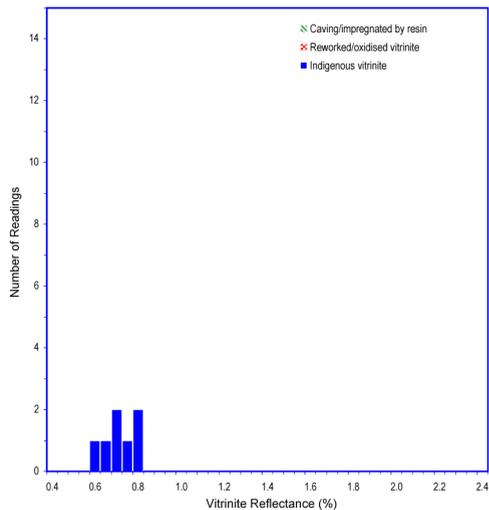


Organic petrographic analyses on Ordovician shale wells in Ohio.

Performed by Core Laboratories

**Visual kerogen analysis and photomicrographs of the American Aggregate well (APINO 3416560005).
Also included is a thermal maturation scale.**

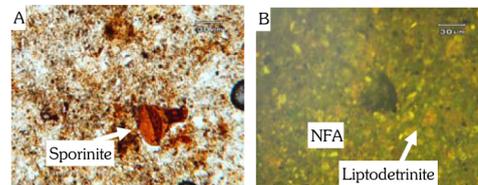
ORGANIC PETROGRAPHY ANALYSIS



Well : American Aggregate

Depth (ft) : 923.2
 Mean Ref. : 0.74%
 Readings : 7
 Min. Ref. : 0.64%
 Max. Ref. : 0.84%
 SD : 0.068

Sample Type : Core Chip
 Comments :



Visual kerogen analysis show good recovery organic matter dominated by non fluorescence amorphous (NFA) and vitrinite particles, exinite contains of brown sporinite with thermal alteration scale (TAS) value of 4/5 indicating mature organic matter corroborate to vitrinite reflectance data value of 0.74% Ro (mean vitrinite reflectance). The maceral composition indicating type III/IV gas prone kerogen. Photomicrograph show typical view in transmitted white light (A) and (B) fluorescence view under reflected ultra violet light.

Ordered Ro Values :

0.64 0.68 0.71 0.72 0.79 0.81 0.84

Visual Kerogen Analysis :

Client ID	Sample ID	Depth (ft)	Amorphinite (Type I-III/IV)		Exinite (Type I/II)						OPK %	Vitrinite Type III %	Semi Fusinite Type IV %	Inertinite Type IV %	Mean Ro%	TAS
			NF.A. %	F.A %	A %	C %	S %	R %	SB %	L %						
	-	923.2	17	45	1	-	5	2	-	15	68	15	-	-	0.74	4/5

