APPENDIX F:

EPIFLUORESCENCE ANALYSES AND DESCRIPTIONS OF WELLCUTTINGS FROM THE PARADOX FOLD AND FAULT BELT AREA, UTAH

Table F.1. Epifluorescence analyses and descriptions of well cuttings from the Paradox fold and fault belt area, Utah.

Map #	Well Name	Location	County	Interval	N	Rating*		Sample Type	Comments	Photomicrographs	Binocular Microscope Image
						Range	Ave				
1	Humble Woodside 1	SESE 12 19S 13E	Emery	6580-90	7	0.0-patches of 1.5	1.2	cuttings	medium to coarsely crystalline dolomite, fair to good intercrystalline porosity with abundant bitumen, drillstem test flowed water	x	
1	Humble Woodside 1	SESE 12 19S 13E	Emery	6590-6600	5	0.0-1.0	0.3	cuttings	fine to medium crystalline dolomite, none to minor intercrystalline porosity, trace to common bitumen		
1	Humble Woodside 1	SESE 12 19S 13E	Emery	6735-40	4	0.0-0.5	0.2	cuttings	finely crystalline dolomite and limestone (?), very low visible porosity, no bitumen, drillstem test flowed water		
1	Humble Woodside 1	SESE 12 19S 13E	Emery	6740-50	7	0.0-0.5, with small patches up to 1.5	0.5	cuttings	finely crystalline dolomite and limestone (?), very low visible porosity, no bitumen, drillstem test flowed water		
2	Carter Oil Hatch Sphinx Unit 1-A	SWNW 35 19S 14E	Emery	8670-75	5	0.2-0.5	0.3	cuttings	medium to coarse crystalline dolomite, minor visible intercrystalline porosity, traces of bitumen		
2	Carter Oil Hatch Sphinx Unit 1-A	SWNW 35 19S 14E	Emery	8675-80	7	0.2-1.0	0.5	cuttings	medium to coarse crystalline dolomite, minor visible intercrystalline porosity, traces of bitumen		
2	Carter Oil Hatch Sphinx Unit 1-A	SWNW 35 19S 14E	Emery	8680-85	8	0.0-1.0	0.5	cuttings	fine to coarse crystalline dolomite, low visible porosity, minor amounts of bitumen, some orange and red (iron-rich?) epifluorescence		
2	Carter Oil Hatch Sphinx Unit 1-A	SWNW 35 19S 14E	Emery	8690-95	8	0.2-1.0	0.6	cuttings	coarse crystalline dolomite, fair to good intercrystalline porosity, traces of bitumen, possible fracture-filling coarse dolomite		
2	Carter Oil Hatch Sphinx Unit 1-A	SWNW 35 19S 14E	Emery	8700-05	8	0.4-1.0	0.8	cuttings	coarse crystalline dolomite, very low visible porosity, no visible bitumen		
2	Carter Oil Hatch Sphinx Unit 1-A	SWNW 35 19S 14E	Emery	8710-15	9	0.4-1.0	0.7	cuttings	coarse crystalline dolomite, very low visible porosity, no visible bitumen		
3	Denison Mines 5-1	SENE 5 21S 14E	Emery	5830-40	4	0.0-0.5	0.2	cuttings	microcrystalline dolomite, trace of bitumen possibly along fractures, very low visible porosity		
3	Denison Mines 5-1	SENE 5 21S 14E	Emery	5840-50	7	0-0	0.0	cuttings	microcrystalline dolomite, no visible bitumen, very low porosity		
3	Denison Mines 5-1	SENE 5 21S 14E	Emery	5850-60	6	0.5-2.5	1.5	cuttings	microcrystalline dolomite, fair to good visible micro-intercrystalline porosity, no visible bitumen	x	
3	Denison Mines 5-1	SENE 5 21S 14E	Emery	5860-70	6	0.0-2.0	1.5	cuttings	microcrystalline dolomite, fair to good micro-intercrystalline porosity, no bitumen	x	
4	Superior Salt Wash 22-34	SENW 34 22S 17E	Grand	10,070-75	6	0.0-0.3	0.1	cuttings	microcrystalline dolomite, very low visible porosity, no visible bitumen		

Map #	Well Name	Location	County	Interval	N	Rating*		Sample Type	Comments	Photomicrographs	Binocular Microscope Image
						Range	Ave				
4	Superior Salt Wash 22-34	SENW 34 22S 17E	Grand	10,075-80	5	0.0-0.3	0.1	cuttings	microcrystalline dolomite and possible limestone, no visible porosity, no bitumen		
4	Superior Salt Wash 22-34	SENW 34 22S 17E	Grand	10,080-85	5	0.0-0.3	0.1	cuttings	microcrystalline dolomite and possible limestone, no visible porosity, no bitumen		
5	Texaco Government Smoot 1	CSENE 17 23S 17E	Grand	8732-33	4	1.5-2.5	2.0	core chip	medium to coarsely crystalline dolomite with fair intercrystalline porosity, trace of bitumen	x	
5	Texaco Government Smoot 1	CSENE 17 23S 17E	Grand	8733-34	4	0.5-2.5	1.8	core chip	medium to coarsely crystalline dolomite with good intercrystalline porosity completely lined with bitumen	x	
5	Texaco Government Smoot 1	CSENE 17 23S 17E	Grand	8734-35	4	0.5-2.5	1.8	core chip	medium to coarsely crystalline dolomite with good intercrystalline porosity completely lined with bitumen	x	
5	Texaco Government Smoot 1	CSENE 17 23S 17E	Grand	8736-37	4	0.5-1.5	1.0 with patches up to 2.0	core chip	medium to coarsely crystalline dolomite with good intercrystalline porosity and vugs lined with bitumen	x	
6	Shell Chaffin 1	NENW 21 23S 15E	Emery	7460-70	4	0.0-0.0	0.0	cuttings	finely crystalline dolomite and limestone (?), none to minor visible porosity, trace of bitumen		
6	Shell Chaffin 1	NENW 21 23S 15E	Emery	7500-10	7	0.0-0.5	0.4	cuttings	medium to coarsely crystalline dolomite, no visible bitumen, minor to fair intercrystalline porosity		
6	Shell Chaffin 1	NENW 21 23S 15E	Emery	7510-20	3	0.0-0.0	0.0	cuttings	finely crystalline dolomite and limestone, very low visible porosity, no bitumen		
6	Shell Chaffin 1	NENW 21 23S 15E	Emery	7520-30	5	0.0-1.5	1.0	cuttings	fine to medium crystalline dolomite, minor to fair intercrystalline porosity, no visible bitumen, patchy good epifluorescence	x	
6	Shell Chaffin 1	NENW 21 23S 15E	Emery	7530-40	7	0.5-1.5	1.2	cuttings	very finely crystalline dolomite, high porosity, low permeability, no bitumen	x	
7	Federal Hatt 1	SESE 19 23S 14 E	Emery	5905-15	5	0.0-0.0	0.0	cuttings	microcrystalline limestone/dolomite, no visible porosity, no visible bitumen		
7	Federal Hatt 1	SESE 19 23S 14 E	Emery	5935-45	7	0.5-3.0, continuous to patchy	2.3	cuttings	dolomite, fine to medium crystalline with fair to good intercrystalline porosity, bimodal distribution of shows	x (see figure 6-4A)	
7	Federal Hatt 1	SESE 19 23S 14 E	Emery	5970-80	9	1.5-2.5	2.3	cuttings	medium to coarse crystalline dolomite, low to fair porosity, no bitumen	x	
7	Federal Hatt 1	SESE 19 23S 14 E	Emery	6005-10	5	0.2-1.0	0.3	cuttings	fine to medium dolomite, low to good intercrystalline porosity, no visible bitumen, appears wet	x	
7	Federal Hatt 1	SESE 19 23S 14 E	Emery	6015-20	7	0.5-1.0	0.8	cuttings	fine to medium crystalline dolomite, low to fair intercrystalline porosity, trace of bitumen		
8	General Petroleum Gov 45-5	NESW 5 24S 15E	Emery	6899-07	1	none	0.2	core chip	minor intercrystalline porosity, trace of bitumen		

Map #	Well Name	Location	County	Interval	N	Rating*		Sample Type	Comments	Photomicrographs	Binocular Microscope Image
						Range	Ave				
8	General Petroleum Gov 45-5	NESW 5 24S 15E	Emery	6907-32	2	0.2-0.5	see comment	core chip	chip 1 = 0.2, chip 2 = 0.5, minor to fair intercrystalline porosity, none to trace of bitumen		
8	General Petroleum Gov 45-5	NESW 5 24S 15E	Emery	6932-35	2	0.0-0.3	see comment	core chip	chip 1 = 0.0, chip 2 = 0.3, minor intercrystalline porosity, no bitumen		
9	Tiger Oil State 12-11	SWNW 11 24S 20E	Grand	11,810-20	7	0.5-1.0	0.7	cuttings	medium to coarse crystalline dolomite, fair to well-connected intercrystalline porosity with some fractures, fractures and pores completely lined with bitumen, some large saddle dolomites		
9	Tiger Oil State 12-11	SWNW 11 24S 20E	Grand	11,825 (circulation sample)	8	0.0-0.5	0.2	cuttings	medium to coarse crystalline dolomite, poor to fair intercrystalline porosity, some stylolites, trace of bitumen		
9	Tiger Oil State 12-11	SWNW 11 24S 20E	Grand	11,820-30	8	0.0-0.5	0.3	cuttings	fine to medium crystalline dolomite and possible limestone, poor to fair intercrystalline porosity with bitumen lining		
9	Tiger Oil State 12-11	SWNW 11 24S 20E	Grand	11,836 (45-minute circulation sample)	7	0.0-0.5	0.2	cuttings	fine to medium crystalline dolomite, generally poor porosity lined with bitumen		
9	Tiger Oil State 12-11	SWNW 11 24S 20E	Grand	11,830-40	10	0.0-0.5	0.3	cuttings	fine to medium crystalline dolomite, very poor intercrystalline porosity lined with bitumen		
9	Tiger Oil State 12-11	SWNW 11 24S 20E	Grand	11,840-50	10	0.0-0.5	0.3	cuttings	fine to medium crystalline dolomite, very poor intercrystalline porosity lined with bitumen		
10	Conoco Federal 31	NWSE 31 24S 23E	Grand	10,450-60	4	0.0-0.5	0.2	cuttings	finely crystalline dolomite and possible limestone, trace of intercrystalline porosity with bitumen		
10	Conoco Federal 31	NWSE 31 24S 23E	Grand	10,460-70	6	0.0-0.5	0.2	cuttings	finely crystalline dolomite and possible limestone, trace of intercrystalline porosity with bitumen		
10	Conoco Federal 31	NWSE 31 24S 23E	Grand	10,470-80	4	0.0-patchy 1.5	0.3	cuttings	fine to medium crystalline dolomite, possible limestone, modest intercrystalline porosity, small vugs, fracture porosity, trace of bitumen	x	
10	Conoco Federal 31	NWSE 31 24S 23E	Grand	10,740-50	7	0.0-0.2	0.1	cuttings	fine to coarse crystalline dolomite with large intercrystalline pores, significant bitumen, drillstem test flowed non-flammable gas	x	
10	Conoco Federal 31	NWSE 31 24S 23E	Grand	10,750-60	6	0.0-0.2	0.1	cuttings	fine to coarse crystalline dolomite with large intercrystalline pores, significant bitumen, drillstem test flowed non-flammable gas	x	
11	Shell Gruvers Mesa 2	NENW 10 25S 16E	Emery	6750-55	5	0.0-1.2	1.0	cuttings	fine to medium crystalline limestone and dolomite, low visible porosity, trace of bitumen, possible open fractures		

Map #	Well Name	Location	County	Interval	N	Rating*		Sample Type	Comments	Photomicrographs	Binocular Microscope Image
						Range	Ave				
11	Shell Gruvers Mesa 2	NENW 10 25S 16E	Emery	6755-60	4	0.1-0.5	0.3	cuttings	fine to medium crystalline limestone and dolomite, low visible porosity but possible open fractures, no bitumen		
11	Shell Gruvers Mesa 2	NENW 10 25S 16E	Emery	6785-90	7	0.0 - limestone, 1.0-2.0 - dolomite	1.5	cuttings	very finely crystalline limestone and dolomite, dolomite has high micro-intercrystalline porosity, no permeability, no bitumen		
11	Shell Gruvers Mesa 2	NENW 10 25S 16E	Emery	6790-95	5	1.0-2.2	1.8	cuttings	finely crystalline dolomite, high micro-intercrystalline porosity, low permeability, stylolites, no bitumen		
11	Shell Gruvers Mesa 2	NENW 10 25S 16E	Emery	6900-05	5	0.0-0.3	0.1	cuttings	microcrystalline limestone and dolomite, no visible porosity, trace of bitumen		
11	Shell Gruvers Mesa 2	NENW 10 25S 16E	Emery	6905-10	6	0.0-0.3	0.1	cuttings	fine to medium crystalline limestone and dolomite, traces to fair intercrystalline porosity, no bitumen		
12	McRae Fed 1	SWSW 10 25S 18E	Grand	8485-95	6	0-2.5	0.8	cuttings	no visible porosity to minor porosity, no significant bitumen	x	
12	McRae Fed 1	SWSW 10 25S 18E	Grand	8547-50	2	none	0.3	cuttings	low to no visible porosity, no bitumen		
13	Superior Bow Knot Unit 1	NESE 20 25S 17.5E	Grand	6075-80	6	0.0-2.5	2.0	cuttings	fine to medium crystalline dolomite, poor to fair intercrystalline porosity with abundant bitumen	x	
13	Superior Bow Knot Unit 1	NESE 20 25S 17.5E	Grand	6080-85	6	0.0-2.5, patchy and continuous	2.0	cuttings	fine to medium crystalline dolomite, high micro-intercrystalline porosity, low permeability, trace to common bitumen	x	
13	Superior Bow Knot Unit 1	NESE 20 25S 17.5E	Grand	6362-67	4	1.0-1.5	1.2	core chip	fine to medium crystalline dolomite, very low visible porosity, no bitumen		
13	Superior Bow Knot Unit 1	NESE 20 25S 17.5E	Grand	6367-73	4	1.0-1.5	1.2	core chip	fine to medium crystalline dolomite, very low visible porosity, no bitumen		
13	Superior Bow Knot Unit 1	NESE 20 25S 17.5E	Grand	6373-79	3	1.5-2.5	2.0	core chip	fine to medium crystalline limestone and dolomite, low matrix porosity, no bitumen, doesn't look like moveable oil is present		
13	Superior Bow Knot Unit 1	NESE 20 25S 17.5E	Grand	6390-95	4	0.0-0.8	0.5	cuttings	fine to medium crystalline dolomite, fair to moderate intercrystalline porosity, no bitumen		
13	Superior Bow Knot Unit 1	NESE 20 25S 17.5E	Grand	6395-6400	4	0.3-0.6	0.4	cuttings	medium crystalline dolomite, fair to good intercrystalline porosity, common bitumen, probably wet	x	
14	Big Flat/Bartlett Flat 1	NENE 26 25S 19 E	Grand	8560-70	2	0.0-1.3	0.5	cuttings	drillstem test top, microcrystalline dolomite with stylolites, no visible bitumen, patchy epifluorescence	x	
14	Big Flat/Bartlett Flat 1	NENE 26 25S 19 E	Grand	8570-80	7	0.0-1.5	0.5	cuttings	fine to medium crystalline dolomite, trace of bitumen, micro-stylolites, low visible porosity, intercrystalline porosity, patchy fluorscence	x	
14	Big Flat/Bartlett Flat 1	NENE 26 25S 19 E	Grand	8630-40	4	0.0-2.0	1.5	cuttings	microcrystalline dolomite, high porosity, low permeability, no visible bitumen	x	

Map #	Well Name	Location	County	Interval	N	Rating*		Sample Type	Comments	Photomicrographs	Binocular Microscope Image
						Range	Ave				
14	Big Flat/Bartlett Flat 1	NENE 26 25S 19 E	Grand	8640-50	4	0.5 to patchy 1.5	0.8	cuttings	fine to medium crystalline dolomite with low to medium visible porosity, minor bitumen and possible sulfide mineralization	x	
15	Standard Lookout Point 1	SWSW 29 25S 16E	Emery	6380-90	6	0.0-0.5	0.4	cuttings	no visible porosity, no bitumen		
15	Standard Lookout Point 1	SWSW 29 25S 16E	Emery	6394-95	3	2.0-3.0	2.5	core chip	microcrystalline dolomite with high micro-intercrystalline porosity, low permeability, minor anhydrite	x	
15	Standard Lookout Point 1	SWSW 29 25S 16E	Emery	6500-10	9	0.0-2.0	0.4	cuttings	no to poor visible intercrystalline porosity, no significant bitumen	x	
15	Standard Lookout Point 1	SWSW 29 25S 16E	Emery	6510-20	4	0.0-0.0	0.0	cuttings	no visible porosity, no bitumen, fine microcrystalline dolomite		
16	Fed Oil Fed Bowknoll 1	NESE 30 25S 18 E	Grand	7375-80	4	0.5-2.5	1.8	cuttings	fair intercrystalline porosity, possible fractures, abundant bitumen	x	
16	Fed Oil Fed Bowknoll 1	NESE 30 25S 18 E	Grand	7380-85	4	0.0-0.5	0.3	cuttings	perforated zone, low visible porosity, none to trace of bitumen		
16	Fed Oil Fed Bowknoll 1	NESE 30 25S 18 E	Grand	7385-90	4	0.5-2.5	1.0	cuttings	minor to fair porosity, none to minor bitumen	x	
17	Southern Natural Long Canyon 1	NENW 9 26S 20E	Grand	7560-71	7	0.0-0.8	0.4	cuttings	fine-medium crystalline dolomite and limestone, trace of intercrystalline porosity, trace of bitumen		
17	Southern Natural Long Canyon 1	NENW 9 26S 20E	Grand	7580-85	6	0.0-patches of 1.4	0.4	cuttings	medium to coarse dolomite, poor to fair intercrystalline porosity, fairly abundant bitumen, pale-green epifluorescence	x	
17	Southern Natural Long Canyon 1	NENW 9 26S 20E	Grand	7585-90	10	0.0-patches of 1.5	0.4	cuttings	fine-medium crystalline dolomite with fair to good intercrystalline porosity, traces of bitumen and probable sulfides	x	
17	Southern Natural Long Canyon 1	NENW 9 26S 20E	Grand	7610-20	11	0.0-0.5	0.2	cuttings	fine-medium crystalline dolomite with traces of intercrystalline porosity, traces to abundant bitumen		
17	Southern Natural Long Canyon 1	NENW 9 26S 20E	Grand	7620-30	10	0.0-0.3	0.1	cuttings	fine to medium crystalline dolomite, fair to good intercrystalline porosity with abundant bitumen		
18	Pure Mineral Point 1	NESE 7 26S 18E	Grand	6875-80	5	0-0.5	0.1	cuttings	minor amount of intercrystalline porosity with abundant bitumen		
18	Pure Mineral Point 1	NESE 7 26S 18E	Grand	6880-85	7	0-0.5	0.1	cuttings	minor amount of intercrystalline porosity with abundant bitumen		
18	Pure Mineral Point 1	NESE 7 26S 18E	Grand	6885-90	4	0-1.0	0.5	cuttings	very low to minor intercrystalline porosity, scattered bitumen		
18	Pure Mineral Point 1	NESE 7 26S 18E	Grand	7040-45	9	0-1.0	0.2	cuttings			
18	Pure Mineral Point 1	NESE 7 26S 18E	Grand	7045-50	6	0-0.5	0.1	cuttings	no to very minor, intercrystalline porosity		
18	Pure Mineral Point 1	NESE 7 26S 18E	Grand	7050-55	7	0-0.5	0.3	cuttings	no visible porosity to minor intercrystalline porosity, none to minor bitumen		

