravelbourg Formation



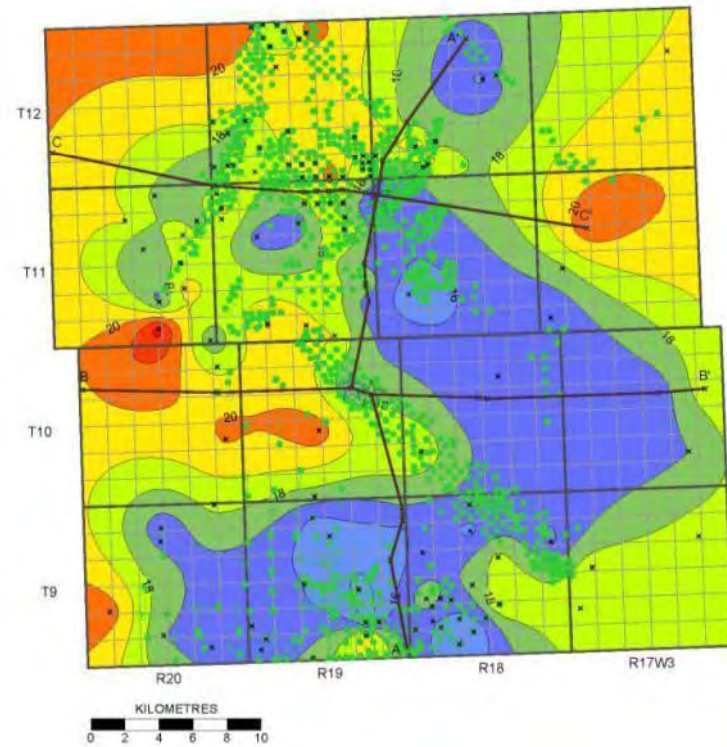
5m contour interval

# Isopach

## Lower Shaunavon Formation

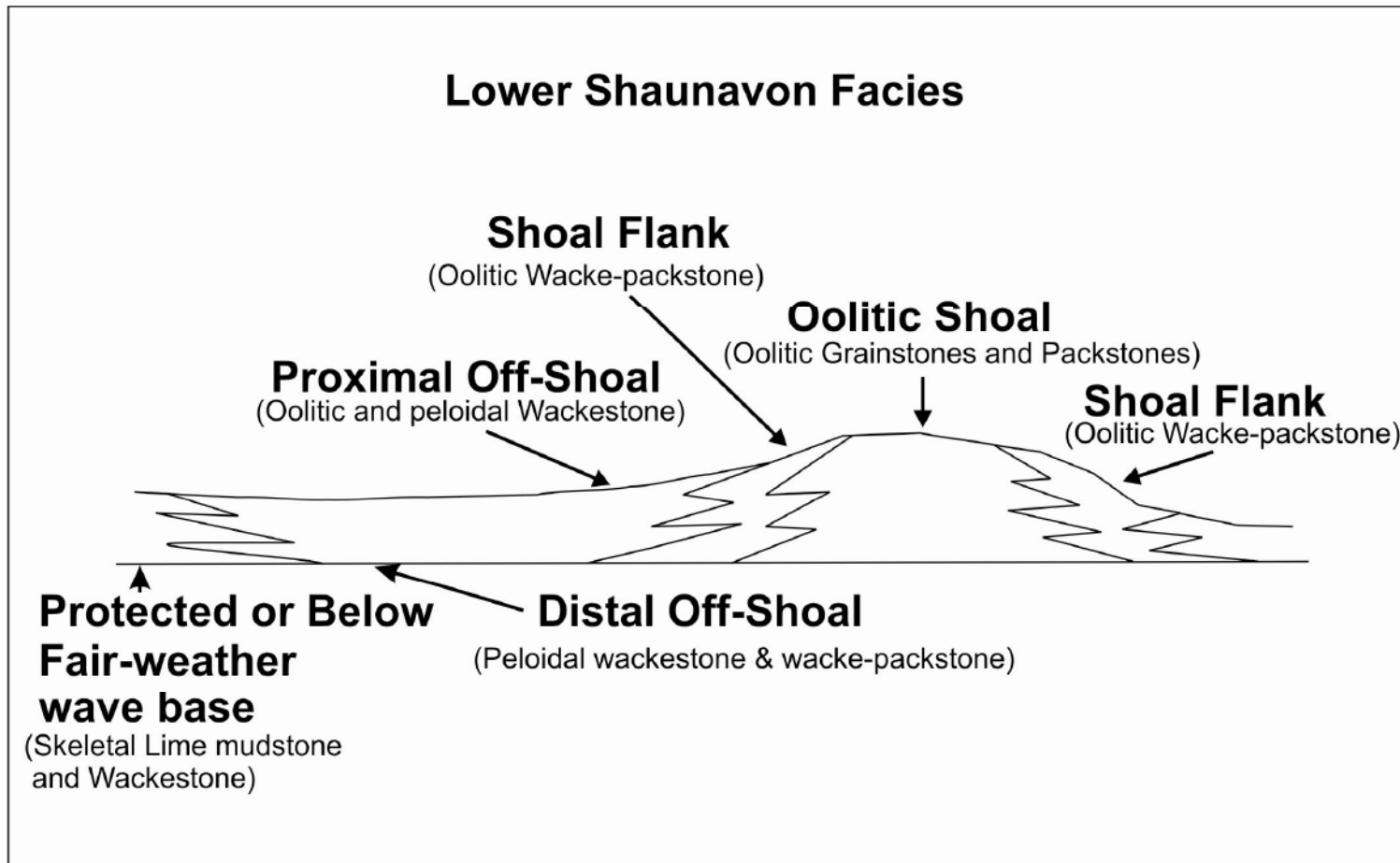


## Upper Shaunavon Formation



1m contour interval

# Depositional Model



*from Kent and Smith, 2009*

# Acknowledgements

Co-Authors – Arden Marsh and Dr. Hairuo Qing

- Dr. Don Kent
- John Lake
- Saskatchewan Geological Survey
- Doug Haden
- University of Regina
- Petrobakken Energy