NF.A : Non Fluorescent Amorphous

F.A : Fluorescing Amorphous

A : Alginite

C : Cutinite

S : Sporinite

R : Resinite

S : Suberinite

L : Liptodetrinite

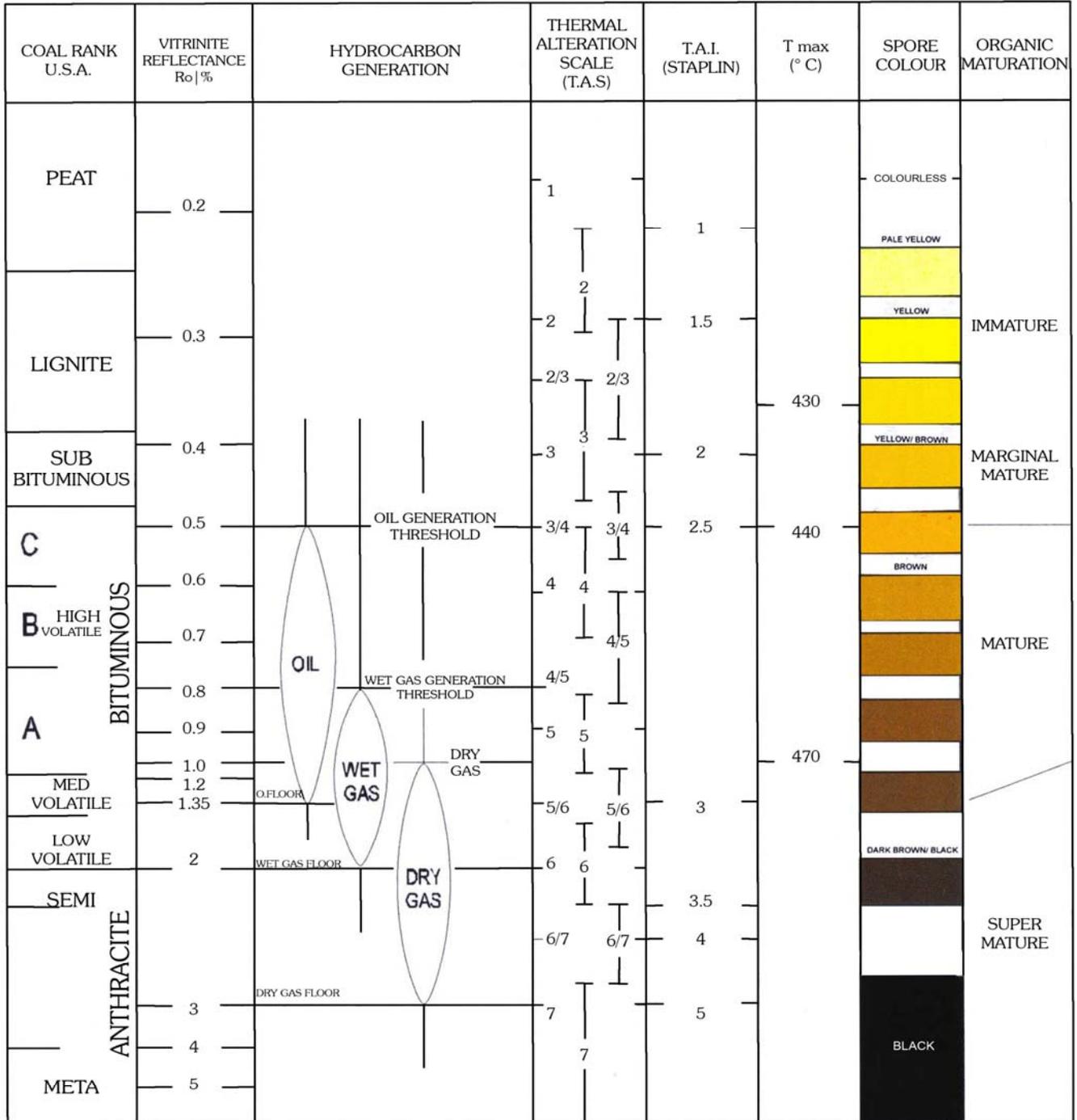
O.P.K : Oil Prone Kerogen

T.A.S : Thermal Alteration Scale



CORE LABORATORIES

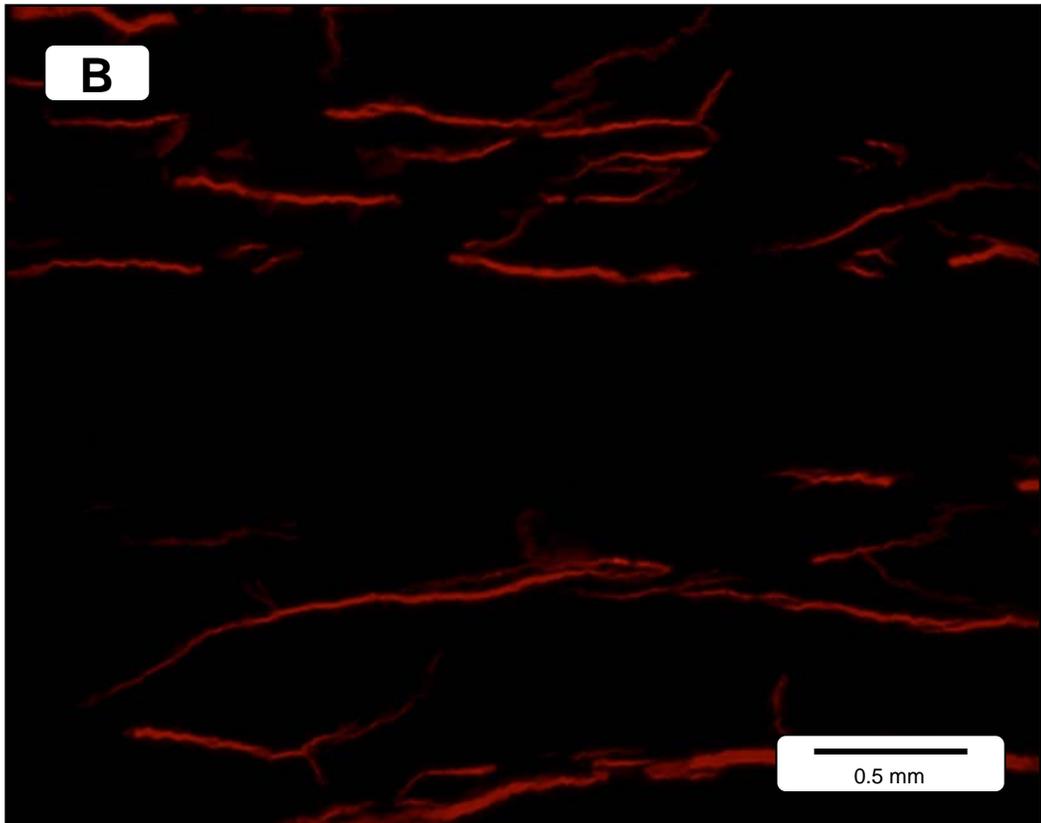
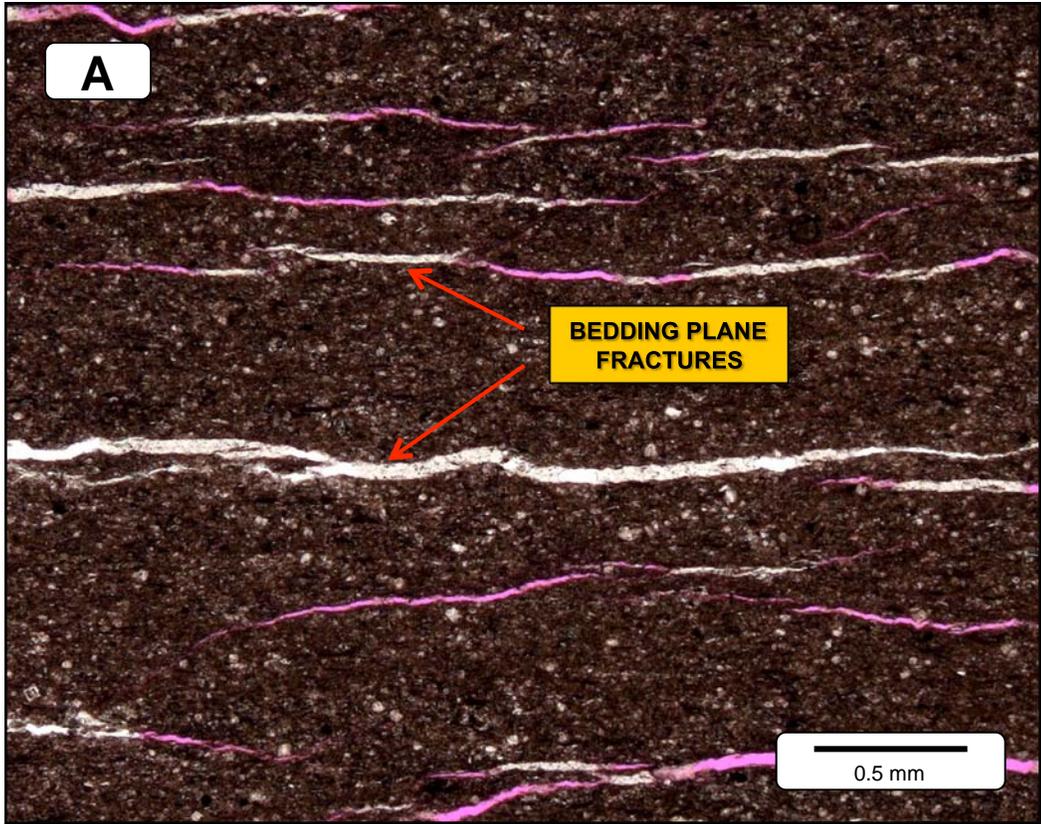
THERMAL MATURATION SCALES



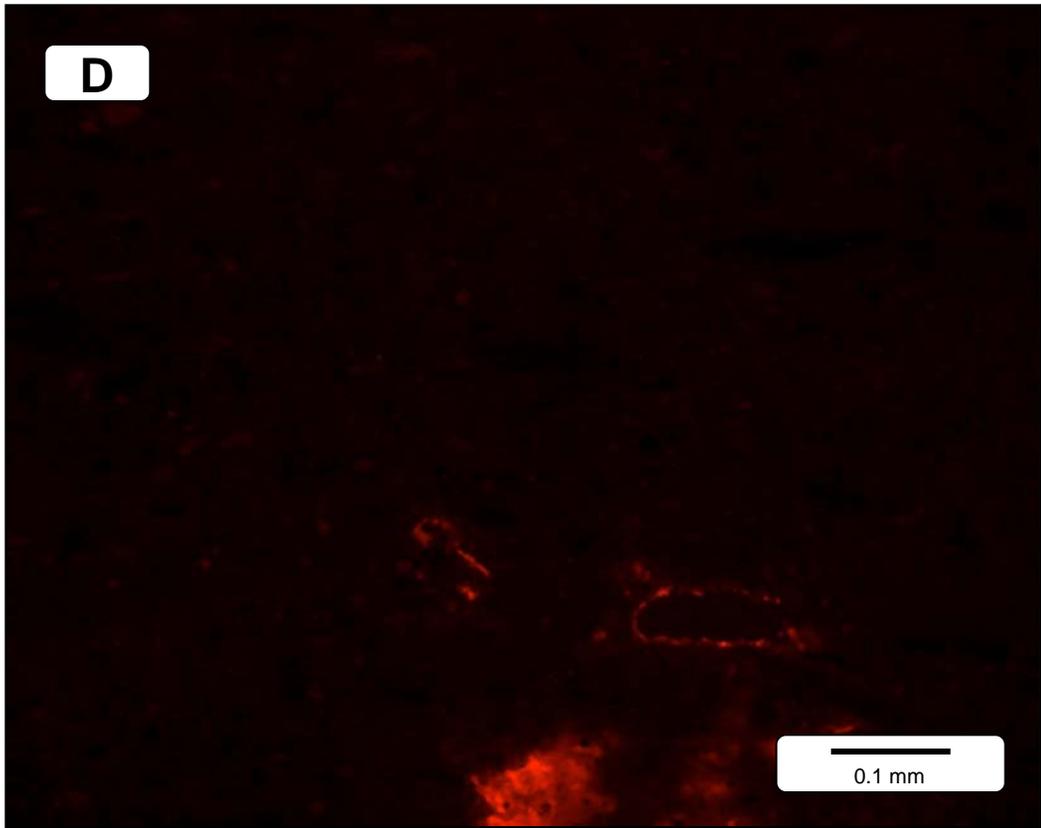
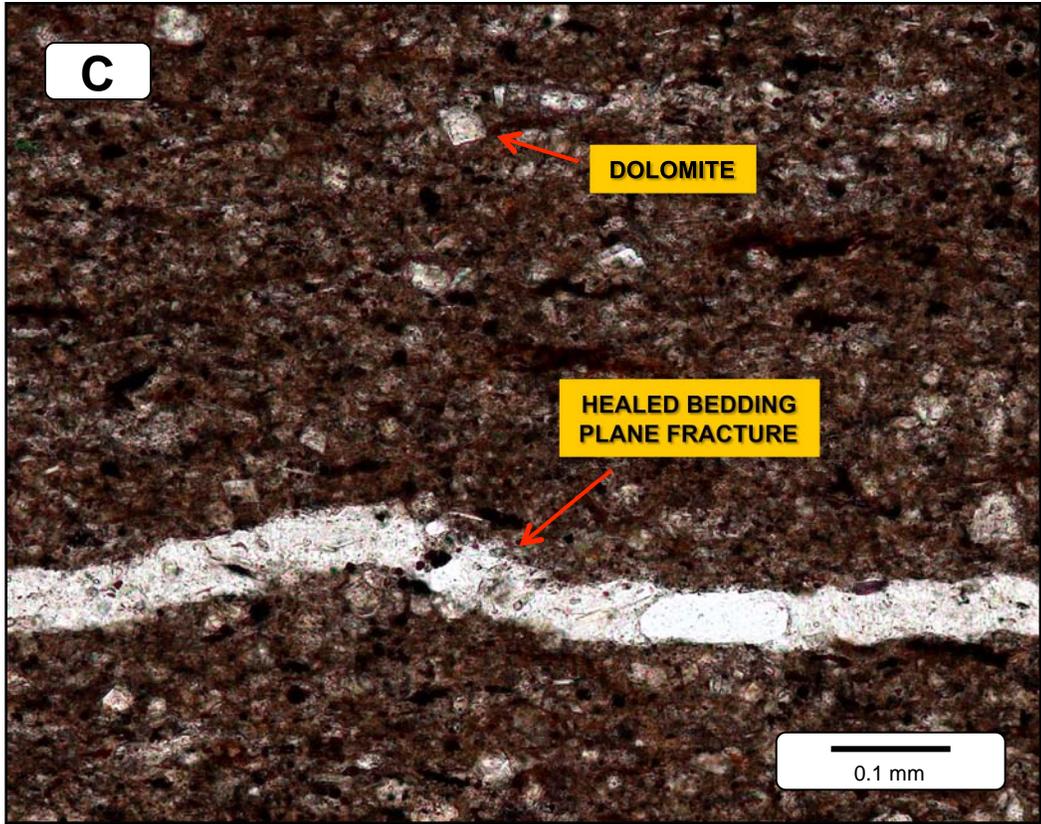
KEY : I NORMAL MITS OF OPERATIONAL ERROR IN TRANSMITTED LIGHT ASSESSMENTS OF PALYNOMORPH COLOUR

TAS after Balten, 1981,1982)