Map #	Well Name	Location	County	Interval	N	Rating*		Sample Type	Comments	Photomicrographs	Binocular Microscope Image
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18	Pure Mineral Point 1	NESE 7 26S 18E	Grand	7055-60	10	0.5-1.5 with a few small patches of 2.0	1.2	cuttings	minor to good intercrystalline porosity, scattered bitumen		
18	Pure Mineral Point 1	NESE 7 26S 18E	Grand	7060-65	7	0.5-2.5	2.0	cuttings	porosity fair to good; pore types include moldic, intercrystalline, small vugs; moderate bitumen	x	
18	Pure Mineral Point 1	NESE 7 26S 18E	Grand	7065-70	6	0-0.5	0.2	cuttings	no visible porosity, no bitumen		
18	Pure Mineral Point 1	NESE 7 26S 18E	Grand	7070-75	4	0-0.5	0.2	cuttings	low to minor intercrystalline porosity, traces of bitumen		
19	Pure Big Flat 3	NENE 23 26S 19E	Grand	7714-15	6	0.0-0.5	0.3	core chip	medium to coarse crystalline dolomite, good intercrystalline porosity, plus moldic and vuggy porosity, bitumen-lined pores, small isolated patches of epifluorescence up to 1.5 in several samples	x	x
19	Pure Big Flat 3	NENE 23 26S 19E	Grand	7715-16	8	0.0-1.0	0.5	core chip	medium to coarse crystalline dolomite, good intercrystalline porosity, plus moldic and vuggy porosity, bitumen-lined pores, small isolated patches of epifluorescence up to 1.5 in several samples	x	x
19	Pure Big Flat 3	NENE 23 26S 19E	Grand	7716-17	4	0.0-0.5	0.3	core chip	fine to medium crystalline dolomite, generally poor intercrystalline porosity lined with bitumen	x	x
19	Pure Big Flat 3	NENE 23 26S 19E	Grand	7717-18	4	0.0-0.5	0.2	core chip	fine to medium crystalline dolomite, poor to fair intercrystalline porosity with some bitumen lined pores, occasional speckles of epifluorescence in pores up to 1.2	x	
19	Pure Big Flat 3	NENE 23 26S 19E	Grand	7718-19	5	0.0-0.3	0.1	core chip	medium crystalline dolomite, poor to fair porosity with some microfractures lined with bitumen	x	
19	Pure Big Flat 3	NENE 23 26S 19E	Grand	7719-20	5	0.0-0.5	0.2	core chip	fine to medium crystalline dolomite, fair to good visible porosity but low permeability, trace of bitumen	x	x
19	Pure Big Flat 3	NENE 23 26S 19E	Grand	7720-21	5	0.0-1.0	0.8 with isolated patches up to 1.5	core chip	medium to coarsely crystalline dolomite, fairly good porosity with bitumen lining, microfractures lined with bitumen	x	x
19	Pure Big Flat 3	NENE 23 26S 19E	Grand	7721-22	3	0.0-0.5	0.4 with isolated patches and speckles up to 1.5	core chip	medium to coarsely crystalline dolomite with fair to poor intercrystalline porosity, lined with bitumen	x	x
19	Pure Big Flat 3	NENE 23 26S 19E	Grand	7723-24	5	0.0-0.5	0.3	core chip	very fine to medium crystalline dolomite, poor to fair visible porosity lined with bitumen	x	x
19	Pure Big Flat 3	NENE 23 26S 19E	Grand	7724-25	6	0.3-1.0	0.7	core chip	fine to medium crystalline dolomite with fair to good intercrystalline porosity and small vugs lined with bitumen		x

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20	British America Federal Ornsby 1	NWNE 3 27S 19E	Wayne	7740-50	5	0.0-2.0, bimodal	1.0	cuttings	poor sample quality/unwashed, very fine to medium crystalline dolomite, some samples no porosity and permeability, some samples high porosity and no permeability, no bitumen	x	
20	British America Federal Ornsby 1	NWNE 3 27S 19E	Wayne	7750-60	6	0.0-0.5	0.3	cuttings	fine to medium crystalline dolomite and fossilferous limestone, very low visible porosity, no bitumen		
20	British America Federal Ornsby 1	NWNE 3 27S 19E	Wayne	7760-70	2	0.3-1.5	1.0	cuttings	finely crystalline dolomite, medium to high intercrystalline porosity, low permeability		
20	British America Federal Ornsby 1	NWNE 3 27S 19E	Wayne	7790-7800	6	0.0-0.5	0.3	cuttings	microcrystalline dolomite and probable limestone, no visible porosity, no bitumen		
20	British America Federal Ornsby 1	NWNE 3 27S 19E	Wayne	7800-10	6	0.5-2.0	1.5	cuttings	fine to medium crystalline dolomite, no visible porosity to high porosity, low permeability	x	
21	Exxon Gold Basin 1	NWNW 15 27S 24E	San Juan	14,300-10	8	0.0-0.1	0.0	cuttings	microcrystalline dolomite and limestone, no visible porosity, no bitumen		
21	Exxon Gold Basin 1	NWNW 15 27S 24E	San Juan	14,310-20	5	0.0-0.5	0.3	cuttings	microcrystalline dolomite and limestone (?), no visible porosity, healed fractures, no bitumen		
21	Exxon Gold Basin 1	NWNW 15 27S 24E	San Juan	14,350-60	7	0.0-1.8	0.5	cuttings	microcrystalline dolomite and limestone (?), no visible porosity, healed fractures, possible traces of bitumen along fractures		
21	Exxon Gold Basin 1	NWNW 15 27S 24E	San Juan	14,360-70	8	0.0-1.8	0.5	cuttings	microcrystalline dolomite and limestone (?), no visible porosity, healed fractures, one sample with bitumen filled fractures containing small patches up to 1.8 epifluorescence		
21	Exxon Gold Basin 1	NWNW 15 27S 24E	San Juan	14,390-14,400	2	0	0.0	cuttings	microcrystalline limestone and dolomite, no visible porosity or bitumen, minor patches of sulfide minerals (opaque)		
21	Exxon Gold Basin 1	NWNW 15 27S 24E	San Juan	14,400-10	7	0.0-2.0	0.8	cuttings	microcrystalline limestone and dolomite, some dolomite with micro-intercrystalline porosity, very low visible porosity, low permeability, traces of bitumen		
22	Putnam 1	SENE 15 27S 22 E	San Juan	7410-20	6	0.0-0.5	0.2	cuttings	fine-grained dolomite and siltstone, micro-intercrystalline porosity with no visible porosity or bitumen		
22	Putnam 1	SENE 15 27S 22 E	San Juan	7420-30	6	0.0-0.4	0.1	cuttings	microcrystalline dolomite, no visible bitumen or porosity		
22	Putnam 1	SENE 15 27S 22 E	San Juan	7440-50	8	0.0-0.8	0.2	cuttings	microcrystalline dolomite, no visible bitumen or porosity		
22	Putnam 1	SENE 15 27S 22 E	San Juan	7480-90	10	0.0-0.5	0.3	cuttings	fine to coarse crystalline dolomite with fair intercrystalline porosity, no bitumen		
23	Humble Unit 1 Bridger Sack Mesa	SESE 17 27S 22 E	San Juan	7030-40	5	0.3-0.5	0.4	cuttings	medium to coarsely crystalline dolomite (hydrothermal ?), fairly good intercrystalline porosity, trace of bitumen		

Map #	Well Name	Location	County	Interval	N	Rating*		Sample Type	Comments	Photomicrographs	Binocular Microscope Image
						Range	Ave				
23	Humble Unit 1 Bridger Sack Mesa	SESE 17 27S 22 E	San Juan	7040-50	8	0.2-0.5	0.3	cuttings	fine to medium crystalline limestone and dolomite, low to moderate amount of intercrystalline porosity, no significant bitumen		
23	Humble Unit 1 Bridger Sack Mesa	SESE 17 27S 22 E	San Juan	7050 (2 hr cirulation sample)	10	0.2-0.5	0.3	cuttings	medium crystalline dolomite, fair to good intercrystalline porosity, some pores lined with bitumen		
23	Humble Unit 1 Bridger Sack Mesa	SESE 17 27S 22 E	San Juan	7050-55	10	0.2-0.5	0.5	cuttings	fine-grained limestone and medium-crystalline dolomite with small patches up to 1.0 epifluorescence, trace to heavy amounts of bitumen, low to intermediate intercrystalline porosity		
23	Humble Unit 1 Bridger Sack Mesa	SESE 17 27S 22 E	San Juan	7055-60	6	0.5-1.0	0.8	cuttings	fine to medium crystalline dolomite with some patches of very coarse saddle dolomite, trace of bitumen, fair to good intercrystalline porosity		
23	Humble Unit 1 Bridger Sack Mesa	SESE 17 27S 22 E	San Juan	7060-65	3	0.1-0.4	0.2	cuttings	finely crystalline limestone and dolomite with possible small fractures lined with fine dolomite, some bitumen		
23	Humble Unit 1 Bridger Sack Mesa	SESE 17 27S 22 E	San Juan	7065-70	11	0.0-0.5	0.2	cuttings	fine to medium crystalline dolomite and limestone, trace of intercrystalline porosity, trace of bitumen		
24	California Oil Muleshoe 1	SWNW 2 28S 23E	San Juan	10,240-50	3	0.0-2.0	0.2 with one bright patch of 2.0	cuttings	fine to medium crystalline dolomite	x (see figure 6-4B)	
24	California Oil Muleshoe 1	SWNW 2 28S 23E		10,270-80	6	0		cuttings	no visible porosity to minor intercrystalline porosity, some bitumen		
25	Gulf Lockhard Fed 1	SW1/2 22 28S 20E	San Juan	5130-35	11	0.5-1.5	1.0	cuttings	abundant pyrobitumen in every sample, intercrystalline porosity in most samples		
25	Gulf Lockhard Fed 1	SW1/2 22 28S 20E	San Juan	5135-40	11	0.5-2.0	1.5	cuttings	better intercrystalline porosity, vugs with scattered bitumen, spotty shows		
25	Gulf Lockhard Fed 1	SW1/2 22 28S 20E	San Juan	5140-45	7	0.5-2.5	1.8	cuttings	fair-to-good intercrystalline porosity with abundant bitumen		
25	Gulf Lockhard Fed 1	SW1/2 22 28S 20E	San Juan	5145-50	8	1.0-2.5	2.0	cuttings	coarsely crystalline dolomite with good intercrystalline porosity, some bitumen	x	
26	Richfield Hatch Mesa 1	SESW 22 28S 21E	San Juan	7780-90	7	0.5-2.5	1.0	cuttings	medium to coarse crystalline dolomite, some bitumen linings, minor intercrystalline porosity, speckled epifluorescence to 2.5		x (see figure 6-3A)
26	Richfield Hatch Mesa 1	SESW 22 28S 21E	San Juan	7790-7800	5	0.0-1.5	1.0	cuttings	medium to coarse crystalline dolomite, minor bitumen linings, very minor visible intercrystalline porosity		x (see figure 6-1D and 6-3B)
26	Richfield Hatch Mesa 1	SESW 22 28S 21E	San Juan	7800-10	5	0.0-1.5	0.3	cuttings	medium to coarse crystalline dolomite, no visible bitumen or porosity, patches of orange fluorescence		x (see figure 6-1B and 6-3C)
26	Richfield Hatch Mesa 1	SESW 22 28S 21E	San Juan	7810-20	6	0.0-0.5	0.3	cuttings	medium to coarse crystalline dolomite, no visible bitumen or porosity, patches of orange fluorescence		x

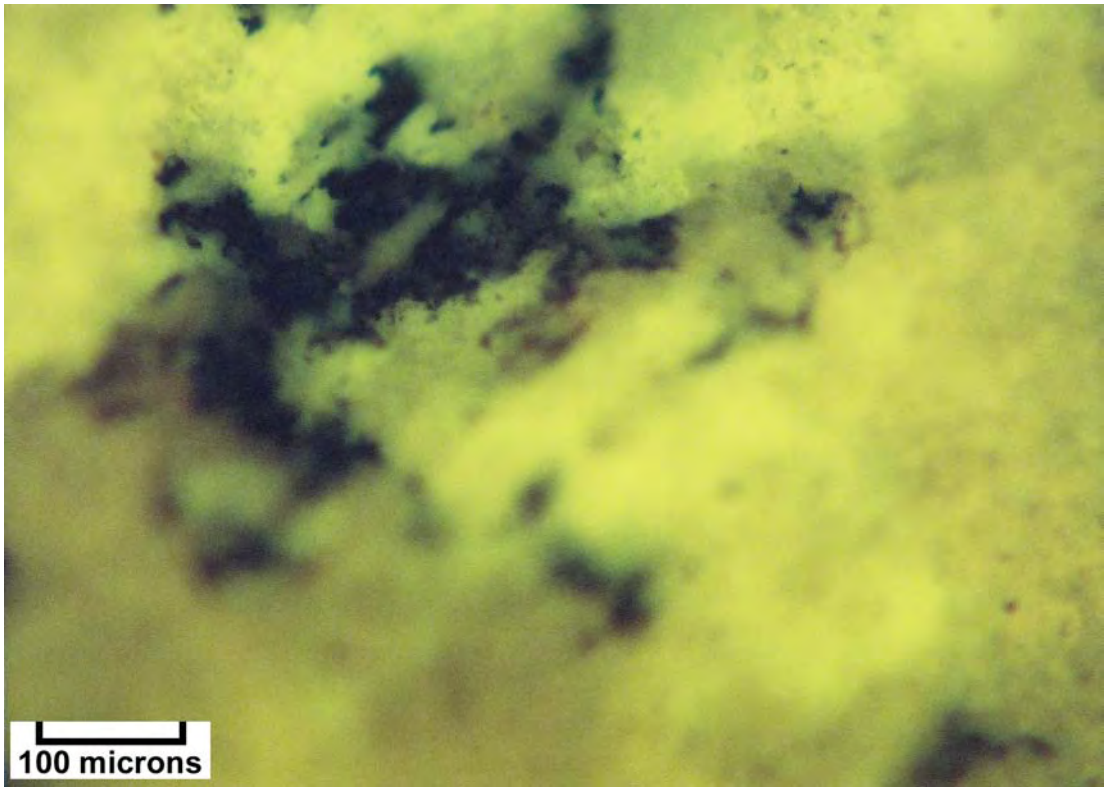
Map #	Well Name	Location	County	Interval	N	Rating*		Sample Type	Comments	Photomicrographs	Binocular Microscope Image
						Range	Ave				
27	Pure USA Big Indian 1	NWSESE 33 29S 24E	San Juan	9960-70	3	0.0-0.0	0.0	cuttings	fine to medium crystalline dolomite, abundant intercrystalline pores completely lined with bitumen, very small patches of 0.5 epifluorescence speckles		
27	Pure USA Big Indian 1	NWSESE 33 29S 24E	San Juan	10,020-23	10	0.0-0.3	0.2	cuttings	medium to coarse crystalline dolomite with fair to good intercrystalline porosity and small vugs completely lined with bitumen, isolated patches and speckles up to 1.5 epifluorescence	x (see figure 6-4D)	x (see figure 6-1C and 6-3D)
27	Pure USA Big Indian 1	NWSESE 33 29S 24E	San Juan	10,024-29	10	0.0-0.1	0.1	cuttings	medium to coarse dolomite with abundant intercrystalline porosity completely lined with bitumen, very small speckles of 0.5 epifluorescence	x	x
27	Pure USA Big Indian 1	NWSESE 33 29S 24E	San Juan	10,029-32	8	0.0-0.1	0.1	cuttings	fine to coarse crystalline dolomite, poor to fair intercrystalline porosity lined with bitumen		
27	Pure USA Big Indian 1	NWSESE 33 29S 24E	San Juan	10,074-77	10	0.0-0.4	0.2	cuttings	fine to medium crystalline dolomite with fair to good intercrystalline porosity, completely lined with bitumen, rare speckles up to 0.5 epifluorescence		
27	Pure USA Big Indian 1	NWSESE 33 29S 24E	San Juan	10,080-86	8	0.0-1.0	0.8	cuttings	medium to coarsely crystalline dolomite, generally good intercrystalline porosity and small vugs lined with bitumen, probable gas/oil transition at 10,080-85		
27	Pure USA Big Indian 1	NWSESE 33 29S 24E	San Juan	10,086-90	6	0.5-1.5	1.0	cuttings	medium to coarsely crystalline dolomite, good to excellent intercrystalline porosity and small vugs lined with bitumen	x	
28	Belco State 1	NENE 32 29.5S 24E	San Juan	9835-36	4	2.0-3.0	2.5	core chip	medium to coarsely crystalline dolomite (probable hydrothermal), fair to good intercrystalline porosity and fractured porosity, trace of bitumen, patchy to continuous epifluorescence, possible oil film	x	
28	Belco State 1	NENE 32 29.5S 24E	San Juan	9836-37	2	0.0-0.3	0.2	core chip	medium to coarsely crystalline dolomite, poor to fair intercrystalline porosity, trace of bitumen around pores		
28	Belco State 1	NENE 32 29.5S 24E	San Juan	9837-38	3	0.0-0.5	0.4	core chip	medium to coarsely crystalline dolomite, poor to fair intercrystalline porosity, epifluorescence is patchy surrounding coarser dolomite crystals, trace of bitumen		
28	Belco State 1	NENE 32 29.5S 24E	San Juan	9838-39	2	0.0-0.2	0.1	core chip	coarsely crystalline dolomite matrix consists of isolated patches of 0.2-0.8 epifluorescence along fractures and intercrystalline spaces, looks wet with trace of oil, fairly good intercrystalline porosity and vuggy porosity, trace of bitumen		

Map #	Well Name	Location	County	Interval	N	Rating*		Sample Type	Comments	Photomicrographs	Binocular Microscope Image
						Range	Ave				
28	Belco State 1	NENE 32 29.5S 24E	San Juan	9850-51	3	0.0-0.2	0.1	core chip	medium to coarse crystalline dolomite with fair intercrystalline porosity, trace of bitumen, matrix contains small patches of remnant epifluorescence 1.0-1.5 around isolated crystals and fractures	x	
28	Belco State 1	NENE 32 29.5S 24E	San Juan	9851-52	2	0.0-0.0	0.0	core chip	medium to coarse dolomite with very low porosity, no bitumen, samples are "dead"		
29	Pure NW Lisbon St. A-1	SWSE 2 30S 24E	San Juan	9710-15	2	0.5-2.0, spotty	1.0	cuttings	minor intercrystalline porosity, significant amount of bitumen, two possible types of epifluorescence - pale-green yellow and bright yellow, indicating two oils or partially degraded oil	x	
29	Pure NW Lisbon St. A-1	SWSE 2 30S 24E	San Juan	9715-20	5	0.5-2.0, in patches	1.0	cuttings	poor to fair intercrystalline porosity, abundant bitumen, possible microfractures	x	
29	Pure NW Lisbon St. A-1	SWSE 2 30S 24E	San Juan	9720-25	5	0.0-1.5, along microfractures only		cuttings	no visible porosity except microfractures, no visible bitumen	x	
30	Elliot Inc. Lisbon Valley C-1 (Lisbon)	NENW 9 30S 24E	San Juan	8765-70	20	0.0-1.5	1.0, small specks in patches that range up to 1.5	cuttings	fine to medium crystalline dolomite with fair to good intercrystalline porosity and small vugs completely lined with bitumen		
31	Pure Lisbon 814-A	CNWSW 14 30S 24E	San Juan	8870-75	8	0.5-2.5	1.8	cuttings	medium to coarse crystalline dolomite, abundant bitumen linings, some large patches of intercrystalline porosity, speckled epifluorescence to 2.5	x	x
31	Pure Lisbon 814-A	CNWSW 14 30S 24E	San Juan	8875-80	6	1.0-3.0	2.0	cuttings	medium to coarse crystalline dolomite, good intercrystalline porosity and abundant bitumen linings, good pale-yellow to greenish yellow epifluorescence	x	
31	Pure Lisbon 814-A	CNWSW 14 30S 24E	San Juan	8890-95	14	0.0-1.8	0.8	cuttings	fine to medium crystalline dolomite, abundant bitumen linings, low amounts of visible porosity, speckled yellow epifluorescence	x	x
31	Pure Lisbon 814-A	CNWSW 14 30S 24E	San Juan	8895-8900	11	0.0-0.5	0.2	cuttings	fine crystalline dolomite, low amounts of visible porosity, traces of bitumen only		x
31	Pure Lisbon 814-A	CNWSW 14 30S 24E	San Juan	8900-05	9	0.0-2.5	1	cuttings	generally fine to medium crystalline dolomite, no visible bitumen		x
31	Pure Lisbon 814-A	CNWSW 14 30S 24E	San Juan	8905-10	7	0.2-2.2	1.5	cuttings	fine to medium crystalline dolomite, minor to fair visible bitumen coatings and porosity, pale-yellow epifluorescence		
31	Pure Lisbon 814-A	CNWSW 14 30S 24E	San Juan	8910-15	8	0.0-2.0	1.3	cuttings	medium to coarse crystalline dolomite, minor visible intercrystalline porosity, some bitumen coatings		x
31	Pure Lisbon 814-A	CNWSW 14 30S 24E	San Juan	8915-20	5	0.0-1.2	0.8	cuttings	fine to coarse crystalline dolomite, patches of good visible intercrystalline porosity, traces of bitumen coatings		

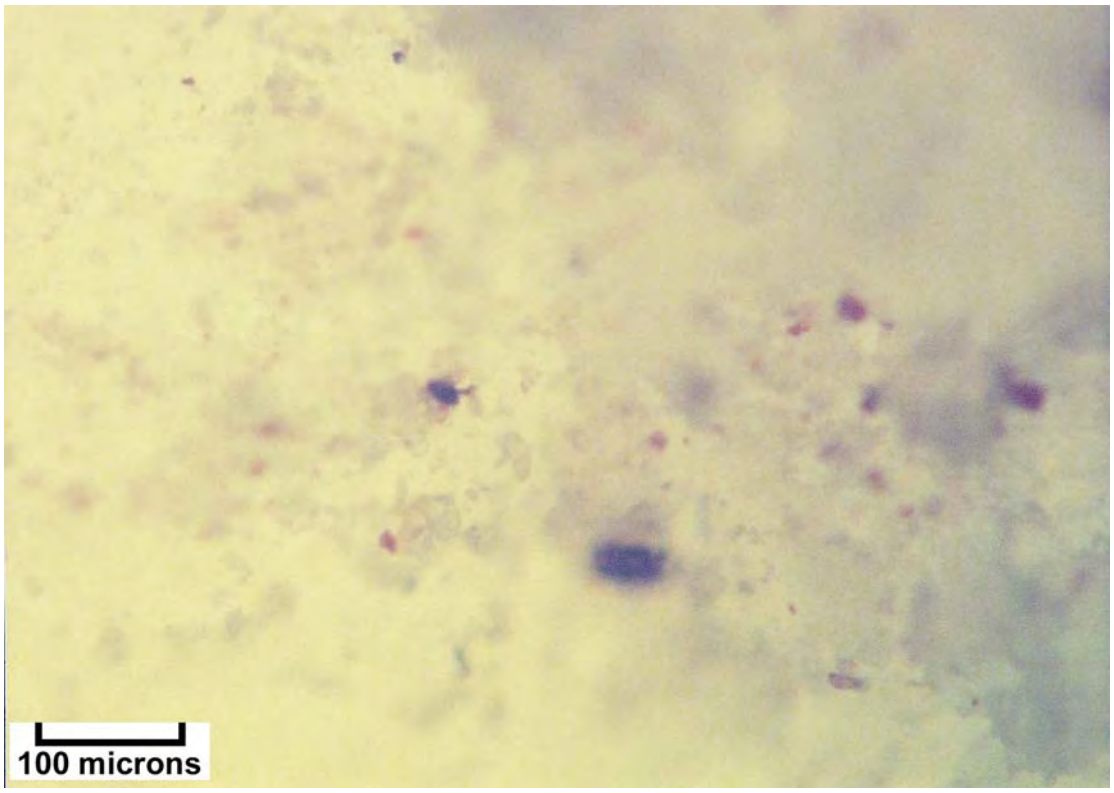
Map #	Well Name	Location	County	Interval	N	Rating*		Sample Type	Comments	Photomicrographs	Binocular Microscope Image
						Range	Ave				
31	Pure Lisbon 814-A	CNWSW 14 30S 24E	San Juan	8920-25	5	0.1-2.2	1.8	cuttings	fine to coarse crystalline dolomite, some visible intercrystalline porosity, no visible bitumen		
31	Pure Lisbon 814-A	CNWSW 14 30S 24E	San Juan	8925-30	7	0.3-0.8	0.8	cuttings	medium to coarse crystalline dolomite, low visible porosity, no visible bitumen		x
32	Pure Oil Spiller Canyon State 1	SWSW 16 30S 25E	San Juan	9080-90	5	0	0.0	cuttings	finely crystalline dolomite and limestone (?), low visible porosity with some bitumen		
32	Pure Oil Spiller Canyon State 1	SWSW 16 30S 25E	San Juan	9090-9100	6	0.0-0.2 with rare patches up to 0.5	0.1	cuttings	fine to medium crystalline dolomite with fair intercrystalline porosity lined with abundant bitumen	x	
32	Pure Oil Spiller Canyon State 1	SWSW 16 30S 25E	San Juan	9100-10	8	0.0-0.5	0.4	cuttings	medium to coarsely crystalline dolomite with poor to fair porosity, lined with bitumen	x	x
32	Pure Oil Spiller Canyon State 1	SWSW 16 30S 25E	San Juan	9150-60	7	0.1-1.0	0.6	cuttings	medium to coarsely crystalline dolomite with fairly good intercrystalline porosity completely lined with bitumen, microfractures also lined with bitumen	x (see figure 6-4C)	x
32	Pure Oil Spiller Canyon State 1	SWSW 16 30S 25E	San Juan	9180-90	4	0.3-1.0	0.7	cuttings	fine to medium crystalline dolomite with poor to fair porosity lined with bitumen, some microfractures lined with bitumen		
32	Pure Oil Spiller Canyon State 1	SWSW 16 30S 25E	San Juan	9190-9200	10	0.3-1.0	0.7 with small patches up to 2.0	cuttings	fine to medium crystalline dolomite and limestone with poor to fair intercrystalline porosity lined with bitumen	x	
32	Pure Oil Spiller Canyon State 1	SWSW 16 30S 25E	San Juan	9330-40	10	0.5-1.0	0.7 small speckled areas up to 2.0	cuttings	medium to coarsely crystalline dolomite (saddle dolomite), fair to good intercrystalline porosity lined with bitumen	x	x
32	Pure Oil Spiller Canyon State 1	SWSW 16 30S 25E	San Juan	9360-70	10	0.3-1.0	0.7	cuttings	finely to coarsely crystalline dolomite with poor to fair intercrystalline porosity, lined with bitumen, speckled areas up to 1.5 epifluorescence	x	
32	Pure Oil Spiller Canyon State 1	SWSW 16 30S 25E	San Juan	9380-90	7	0.5-1.5	1.0	cuttings	finely to coarsely crystalline dolomite, fair to good porosity lined with bitumen, some microfractures also lined with bitumen	x	
32	Pure Oil Spiller Canyon State 1	SWSW 16 30S 25E	San Juan	9410-20	8	0.3-1.0	0.7	cuttings	medium to coarsely crystalline dolomite, poor to fair intercrystalline porosity lined with bitumen, isolated patches of epifluorescence up to 1.5	x	x (see figure 6-1A)

- evaluated at 100X
- highlighted epifluorescence rating represents the highest maximum value for the well

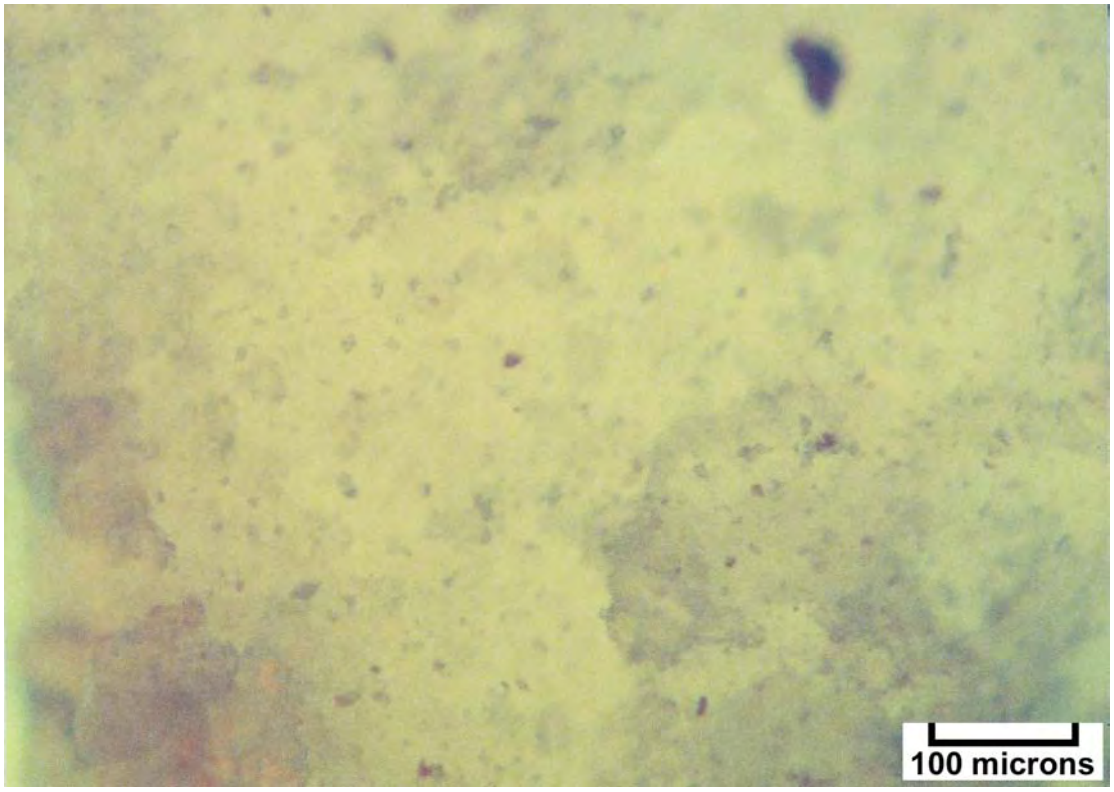
Epifluorescence Photomicrographs and Binocular Microscope Images



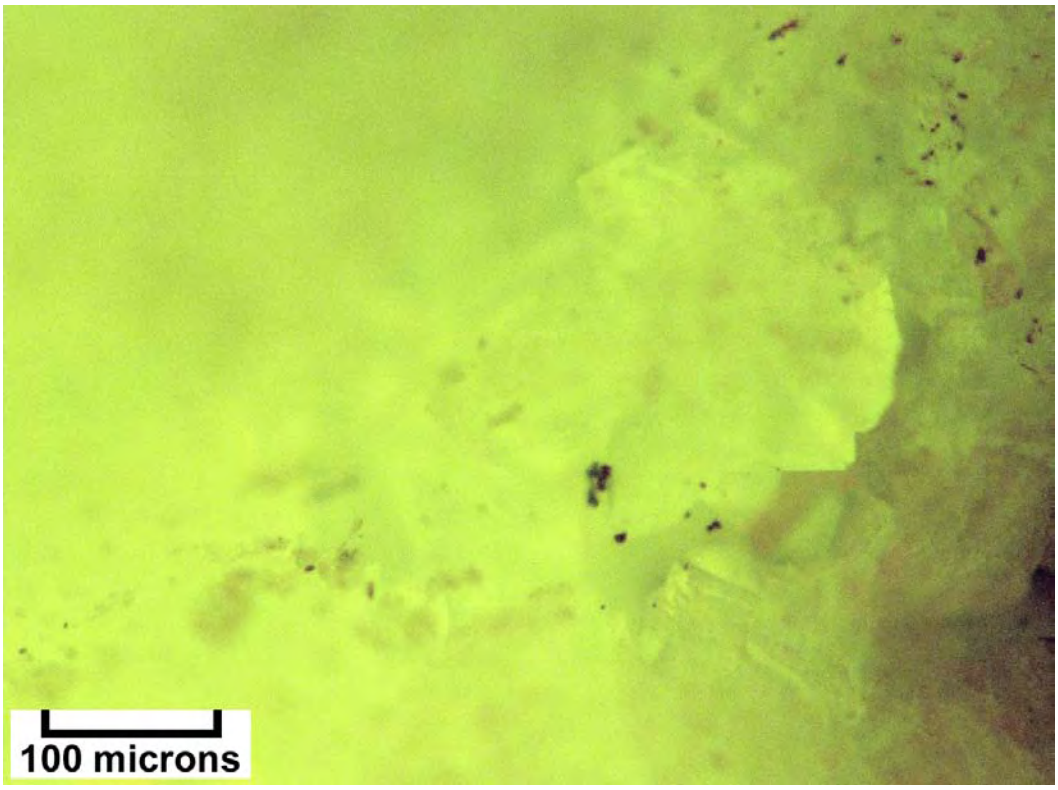
Photomicrograph – Humble Woodside 1 (Map #1), 6580-90 feet, patches of 1.5 epifluorescence in porous, bitumen-bearing dolomite.