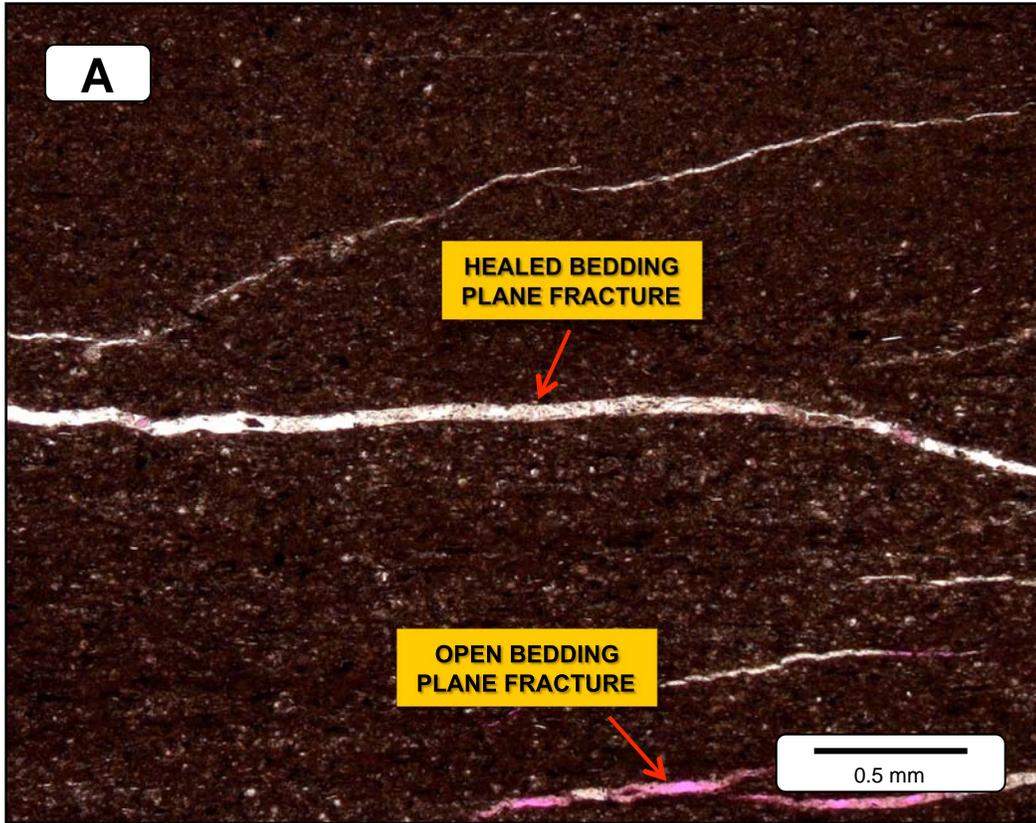
Photomicrographs displaying both transmitted white light and fluorescence view under reflected ultraviolet light of the Valentine Apple (APINO 3401720001) and American Aggregate (APINO 3416560005) wells.



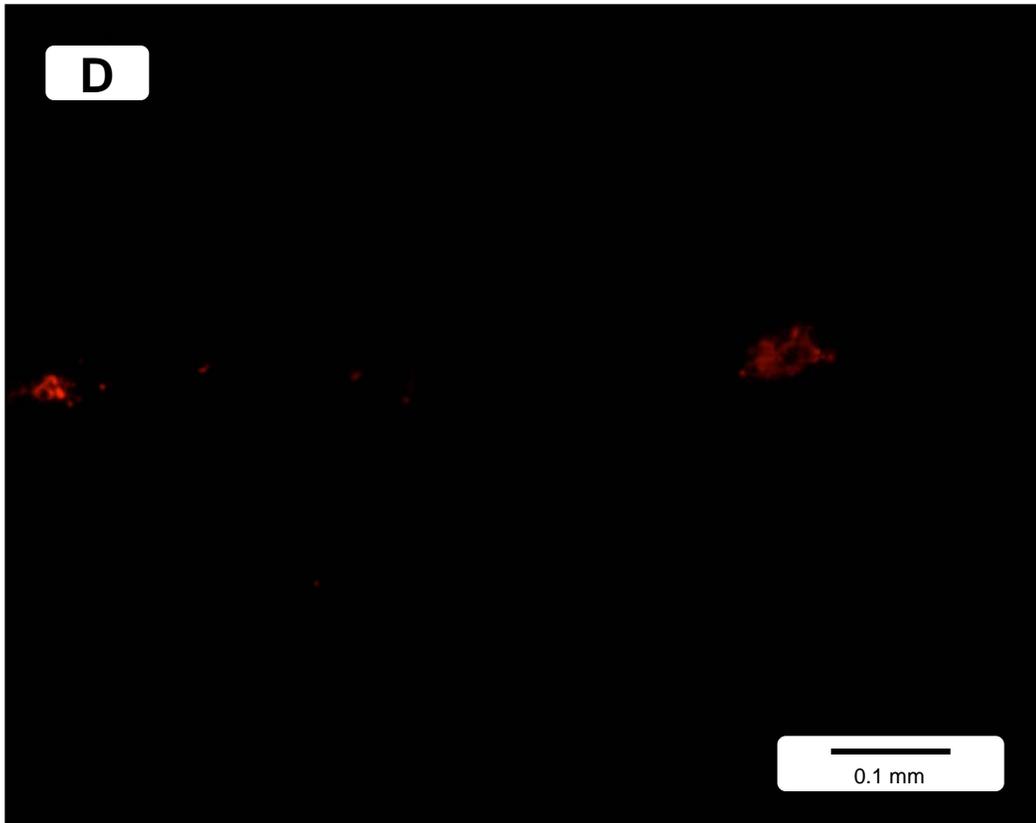
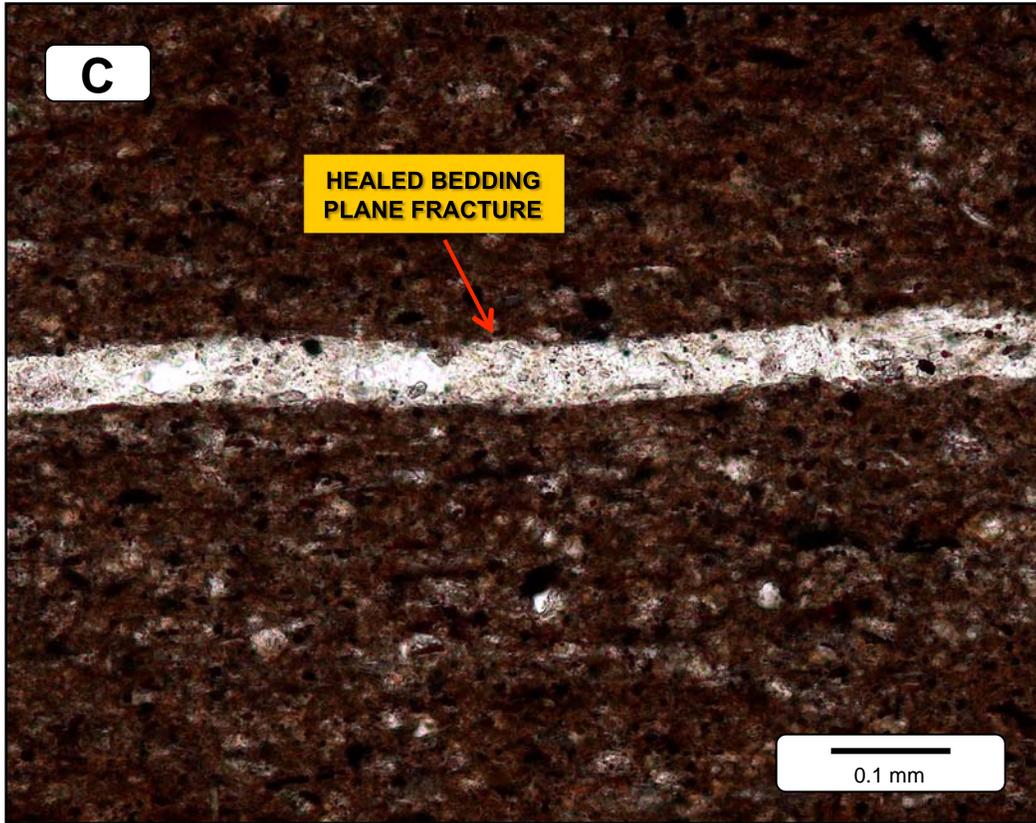
Texas Eastern Co. – Valentine Apple – 406.8 ft