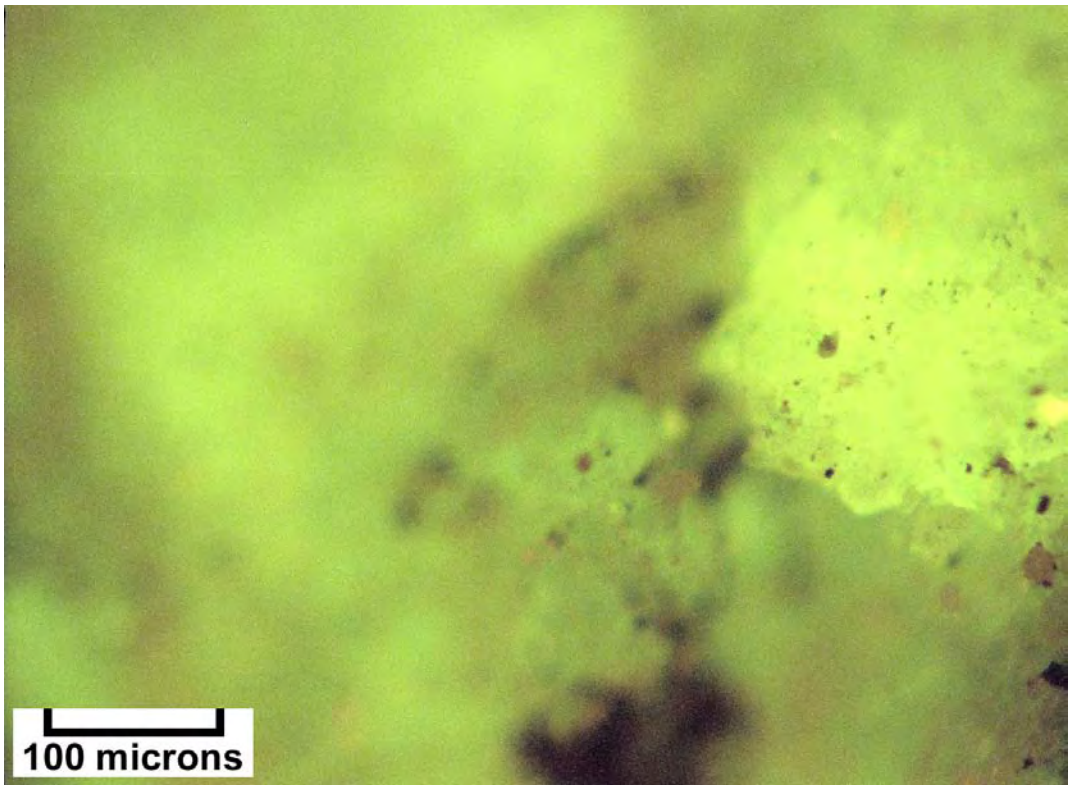
Photomicrograph – Denison Mines 5-1 (Map #3), 5850-60 feet, 2.5 epifluorescence in microcrystalline dolomite with no bitumen.



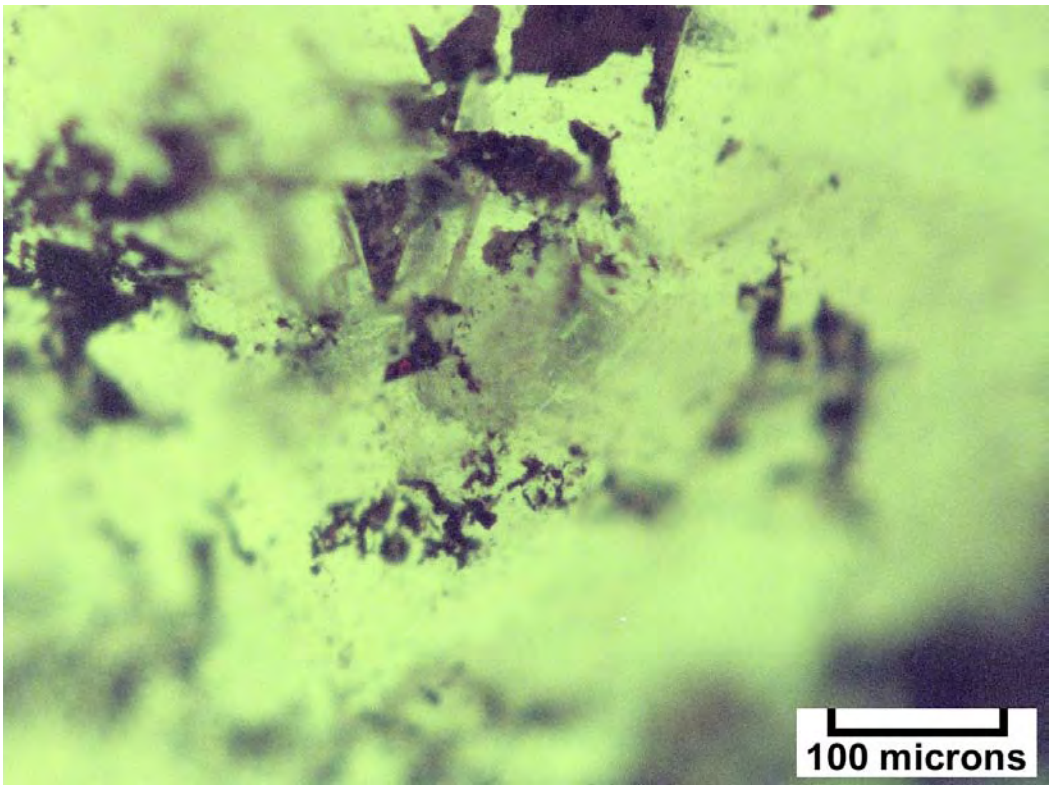
Photomicrograph – Denison Mines 5-1 (Map #3), 5860-70 feet, 2.0 epifluorescence in microcrystalline dolomite with no bitumen, high porosity and low permeability.



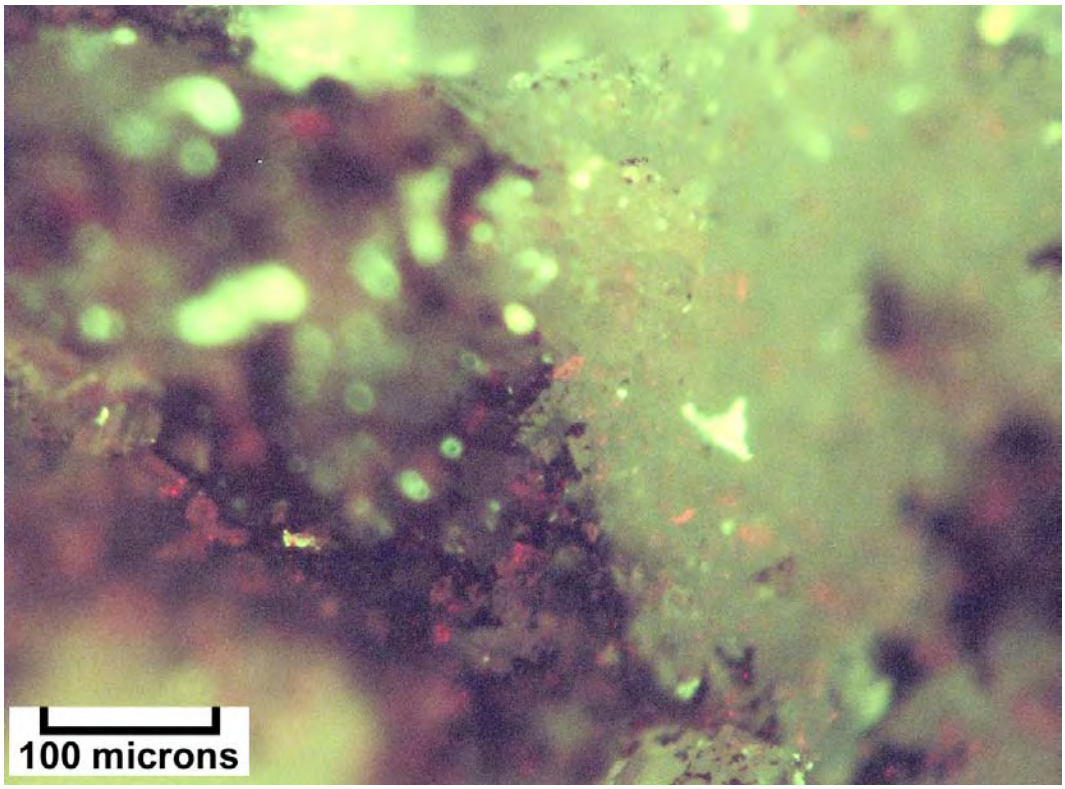
Photomicrograph – Texaco Government Smoot 1 (Map #5), 8732-33 feet, 2.0 epifluorescence, pale yellow, possible high gravity oil in medium crystalline dolomite.



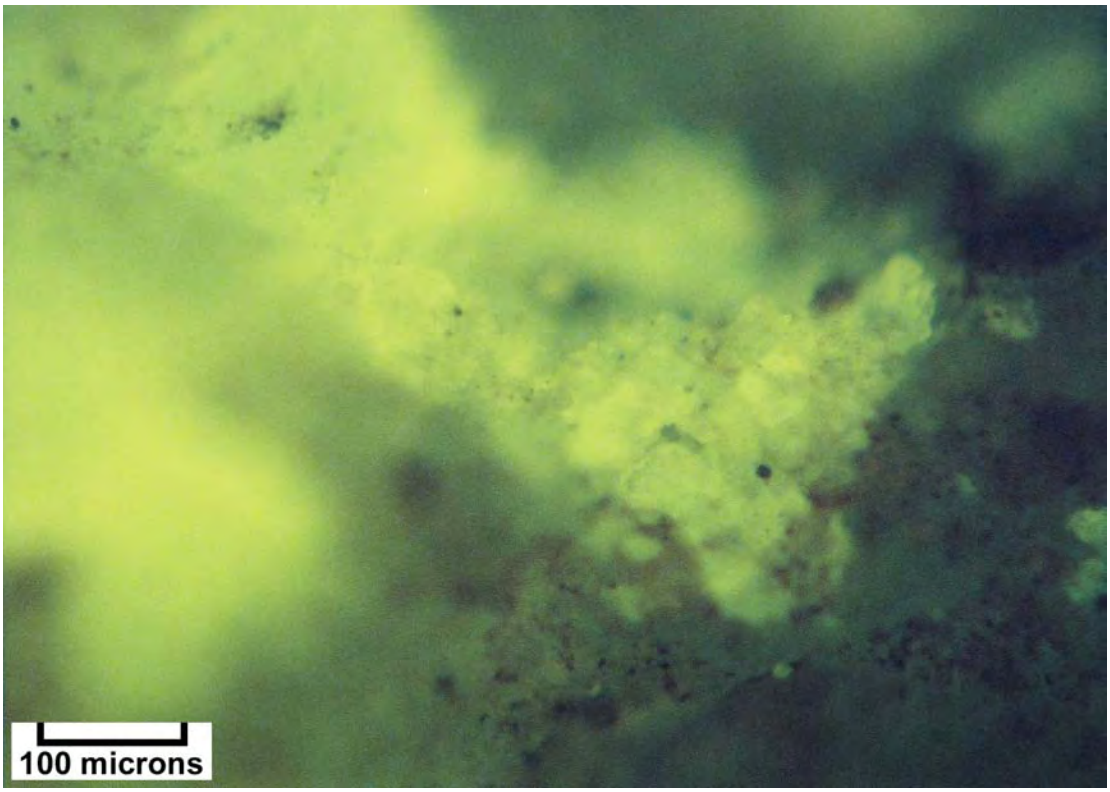
Photomicrograph – Texaco Government Smoot 1 (Map #5), 8733-34 feet, 1.8 epifluorescence in medium crystalline dolomite with good intercrystalline porosity lined with bitumen.



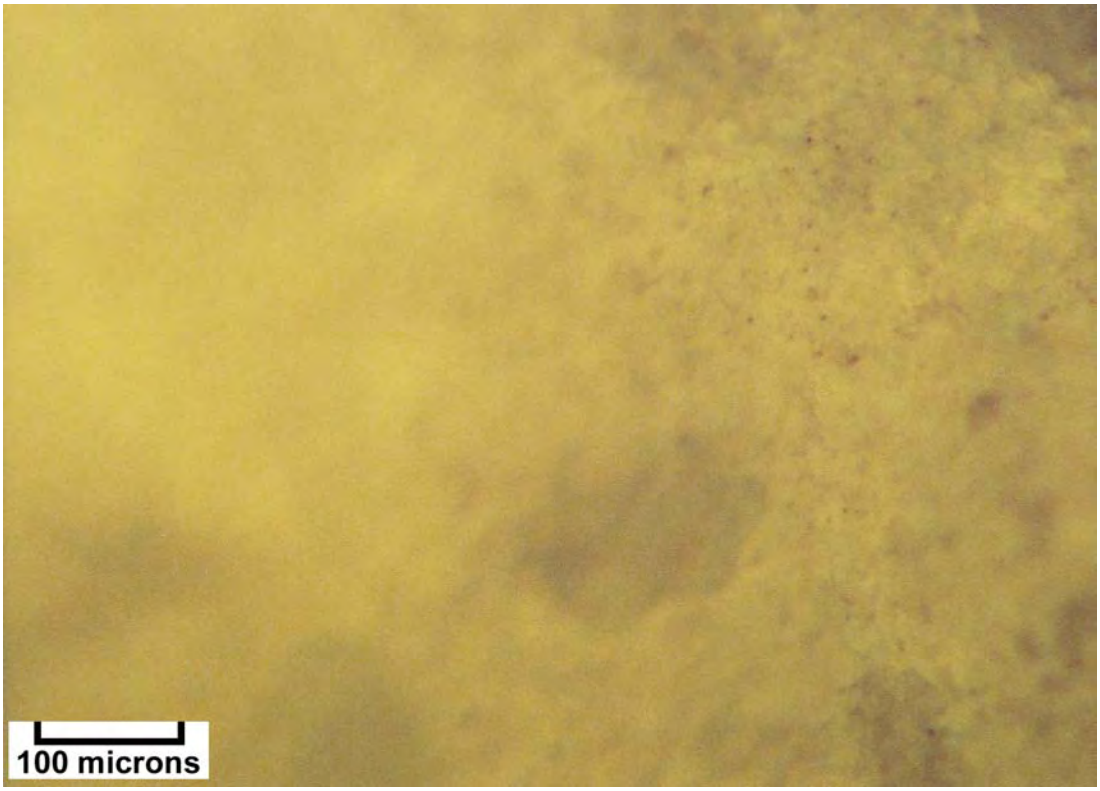
Photomicrograph – Texaco Government Smoot 1 (Map #5), 8734-35 feet, 1.8 epifluorescence in coarsely crystalline dolomite with good intercrystalline pores completely lined with bitumen.



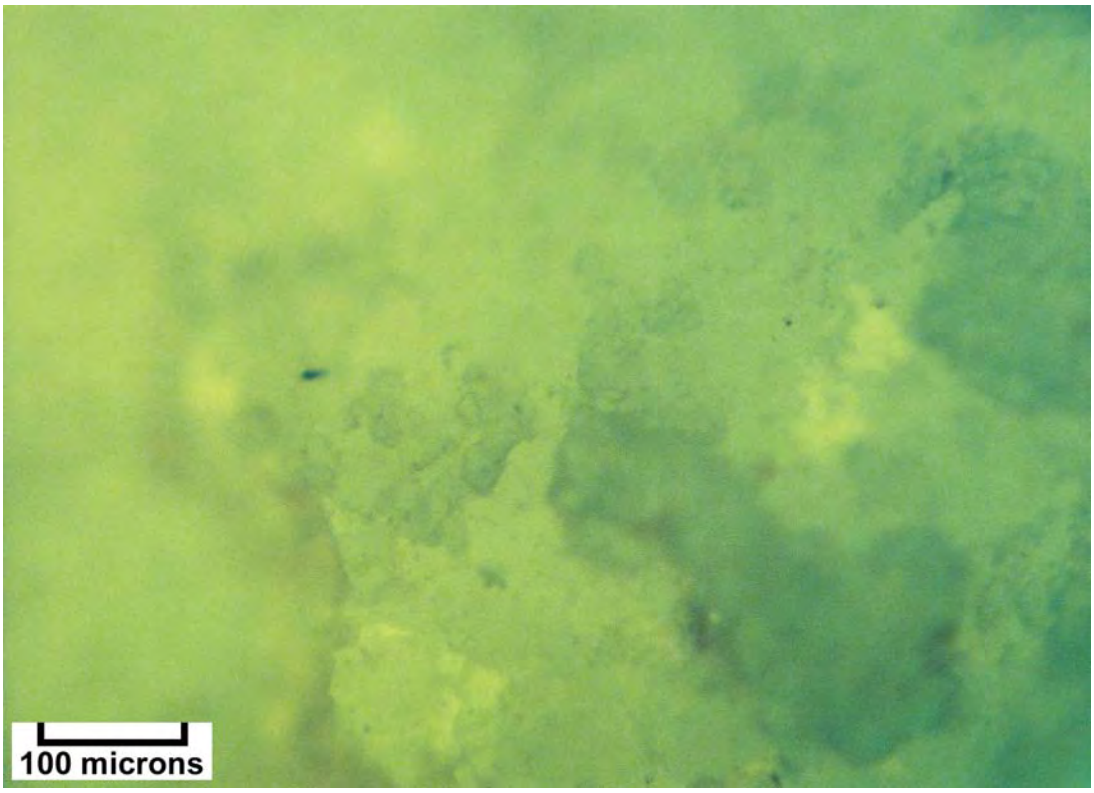
Photomicrograph – Texaco Government Smoot 2 (Map #5), 8736-37 feet, small "speckles" of live epifluorescence up to 2.0 in coarsely crystalline dolomite with good intercrystalline porosity lined with bitumen.



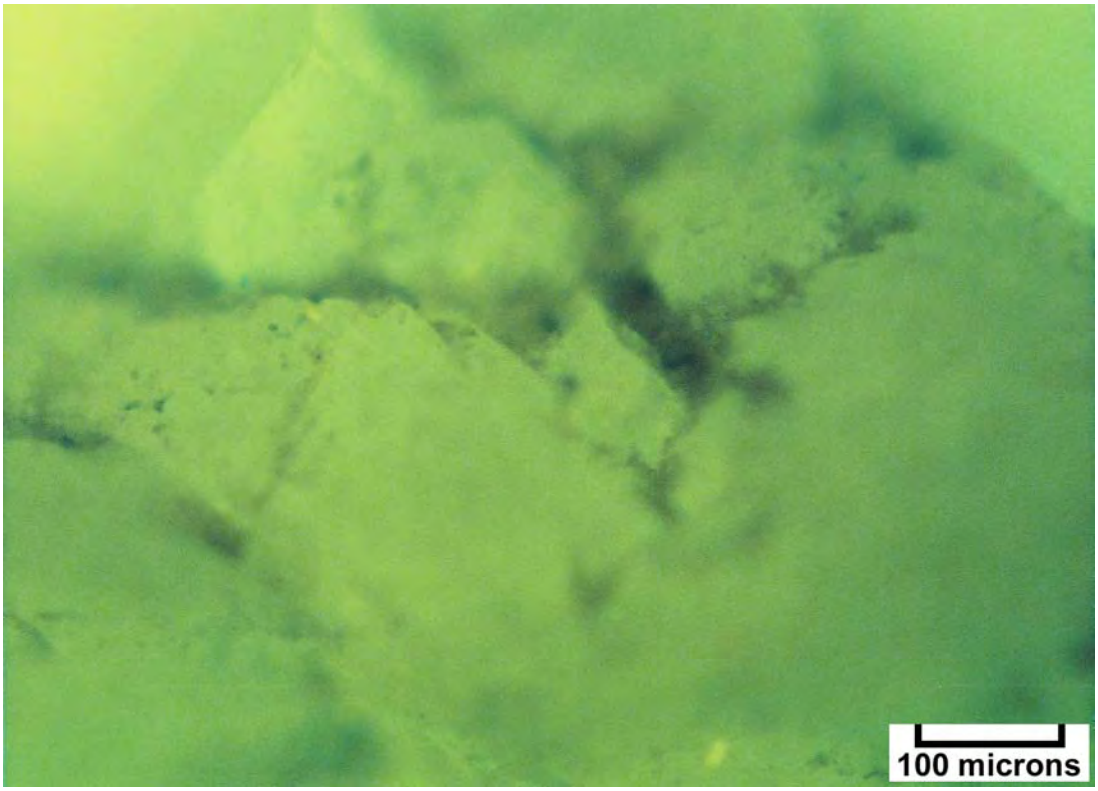
Photomicrograph – Shell Chaffin 1 (Map #6), 7520-30 feet, 1.5 epifluorescence patches surrounded by a "dead" matrix medium crystalline dolomite with minor intercrystalline porosity.



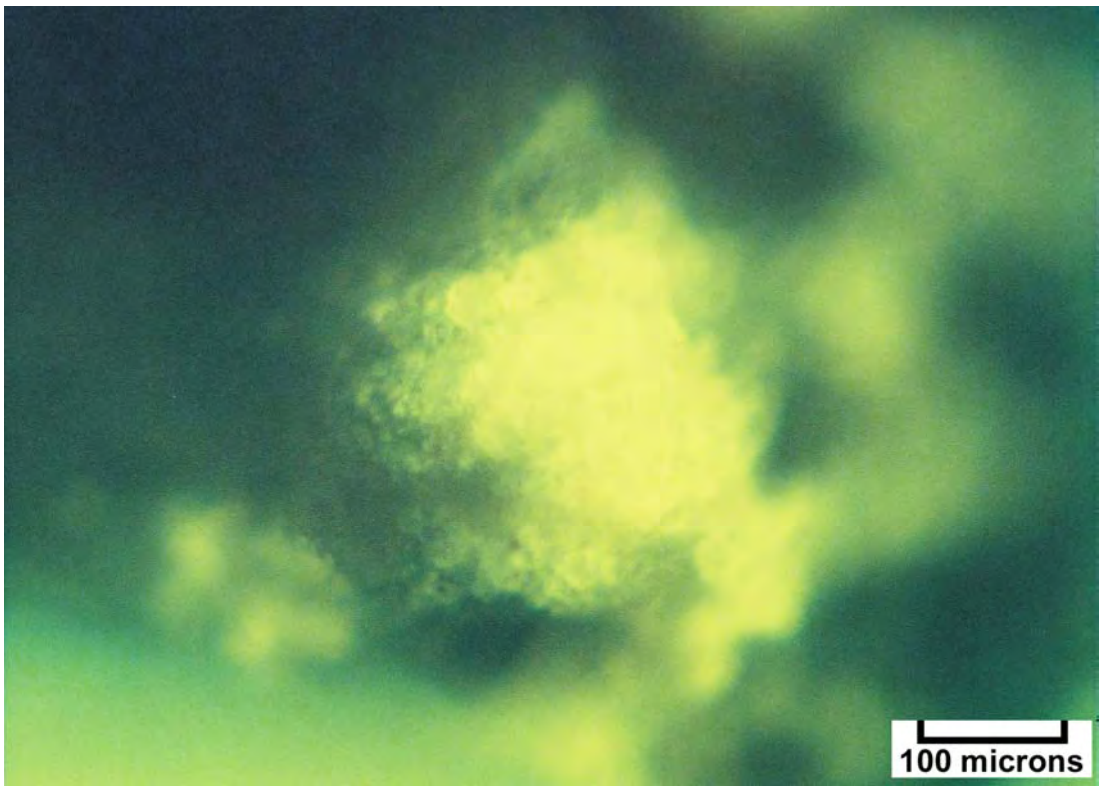
Photomicrograph – Shell Chaffin 1 (Map #6), 7530-40 feet, 1.5 epifluorescence in finely crystalline dolomite containing high porosity and low permeability, no bitumen.



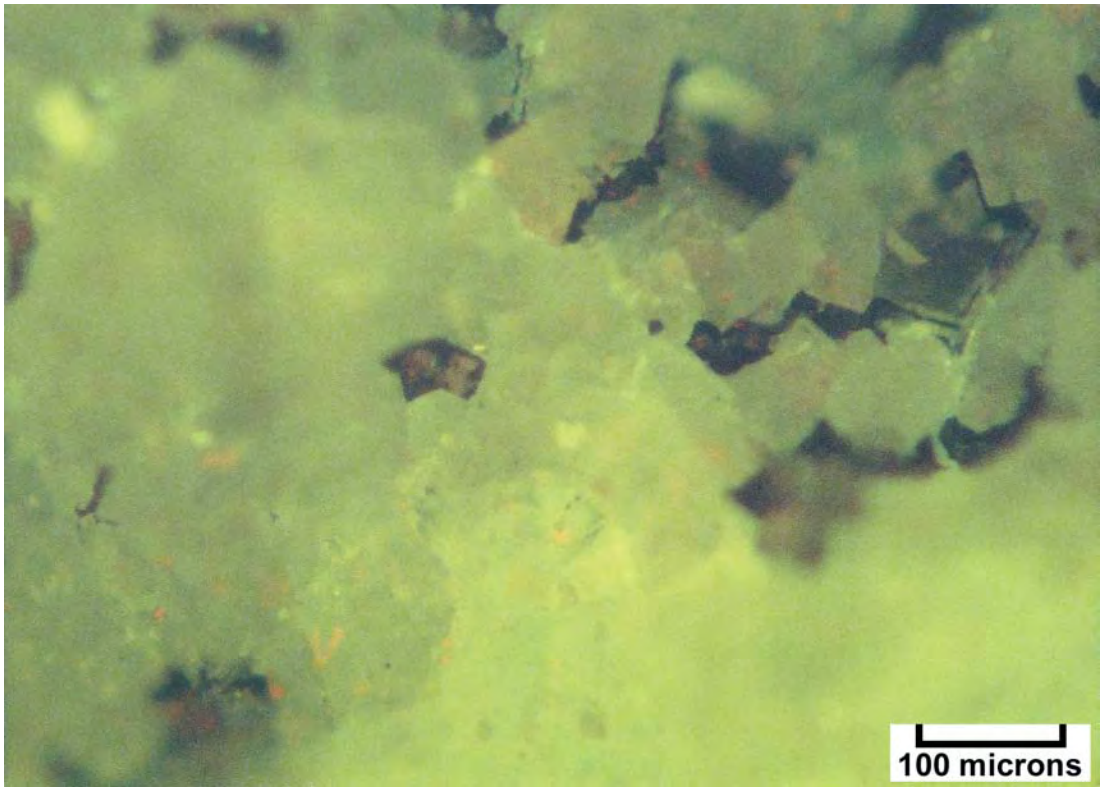
Photomicrograph – Federal Hatt 1 (Map #7), 5970-80 feet, 2.5 epifluorescence in medium crystalline dolomite, no bitumen.



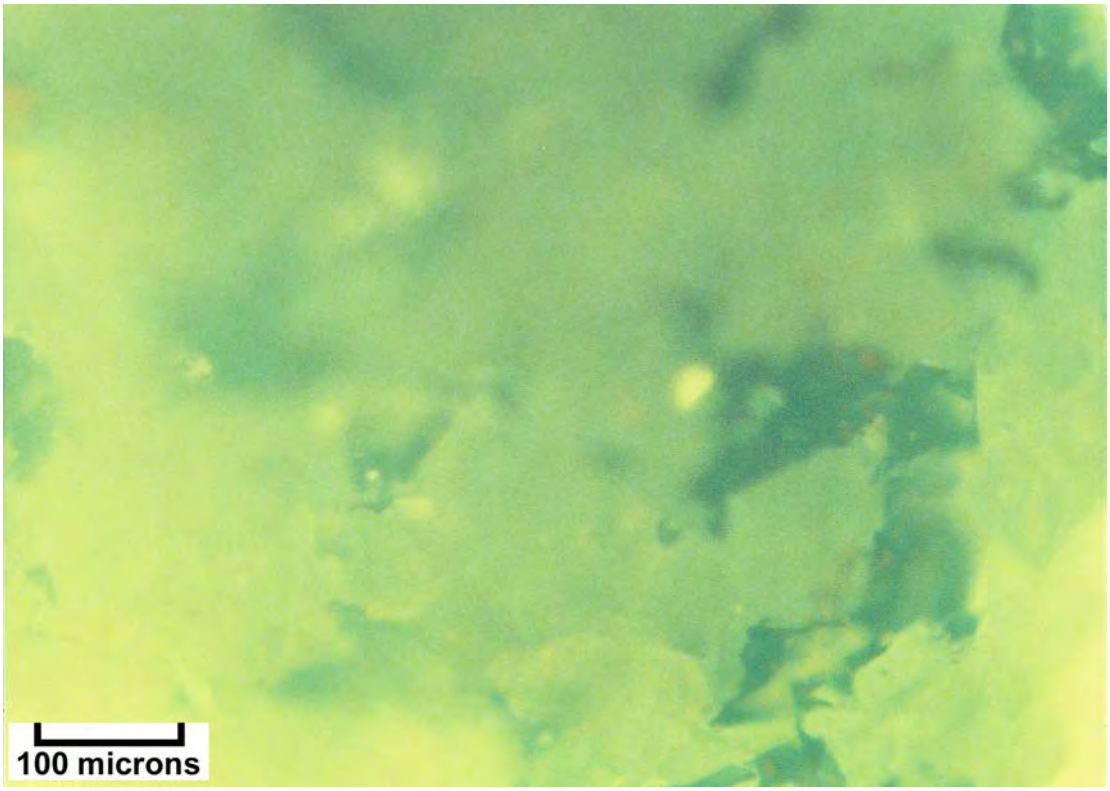
Photomicrograph – Federal Hatt 1 (Map #7), 6005-10 feet, 0.5 epifluorescence in coarsely crystalline dolomite, very good intercrystalline porosity and no bitumen.



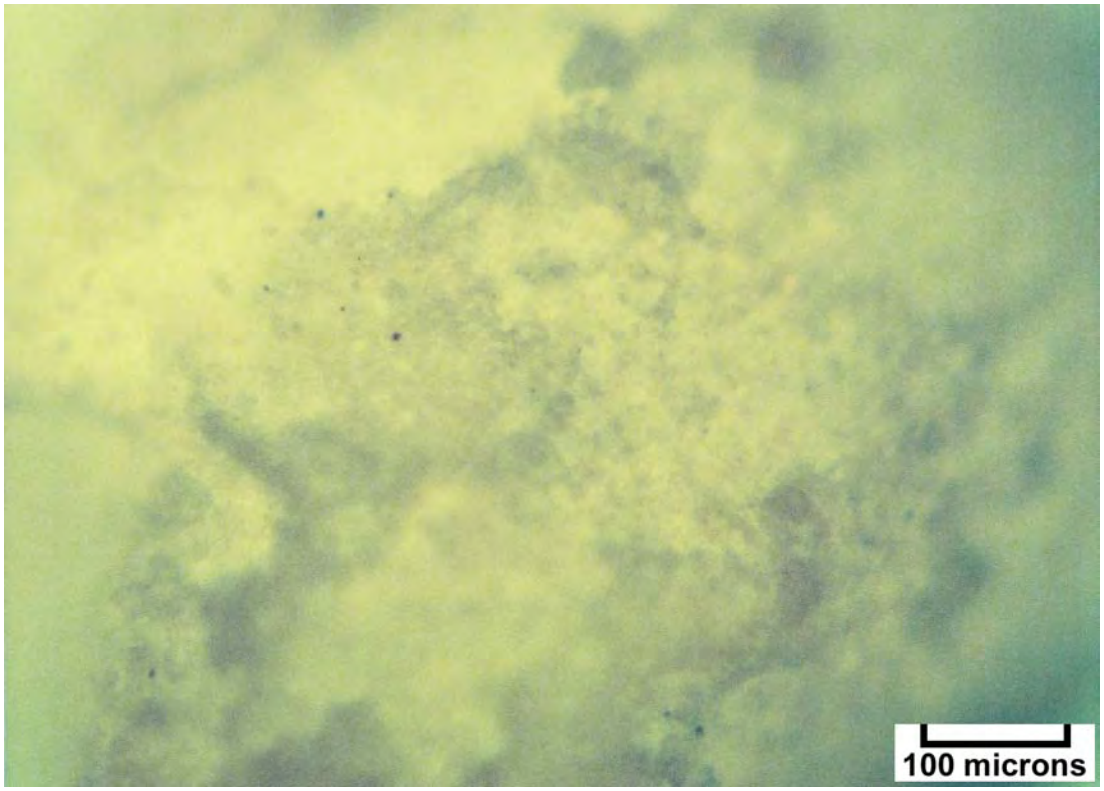
Photomicrograph – Conoco Federal 31 (Map #10), 10,470-80 feet, patchy 1.5 epifluorescence surrounded by zero epifluorescence in finely crystalline dolomite with minor intercrystalline porosity.



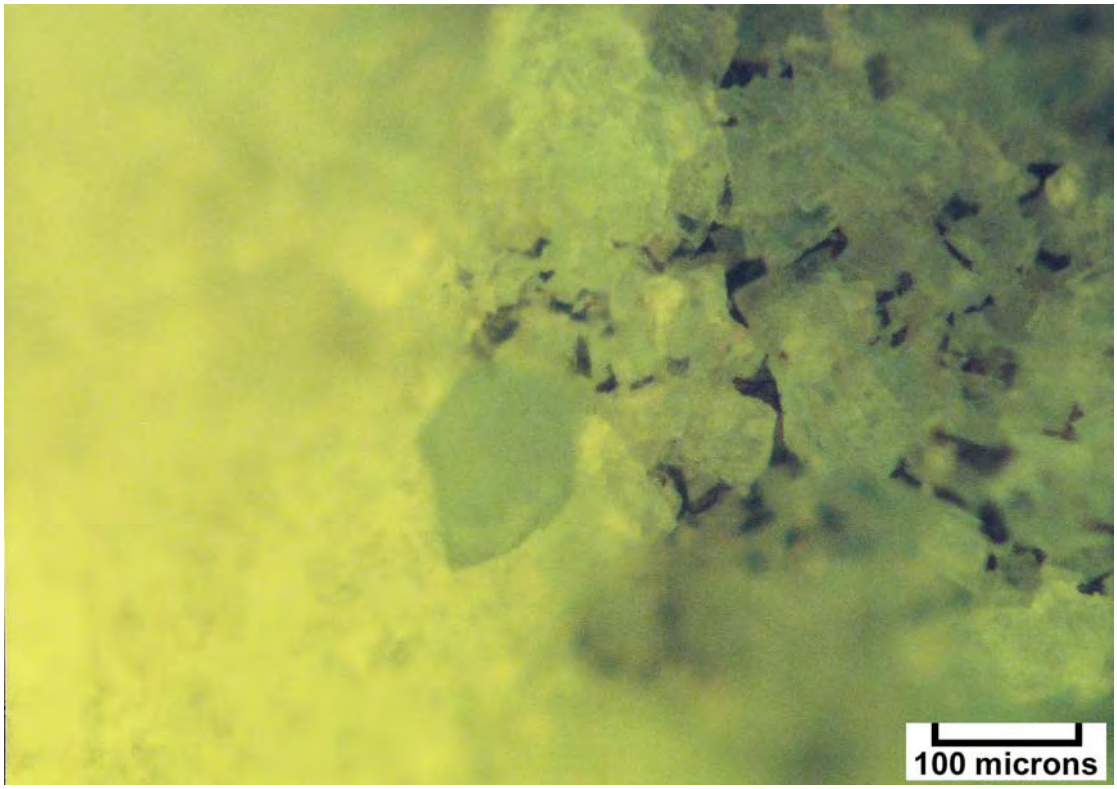
Photomicrograph – Conoco Federal 31 (Map #10), 10740-50 feet, essentially no epifluorescence in coarsely crystalline dolomite with good intercrystalline pores containing bitumen.