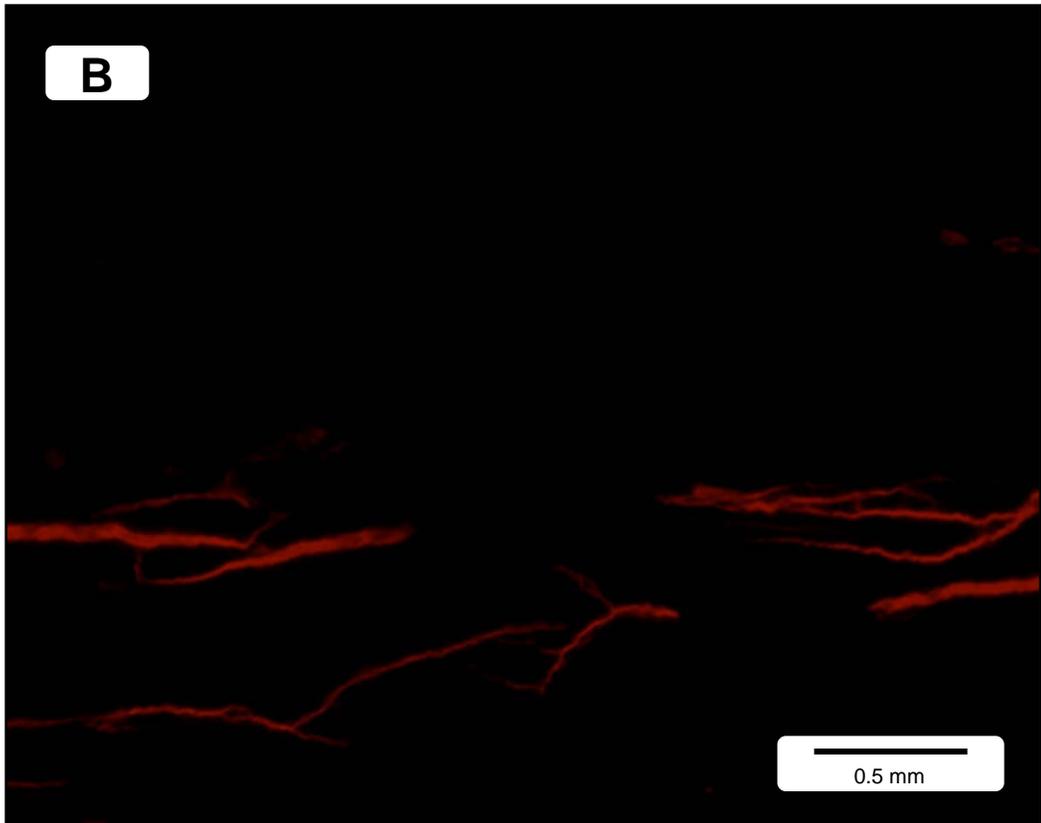
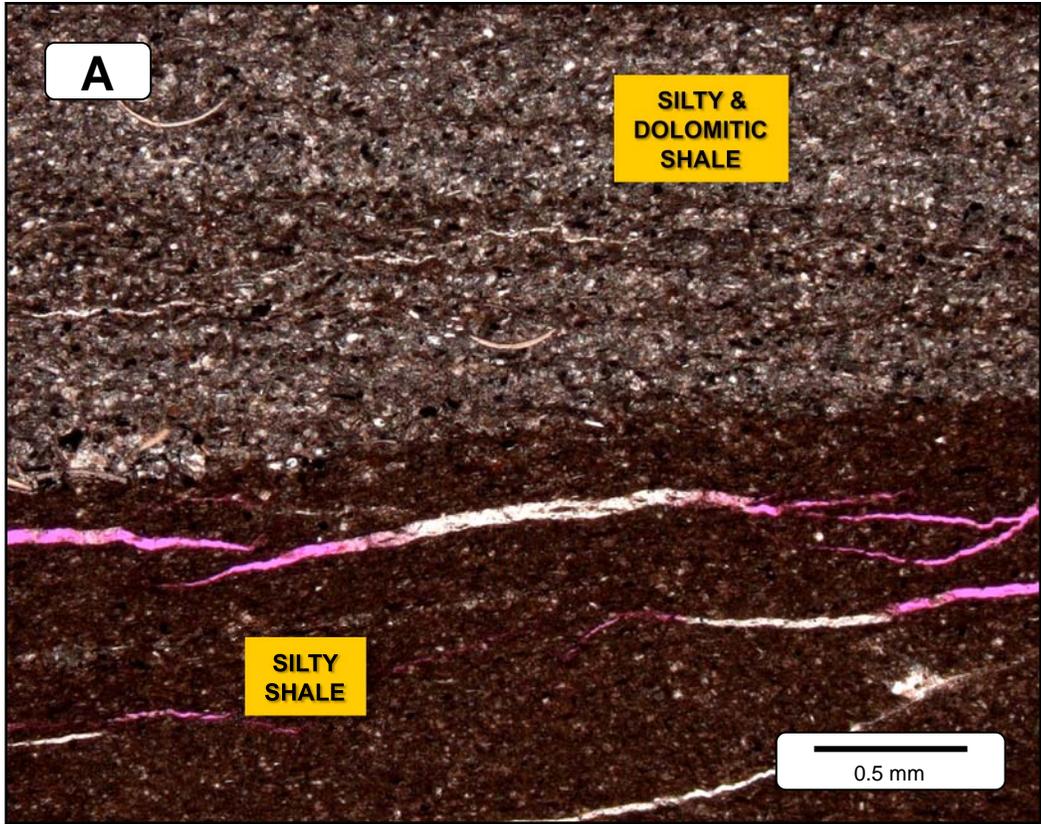
Texas Eastern Co. – Valentine Apple – 406.8 ft



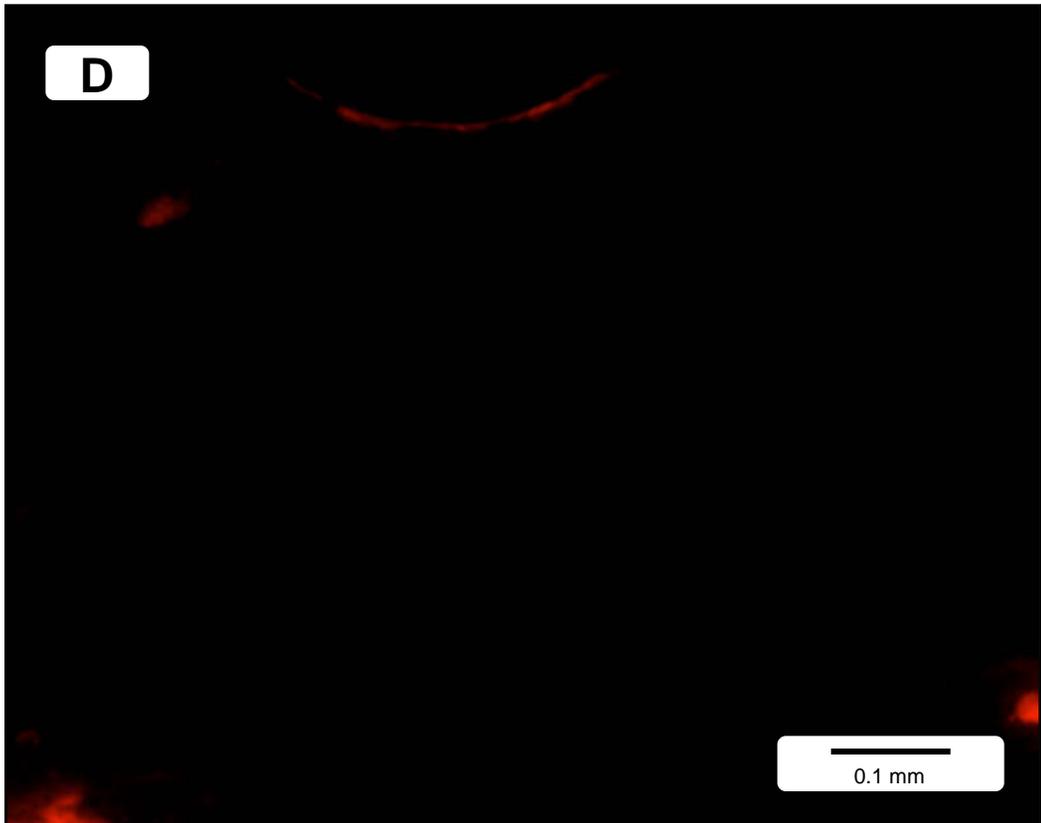
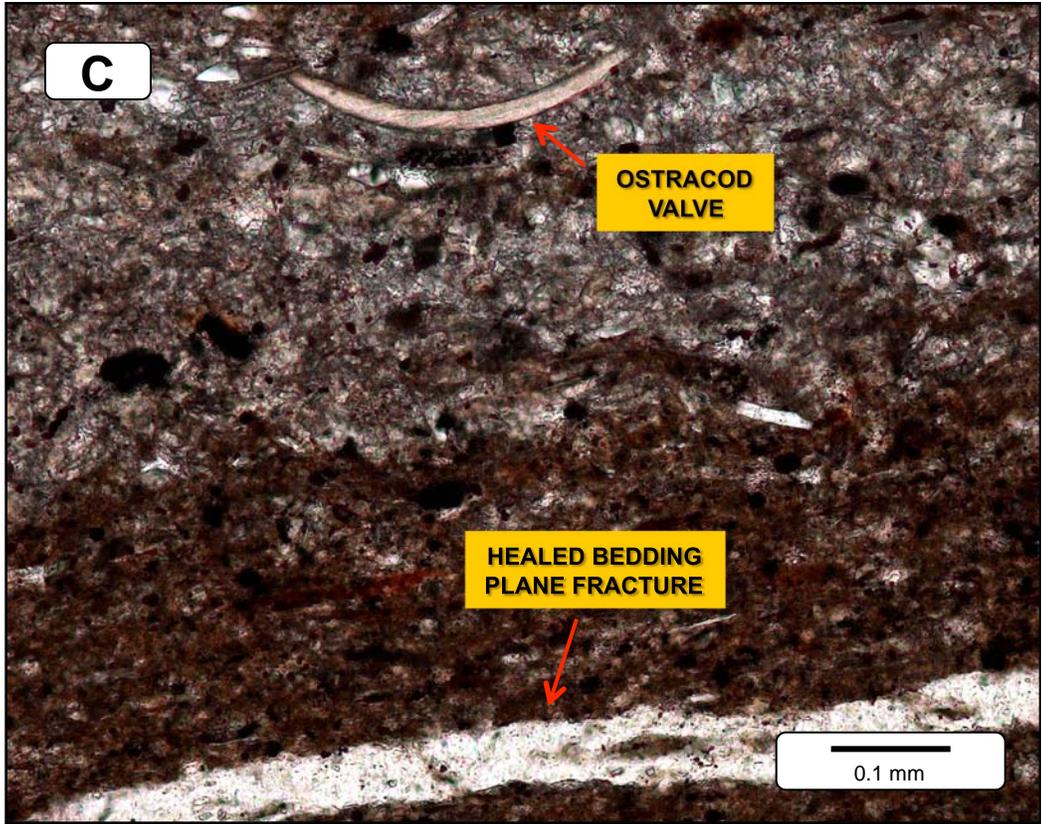
Texas Eastern Co. – Valentine Apple – 413.2 ft



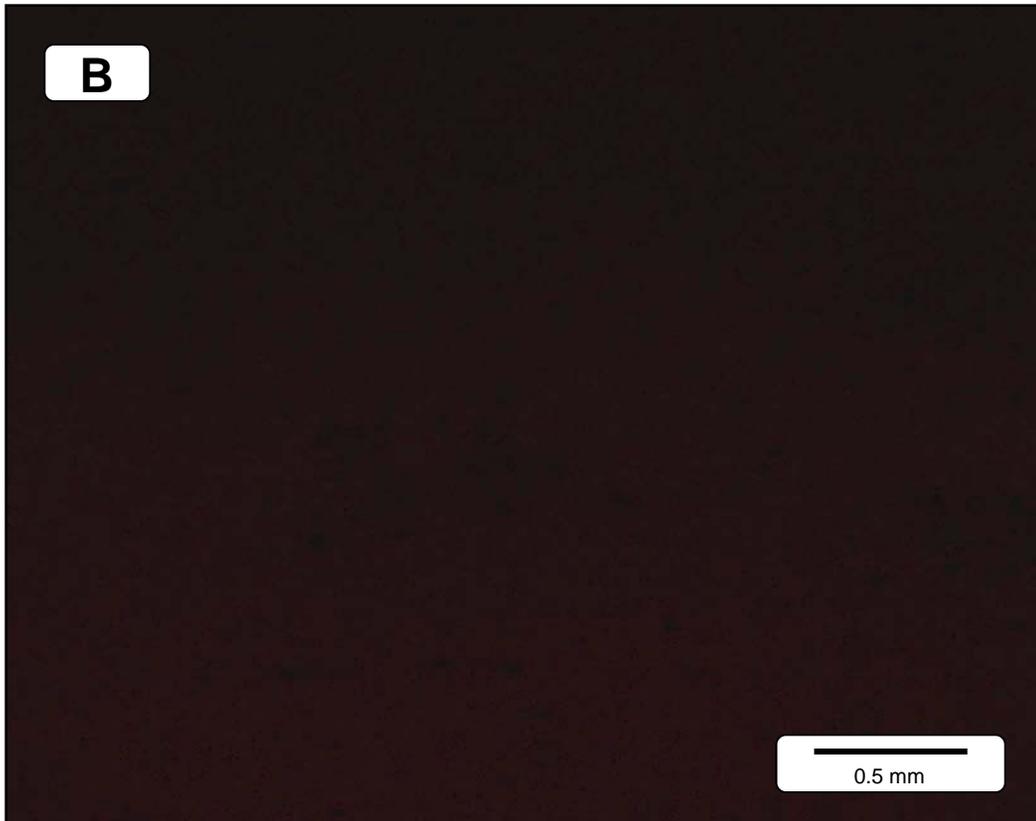
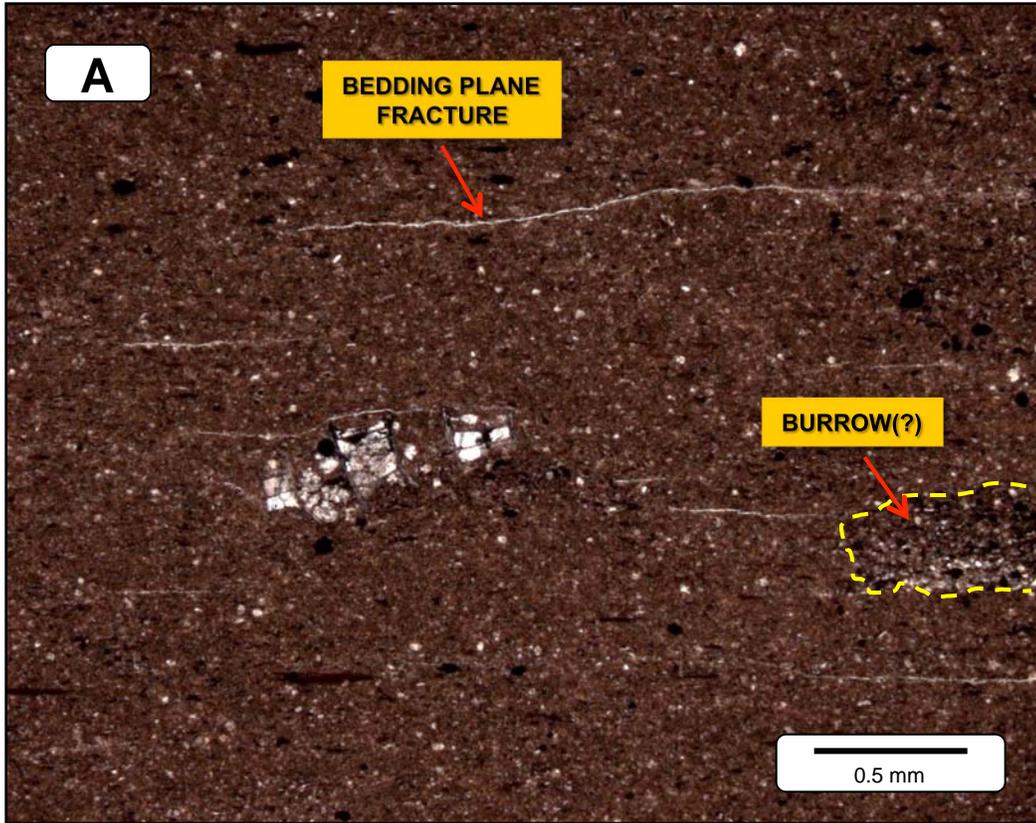
Texas Eastern Co. – Valentine Apple – 413.2 ft



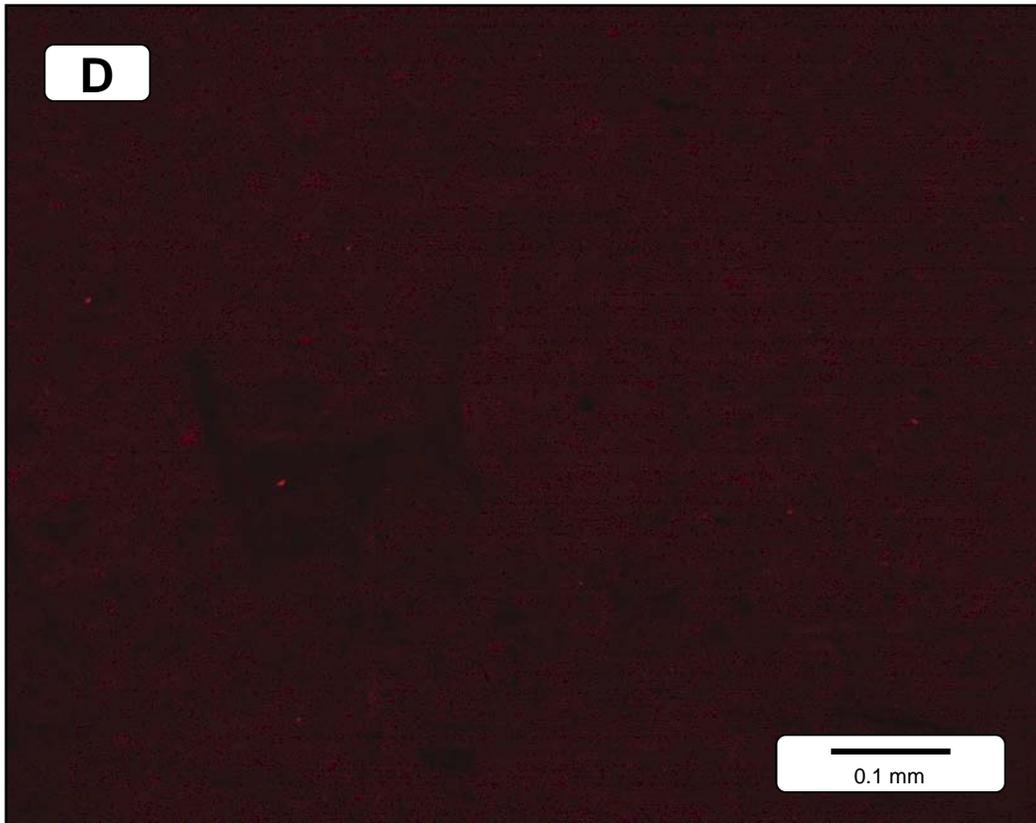
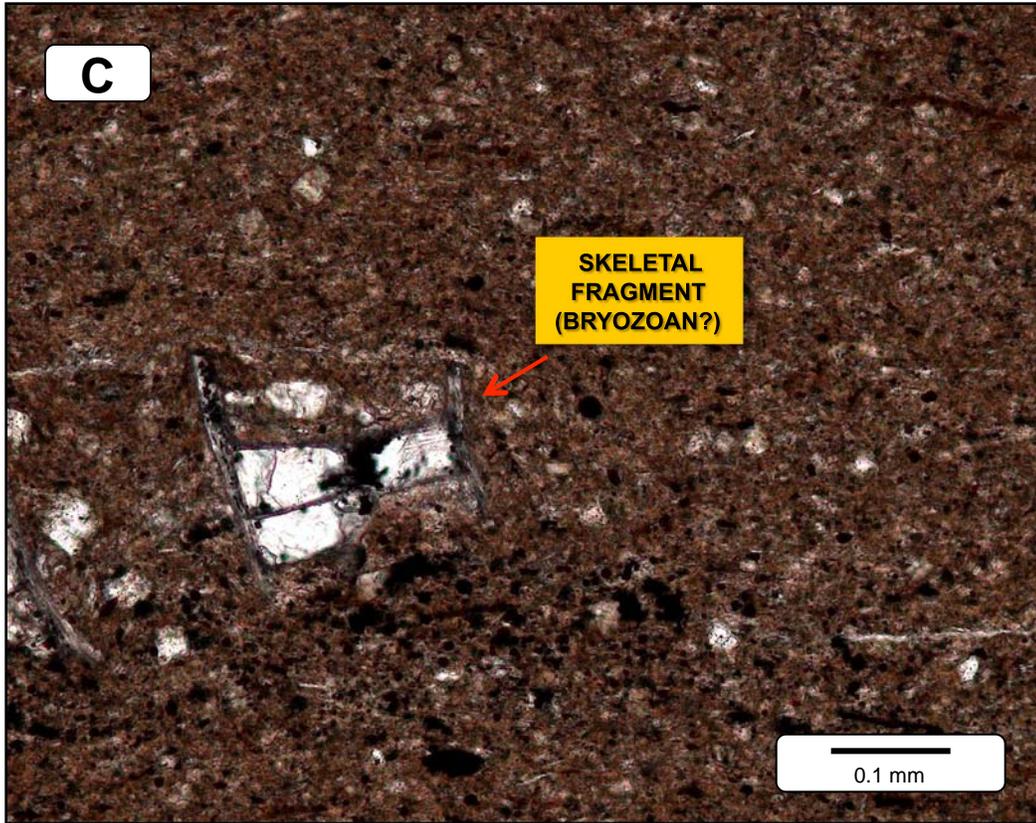
Texas Eastern Co. – Valentine Apple – 494.8 ft