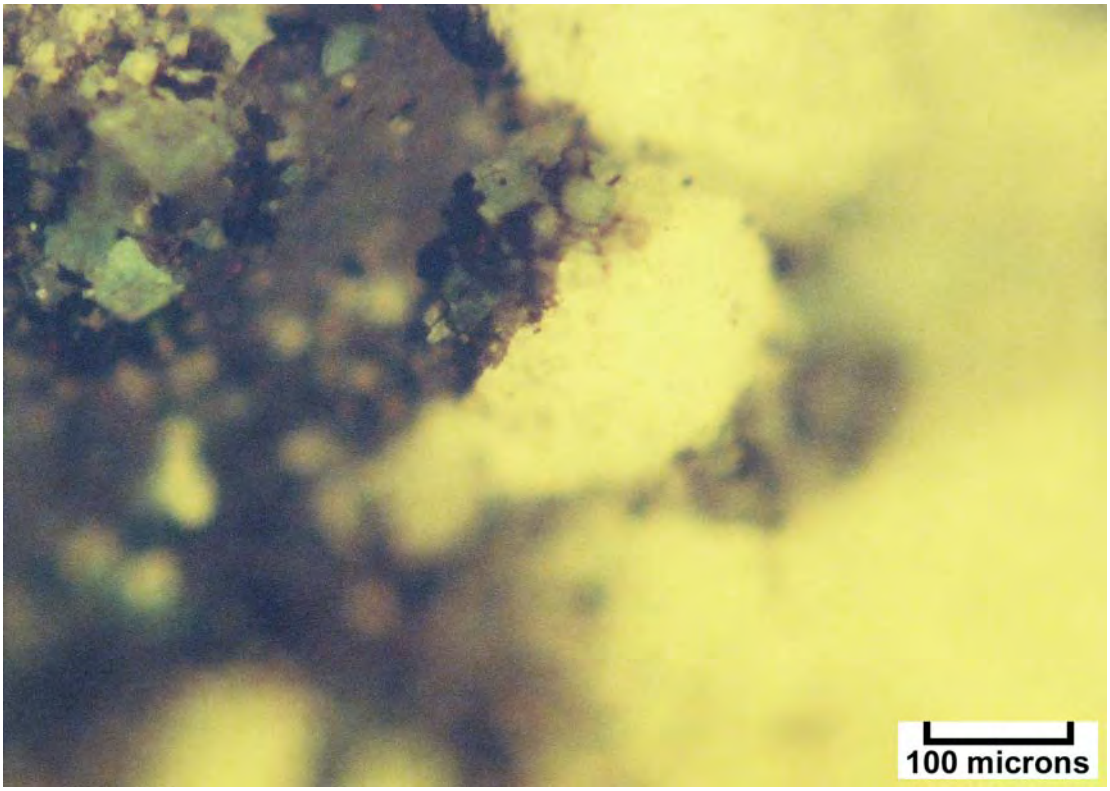
Photomicrograph – Conoco Federal 31 (Map #10), 10,750-60 feet, no epifluorescence in coarsely crystalline dolomite containing good intercrystalline porosity and significant amounts of bitumen.



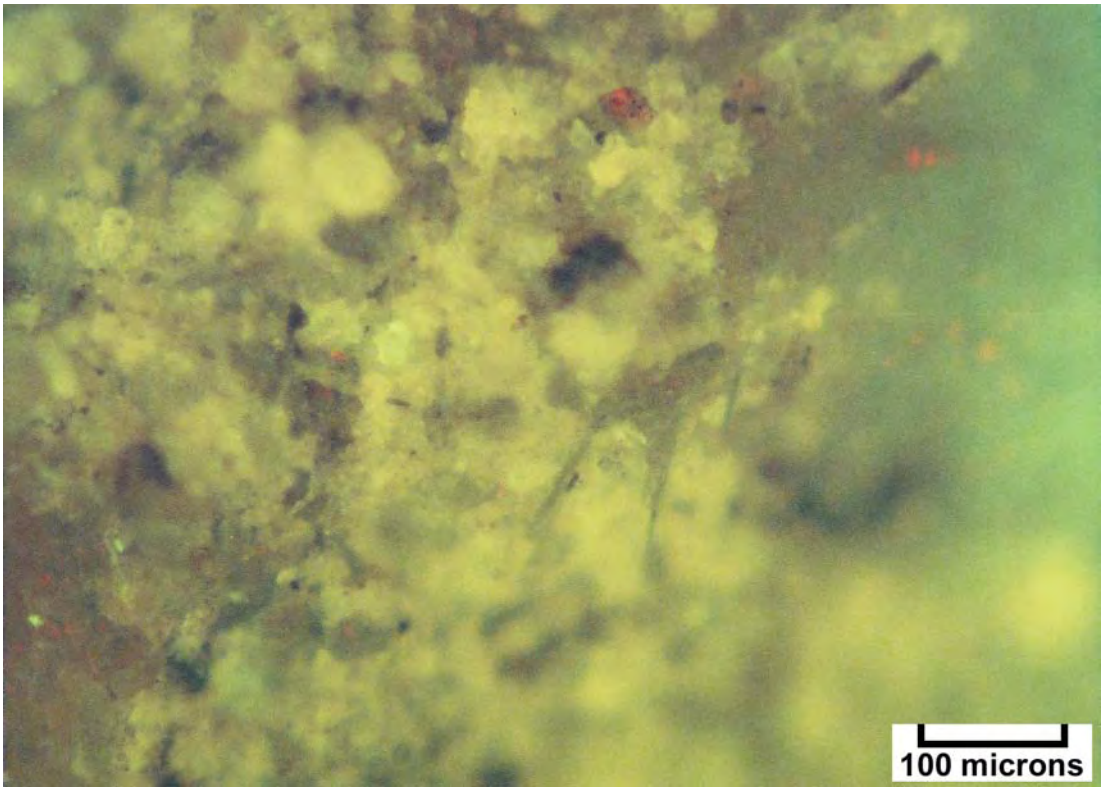
Photomicrograph – McRae Federal 1 (Map #12), 8485-95 feet, 2.5 epifluorescence in medium crystalline dolomite containing no porosity or bitumen.



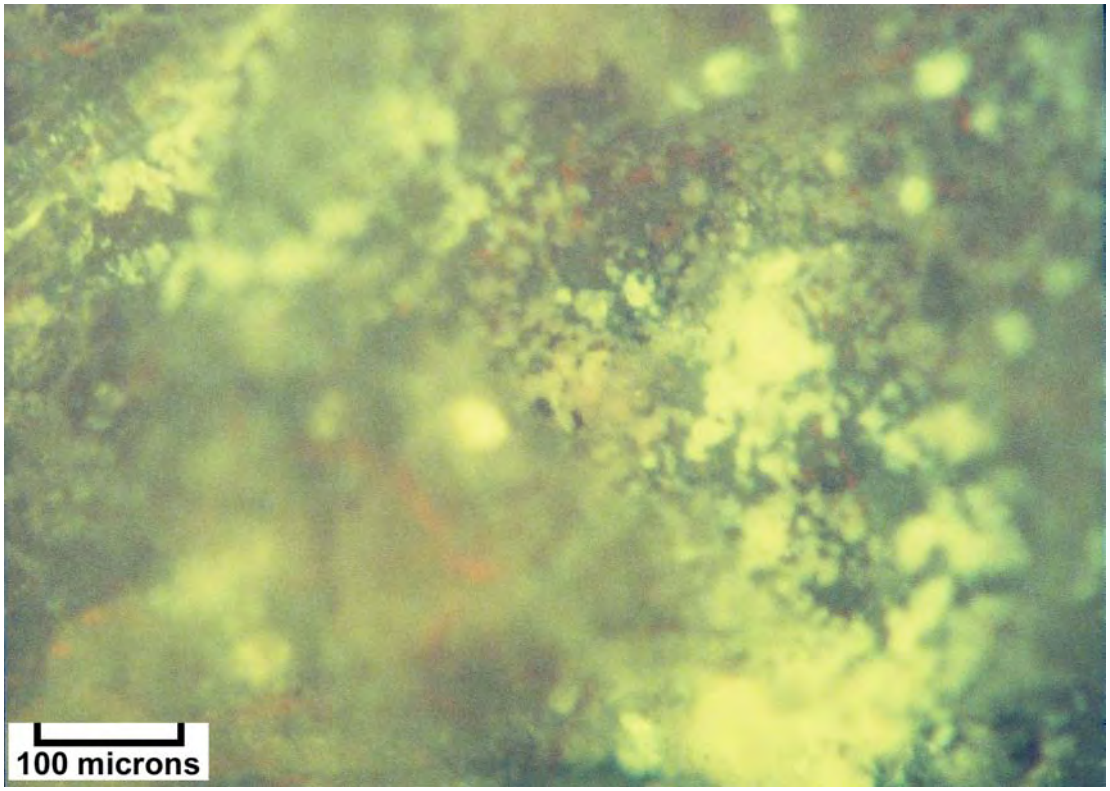
Photomicrograph – Superior Bow Knot Unit 1 (Map #13), 6075-80 feet, patchy 2.0 epifluorescence in medium crystalline dolomite with abundant intercrystalline pores and bitumen.



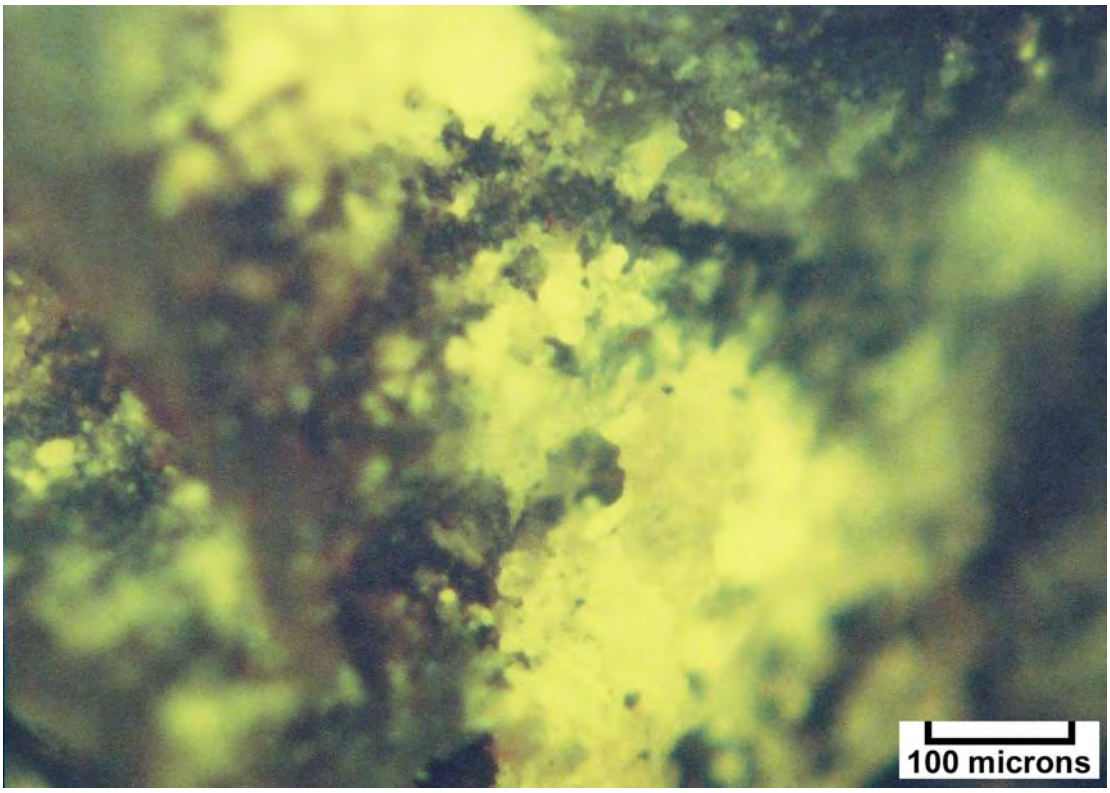
Photomicrograph – Superior Bow Know Unit 1 (Map #13), 6080-85 feet, patchy 2.5 epifluorescence in areas of good intercrystalline porosity and abundant bitumen in medium crystalline dolomite.



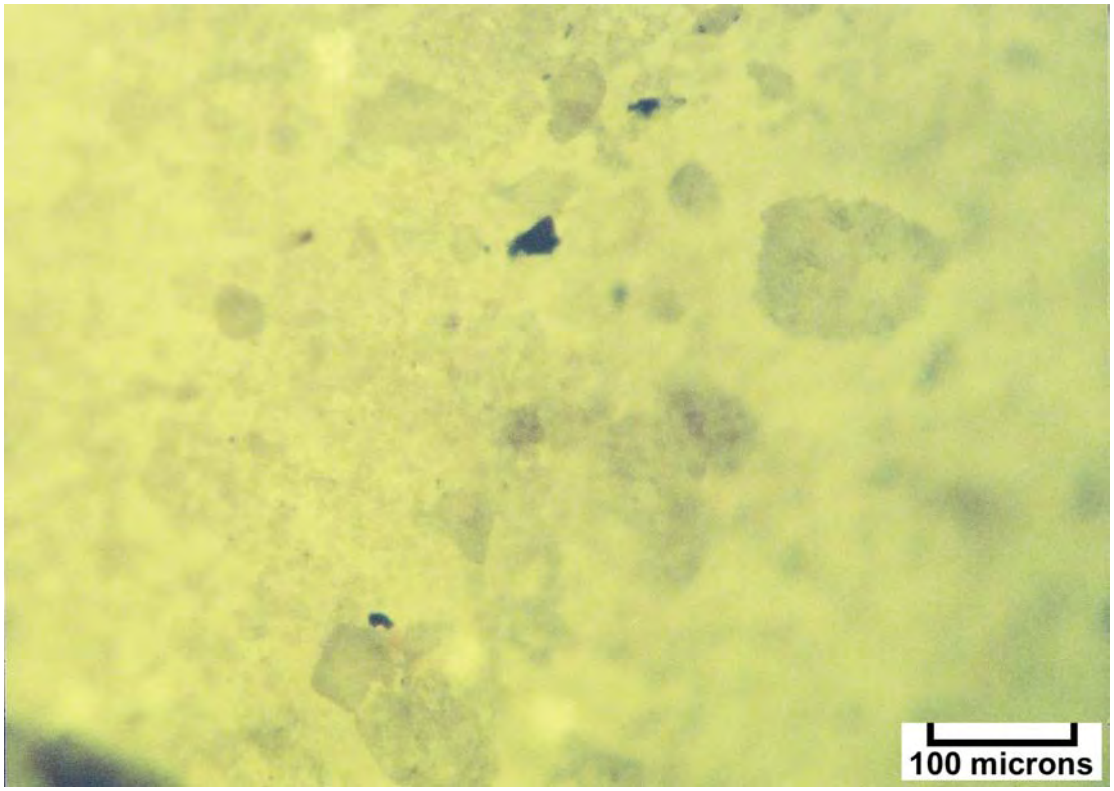
Photomicrograph – Superior Bow Know Unit 1 (Map #13), 6395-6400 feet, 0.5 epifluorescence in medium crystalline dolomite with good intercrystalline porosity and a trace of bitumen.



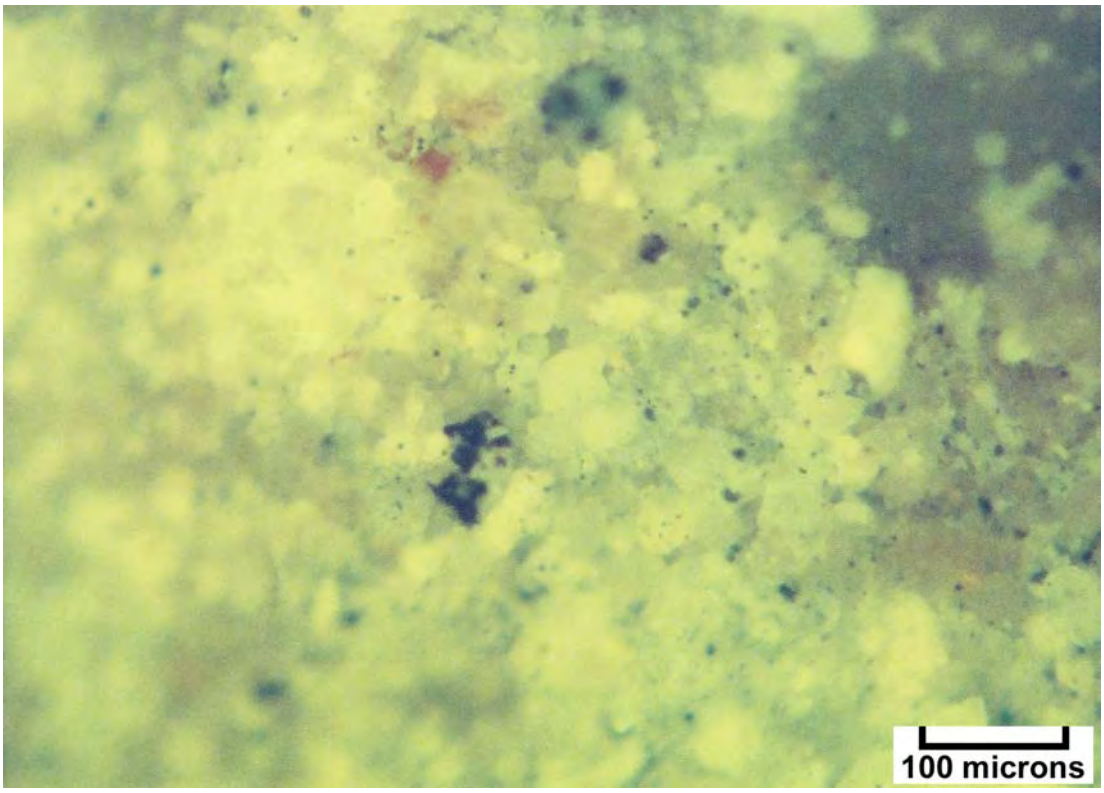
Photomicrograph – Big Flat/Bartlett Flat 1 (Map #14), 8560-70 feet, patchy 1.5 epifluorescence in microcrystalline dolomite.



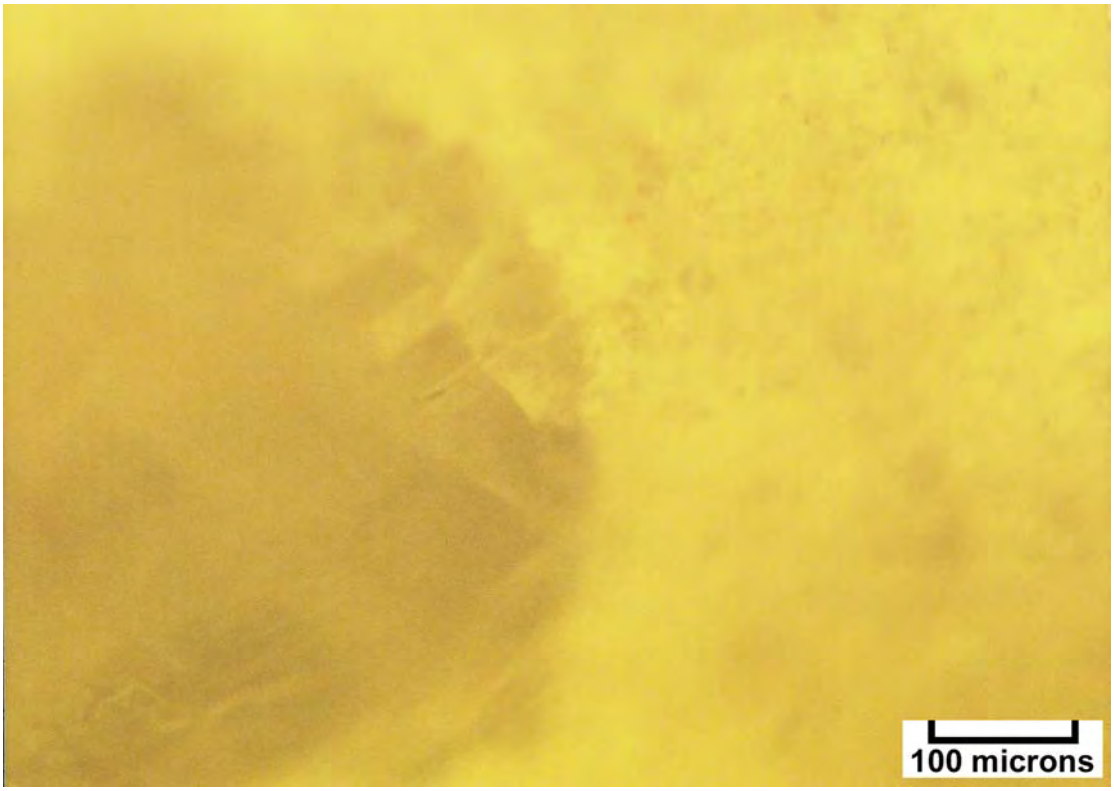
Photomicrograph – Big Flat/Bartlett Flat 1 (Map #14), 8570-80 feet, patchy 1.5 epifluorescence in microcrystalline dolomite with intercrystalline porosity.



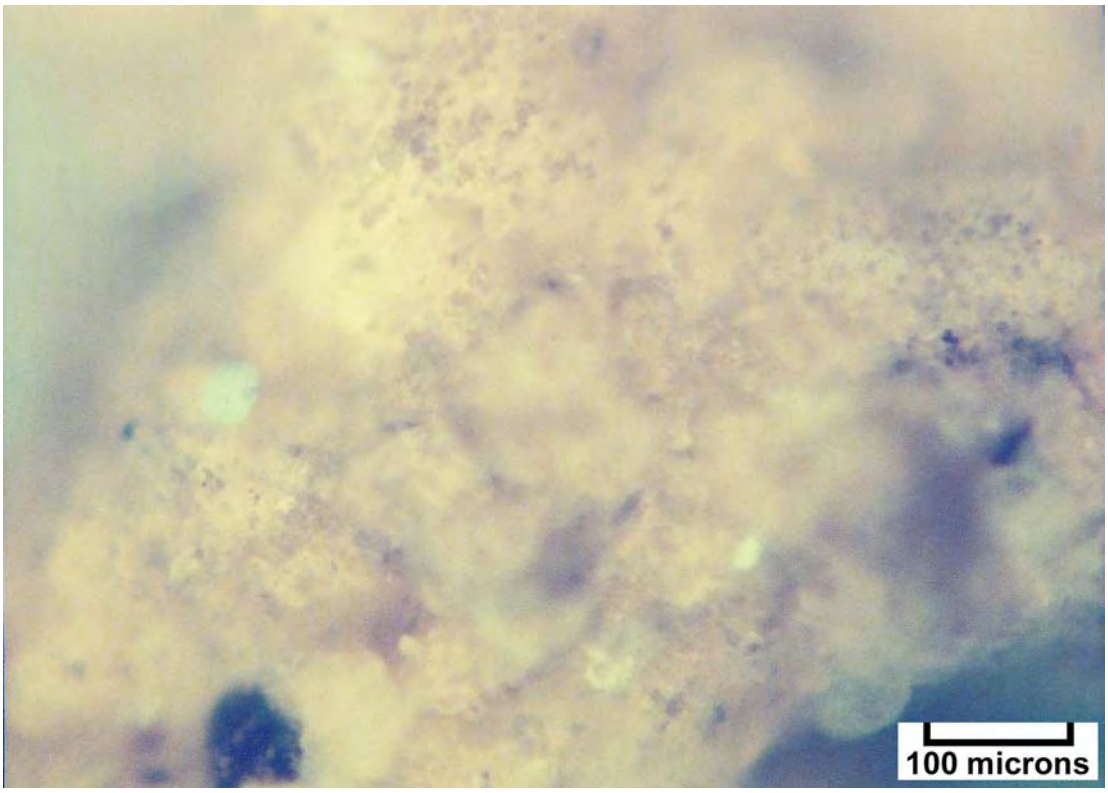
Photomicrograph – Big Flat/Bartlett Flat 1 (Map #14), 8630-40 feet, 2.0 epifluorescence in microcrystalline dolomite with high microcrystalline porosity and low permeability.



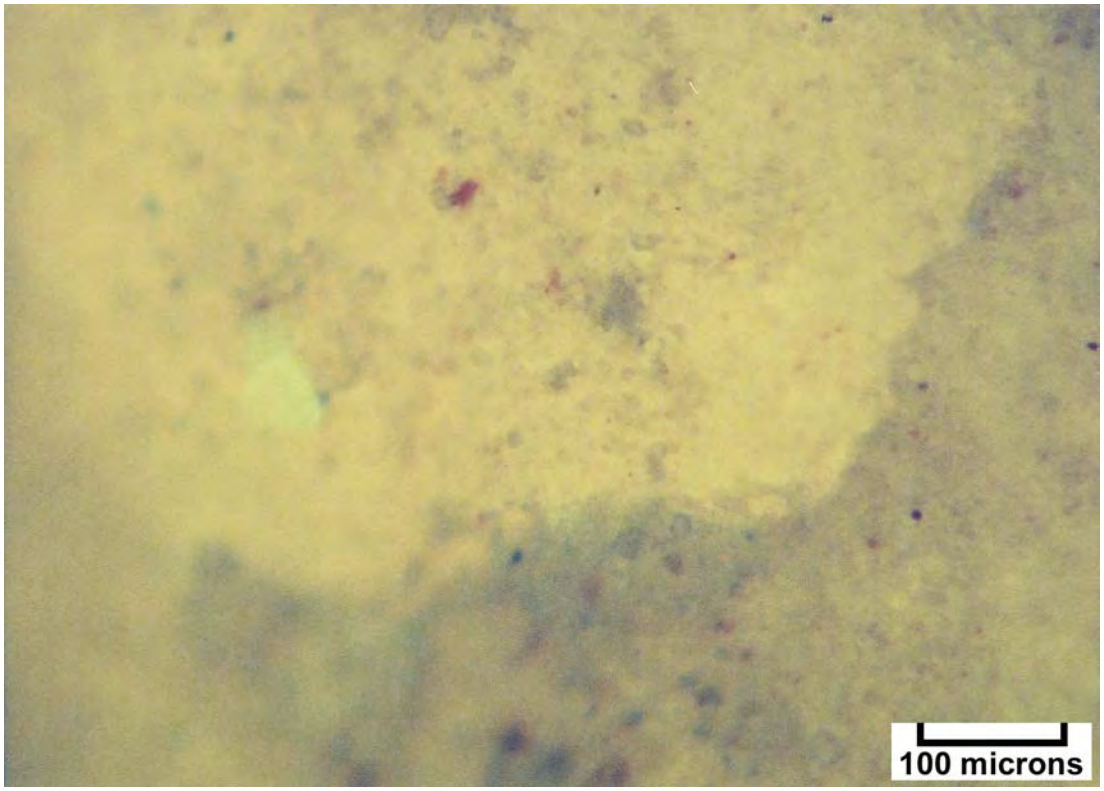
Photomicrograph – Big Flat/Bartlett Flat 1 (Map #14), 8640-50 feet, patches of 1.5 epifluorescence in medium crystalline dolomite with low intercrystalline porosity, minor bitumen, and possible sulfide mineralization.



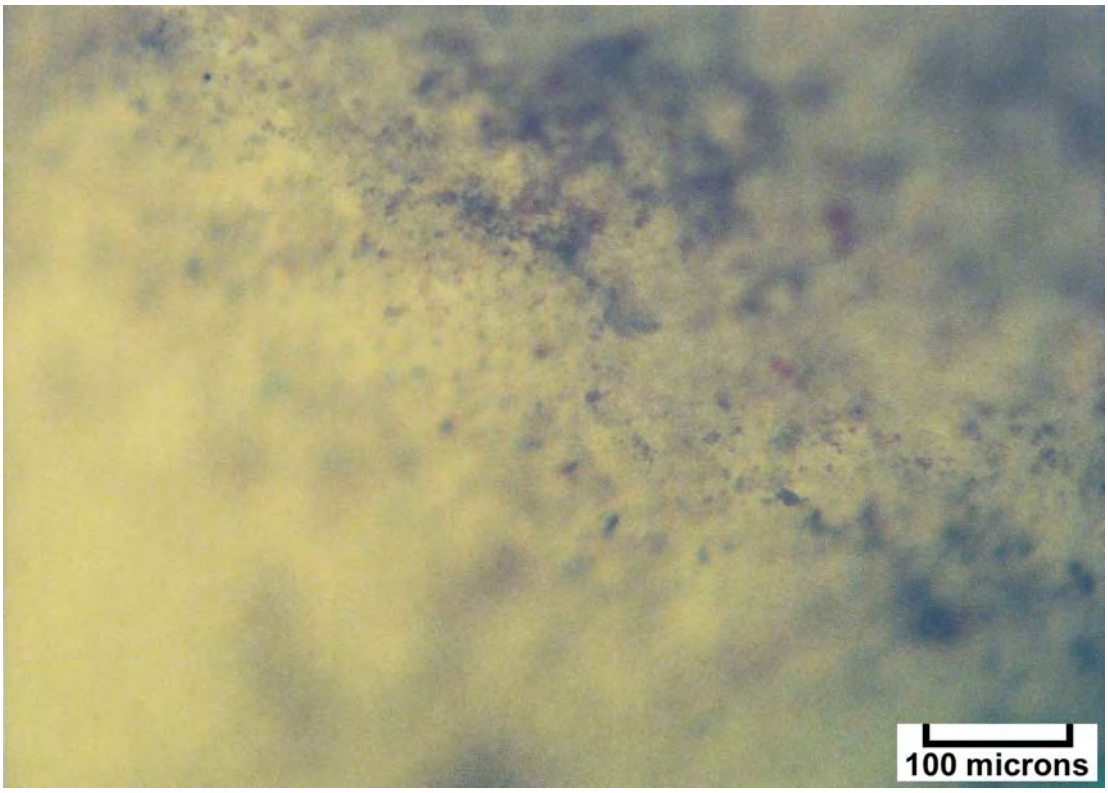
Photomicrograph – Standard Lookout Point 1 (Map #15), 6394-95 feet, 2.5 epifluorescence in microcrystalline dolomite with "dead" patch of anhydrite.



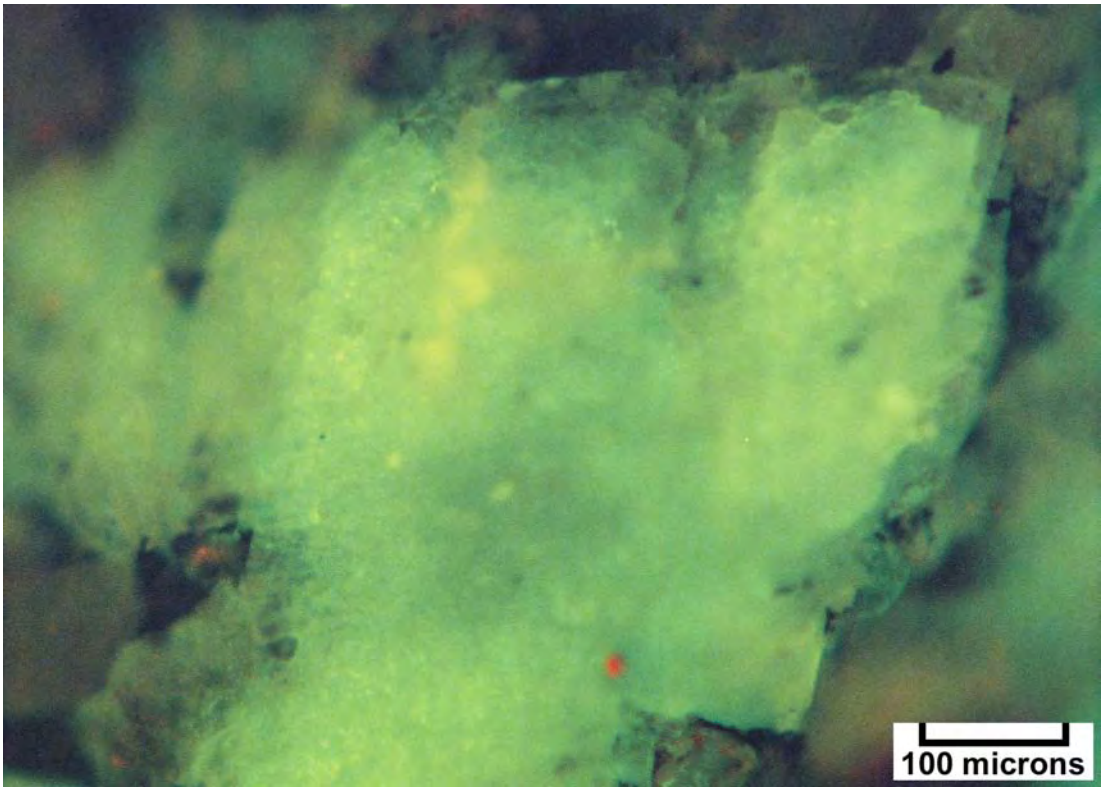
Photomicrograph – Standard Lookout Point 1 (Map #15), 6500-10 feet, 2.0 epifluorescence in coarsely crystalline dolomite containing modest intercrystalline porosity.



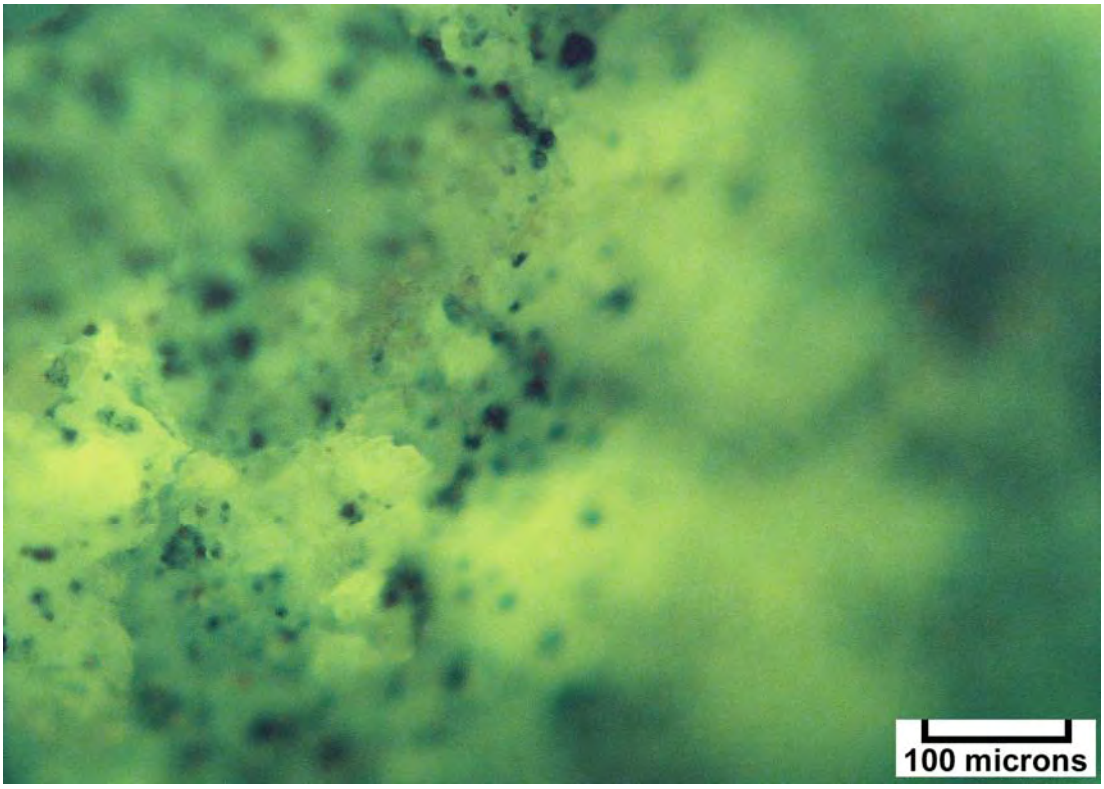
Photomicrograph – Federal Oil Bowknoll 1 (Map #16) 7375-80 feet, 2.5 epifluorescence in finely crystalline dolomite with fair intercrystalline porosity.