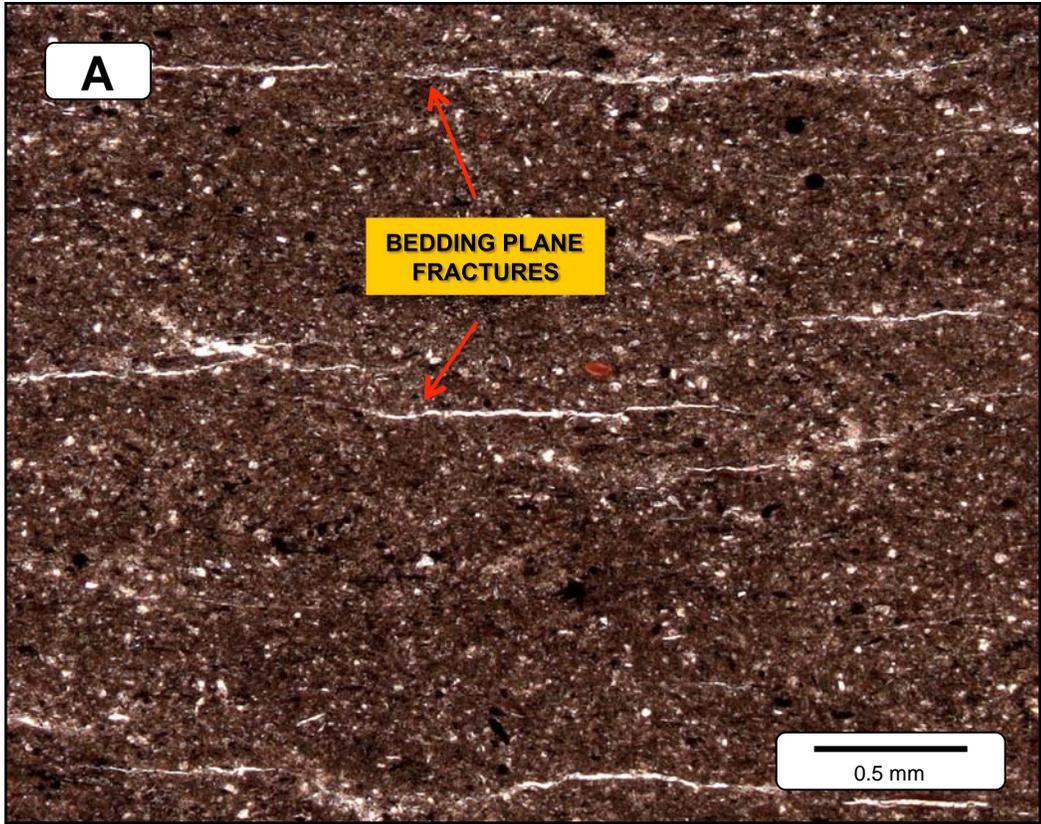
Texas Eastern Co. – Valentine Apple – 494.8 ft



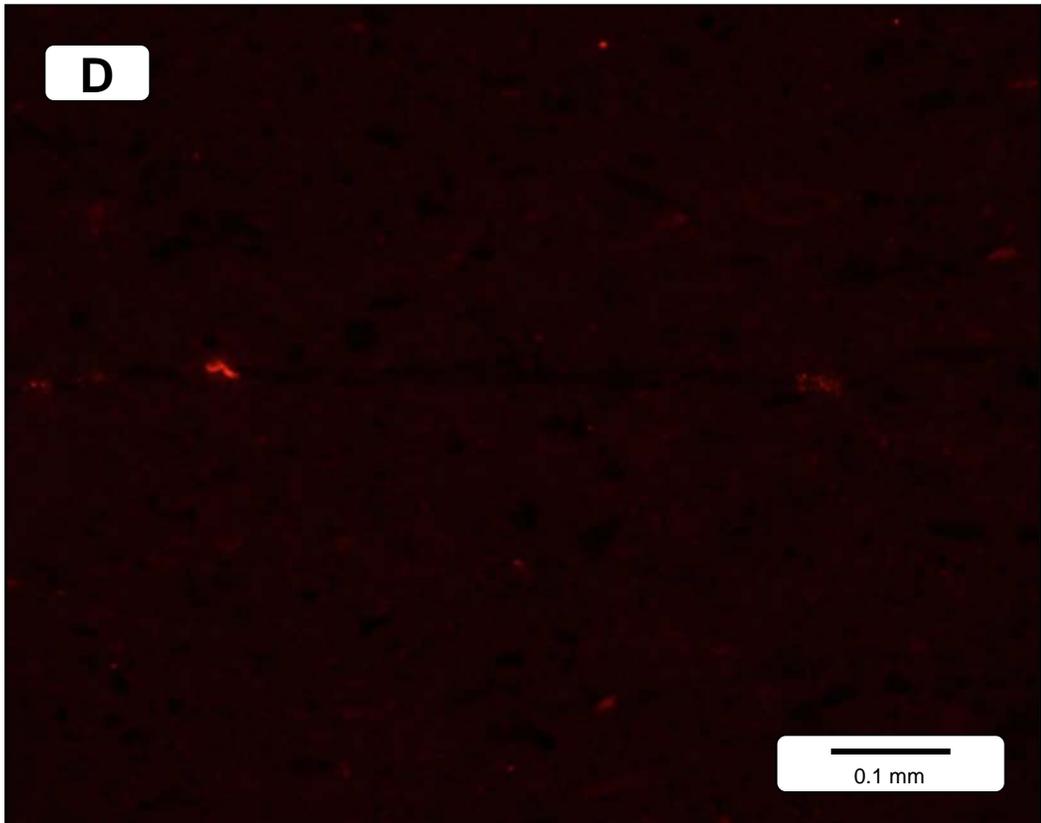
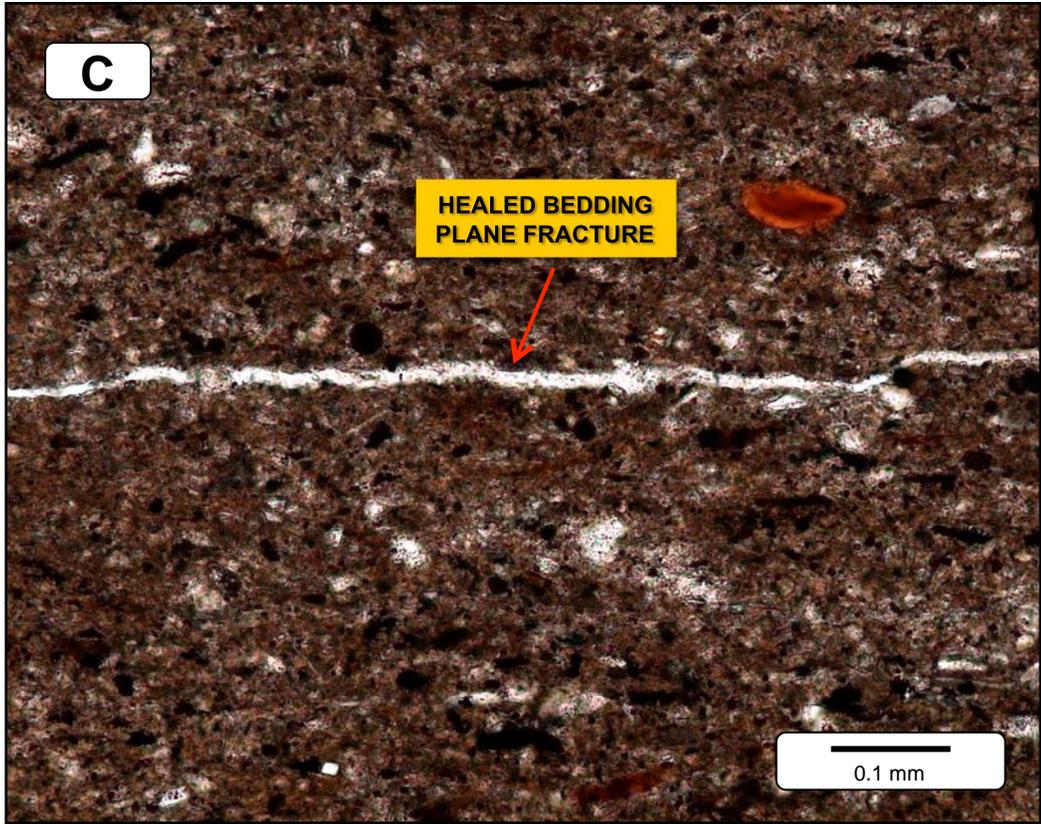
ODGS – American Aggregate – 822.1 ft



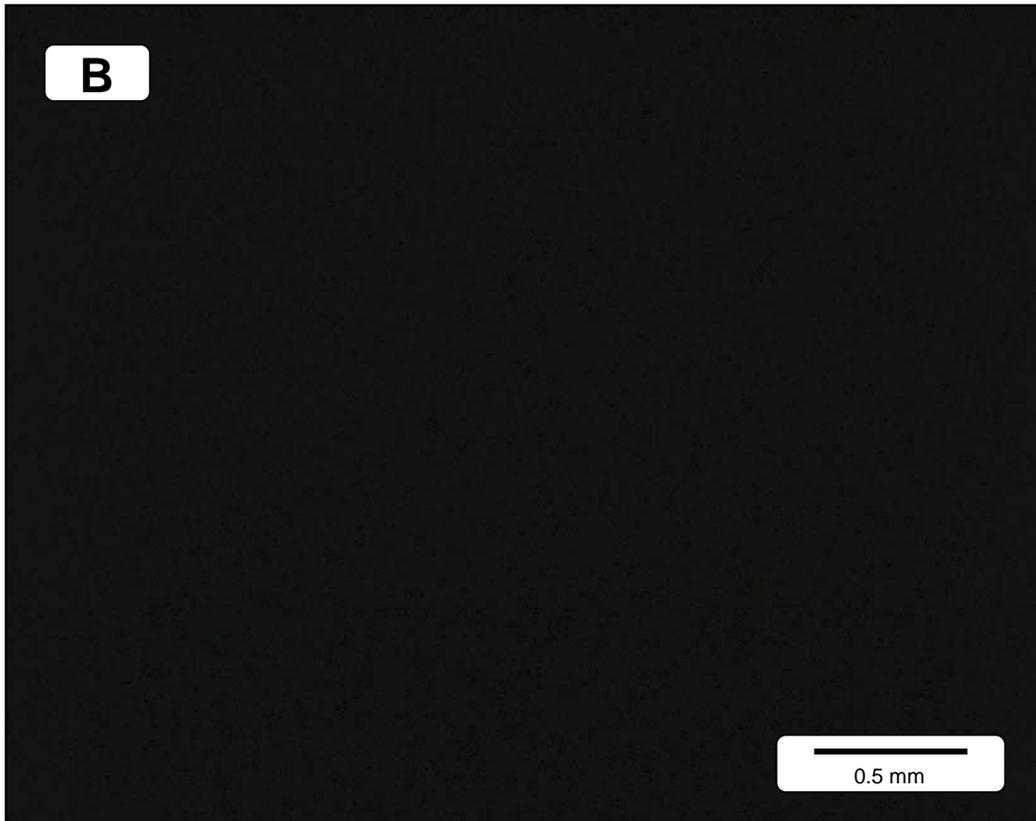
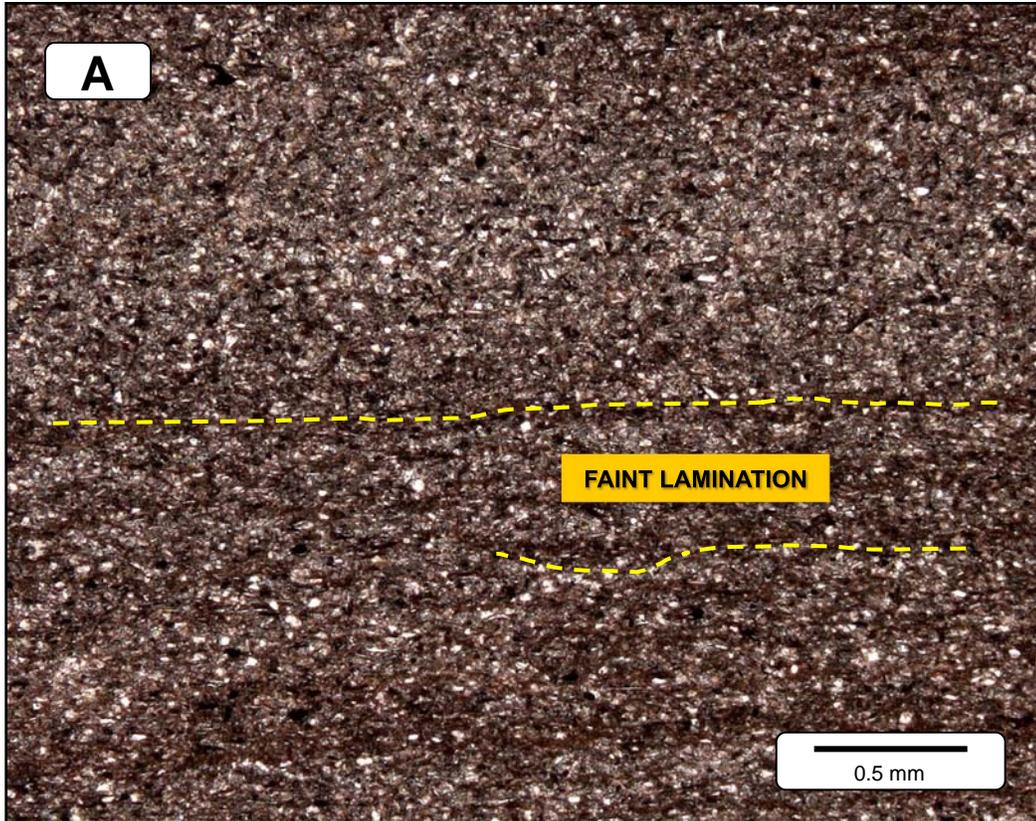
ODGS – American Aggregate – 822.1 ft



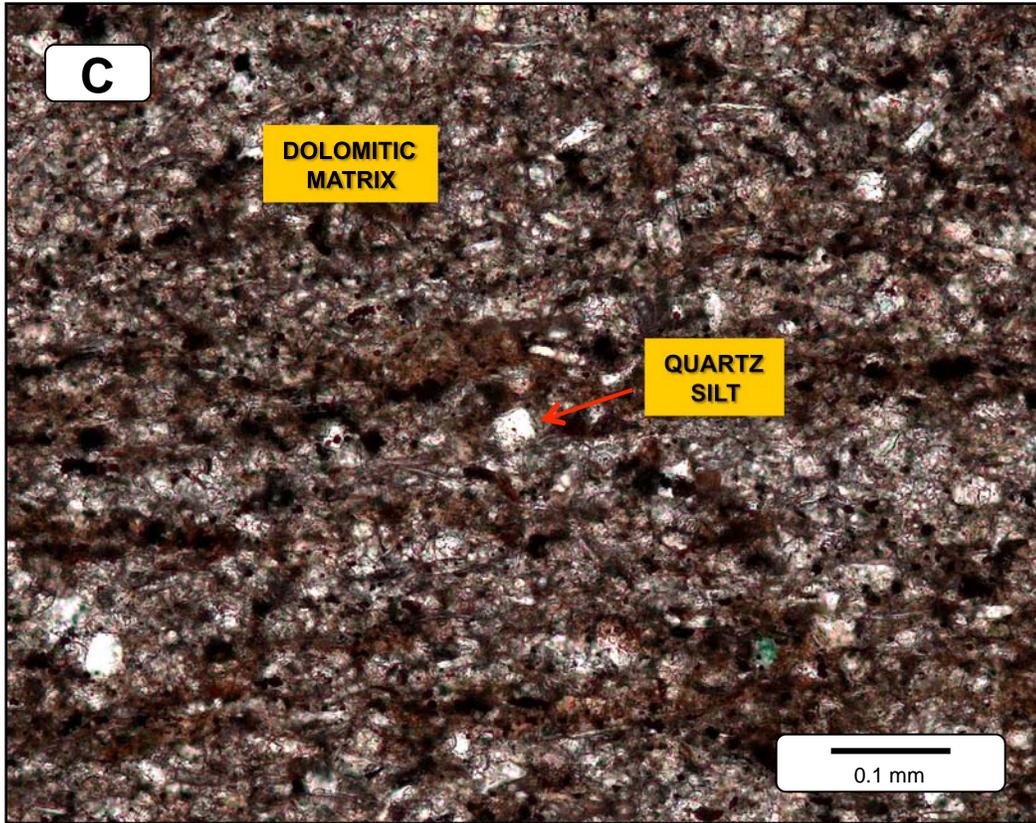
ODGS – American Aggregate – 826.8 ft



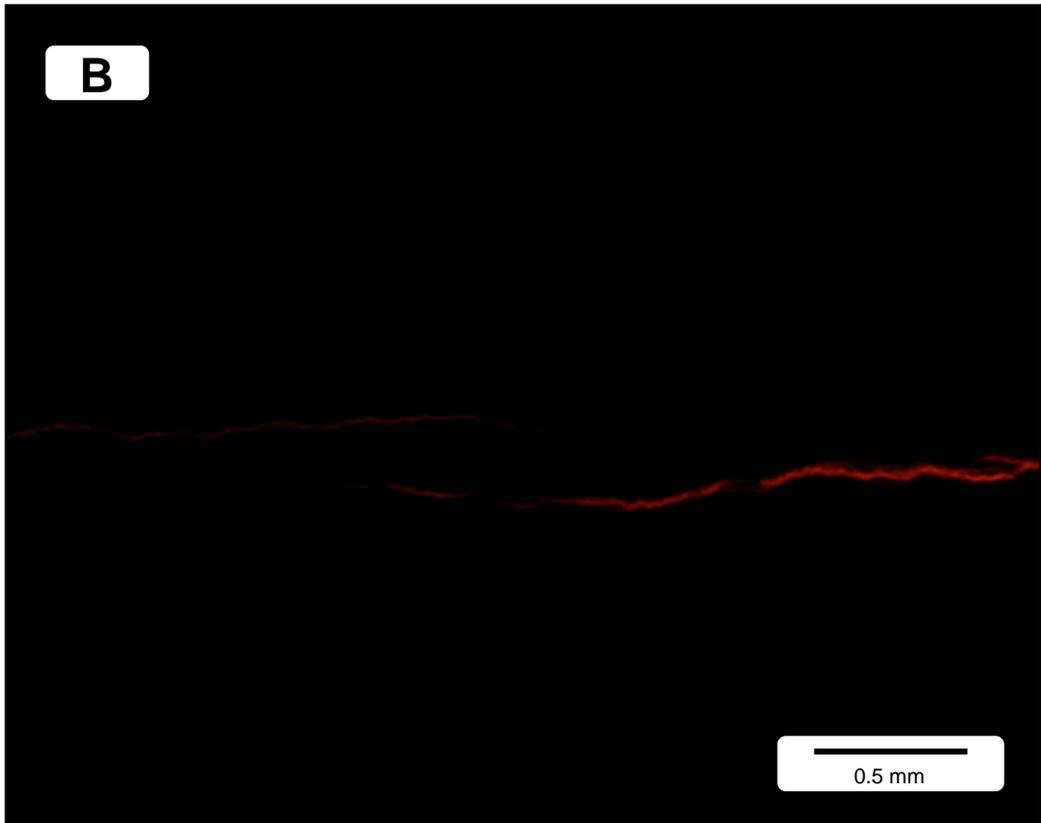
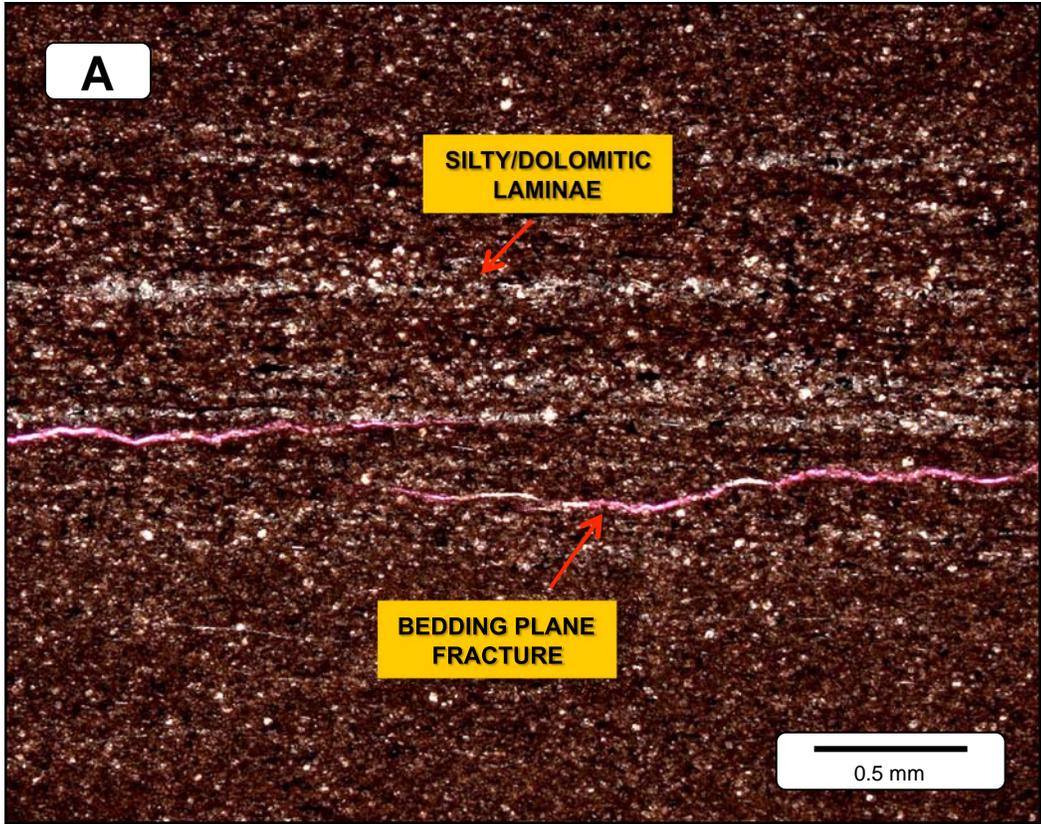
ODGS – American Aggregate – 826.8 ft



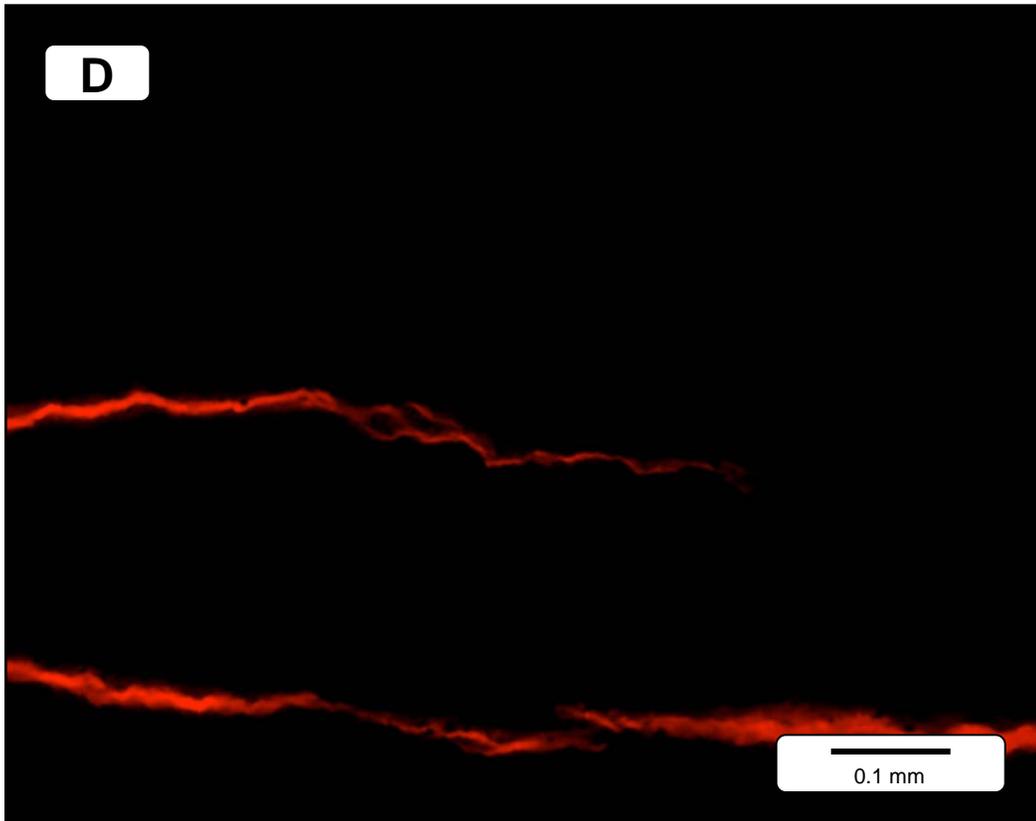
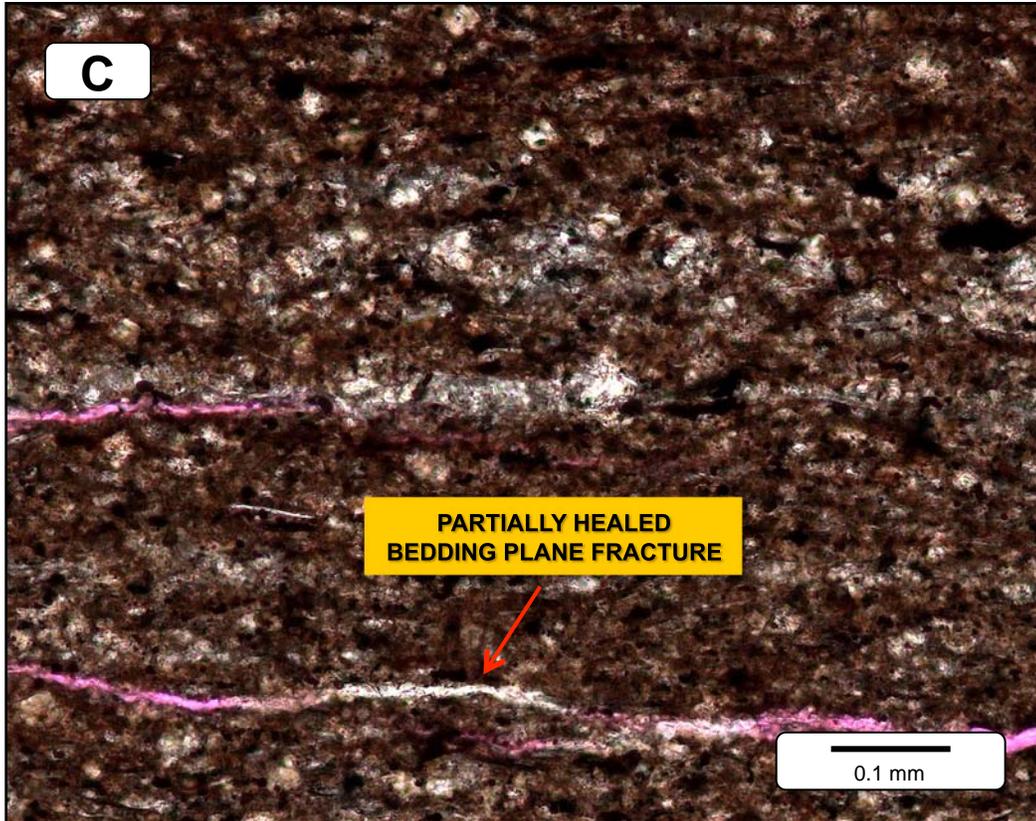
ODGS – American Aggregate – 879.2 ft



ODGS – American Aggregate – 879.2 ft



ODGS – American Aggregate – 911.2 ft



ODGS – American Aggregate – 911.2 ft