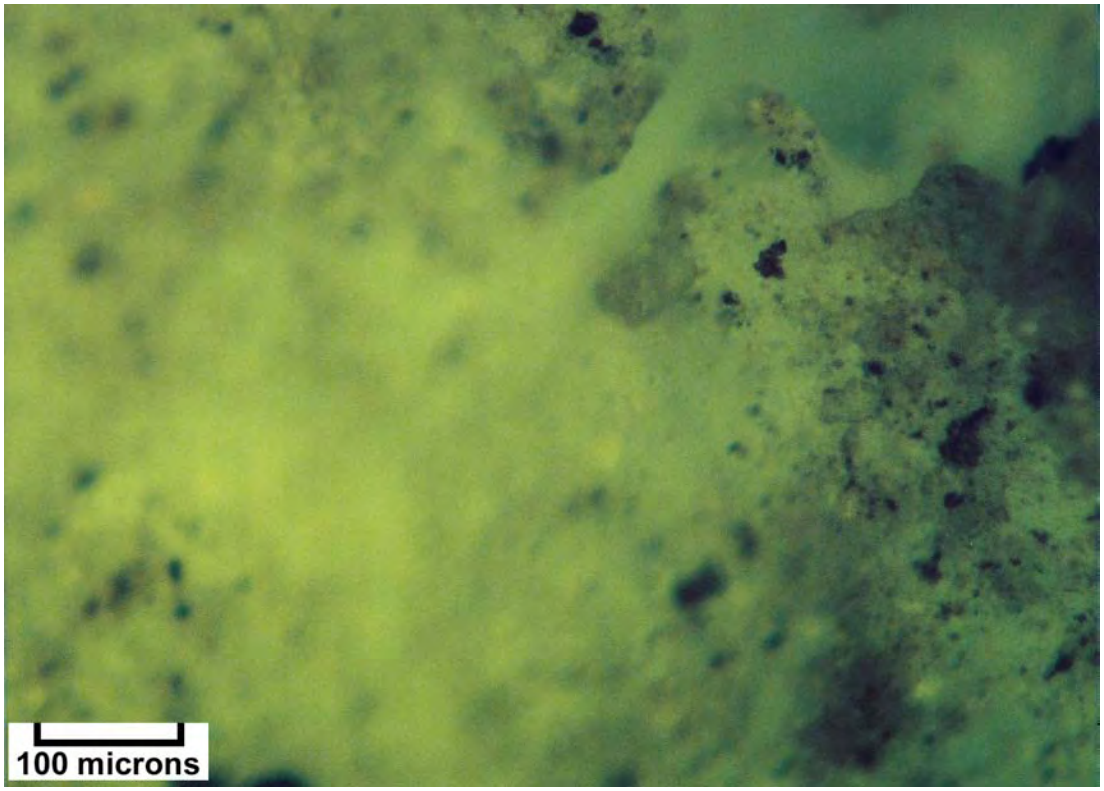
Photomicrograph – Federal Oil Bowknoll 1 (Map #16), 7385-90 feet, 2.5 epifluorescence in finely crystalline dolomite with minor intercrystalline porosity.



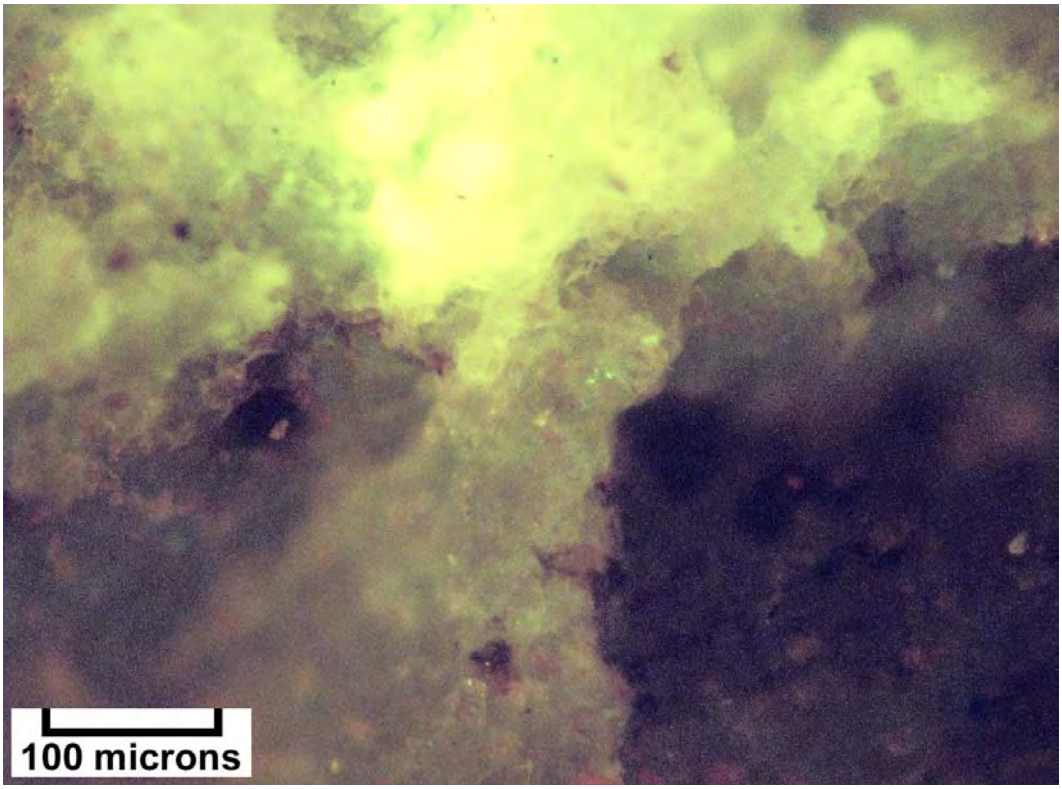
Photomicrograph – Southern Natural Long Canyon 1 (Map #17), 7580-85 feet, pale green 1.4 epifluorescence in coarse dolomite with good intercrystalline porosity and bitumen.



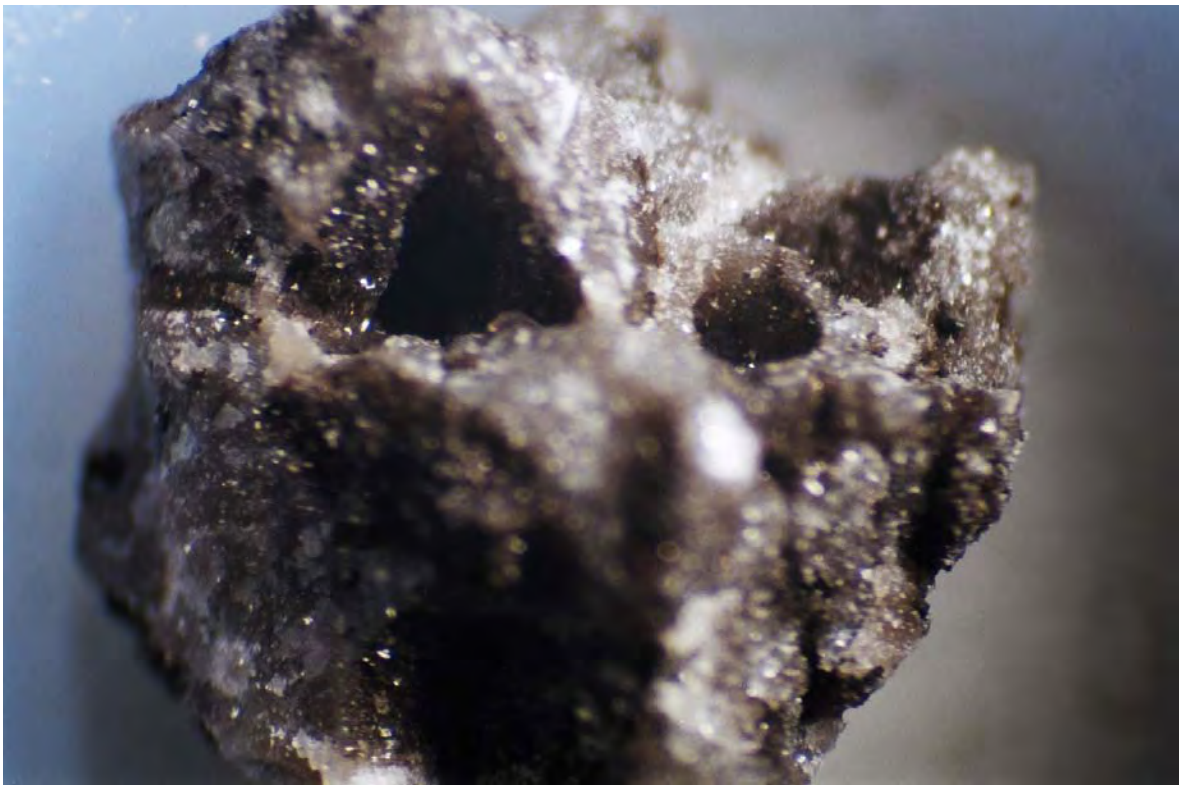
Photomicrograph – Southern Natural Long Canyon 1 (Map #17), 7585-90 feet, patches of 1.0 epifluorescence in medium crystalline dolomite containing good intercrystalline porosity and bitumen.



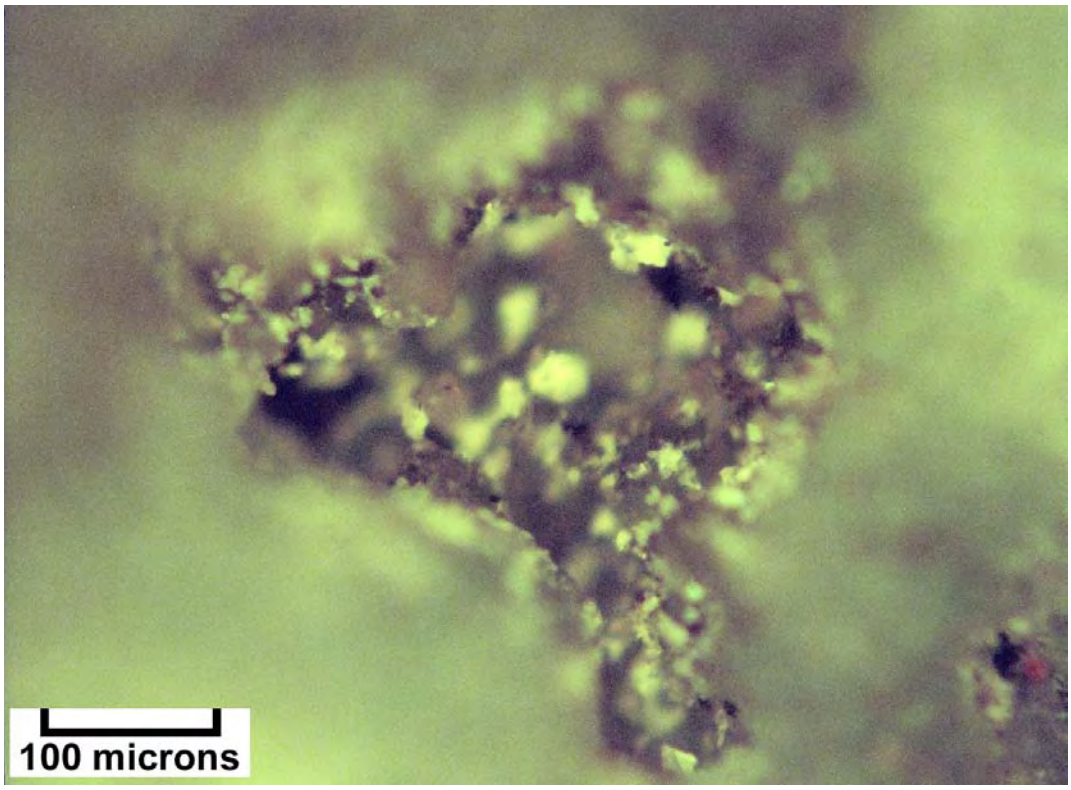
Photomicrograph – Pure Mineral Point 1 (Map #18), 7060-65 feet, 2.5 epifluorescence in medium crystalline dolomite with fair intercrystalline porosity and some bitumen.



Photomicrograph – Pure Big Flat 3 (Map #19), 7714-15 feet, patchy 1.5 epifluorescence of a darker yellow color in coarsely crystalline dolomite containing good intercrystalline and vuggy porosity lined with bitumen.

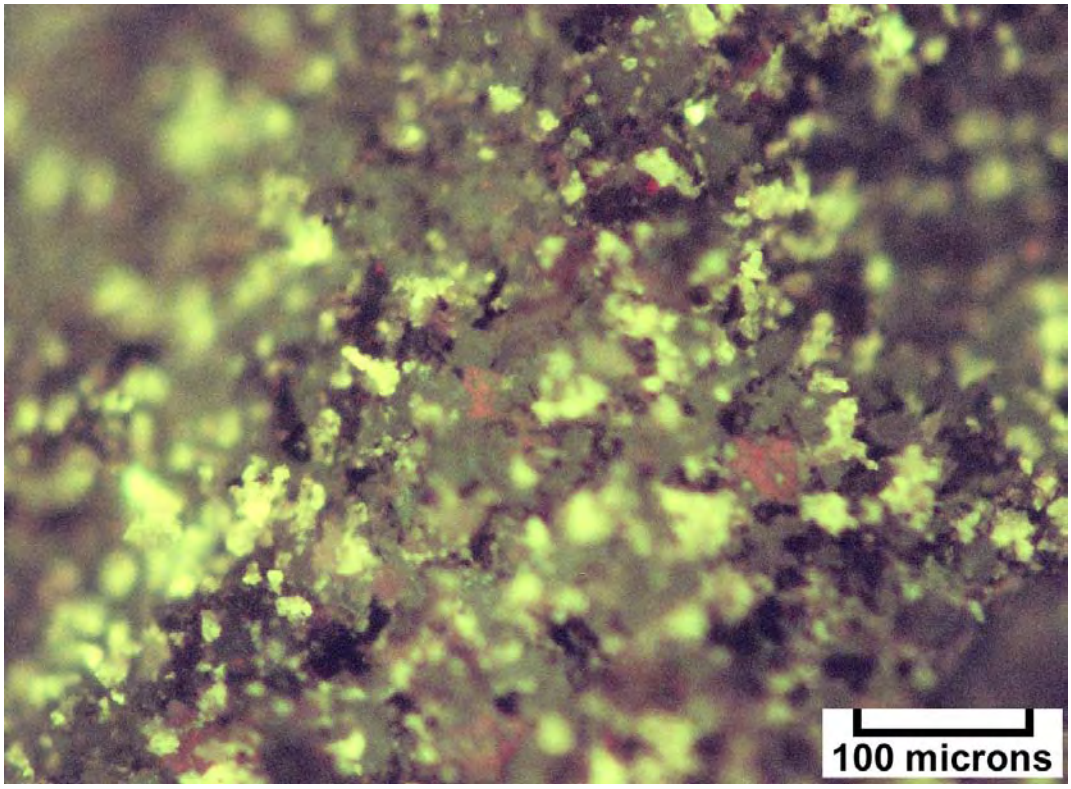


Binocular microscope image (2400x) – Pure Big Flat 3 (Map #19), 7714-15 feet, large cutting with rounded vugs and molds (?), dolomite crystals lining large pores. Note probable oil staining and bitumen.



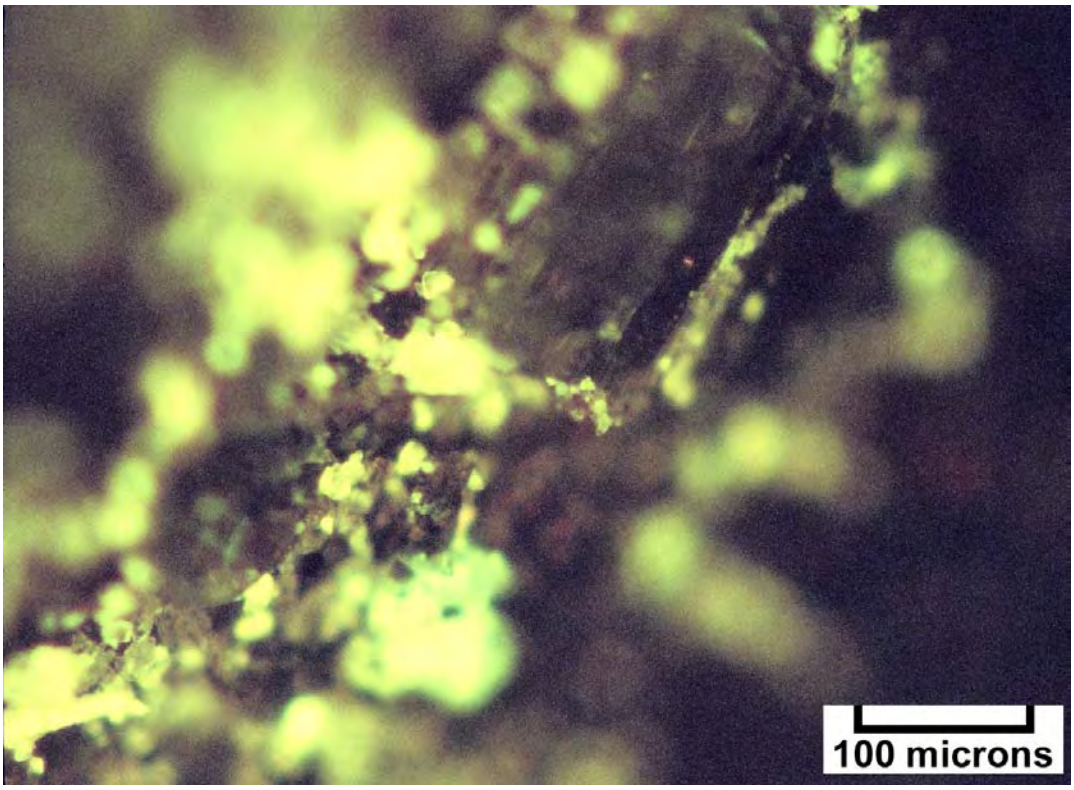
Photomicrograph – Pure Big Flat 3 (Map #19), 7715-16 feet, patches or speckles of dark yellow 1.5 epifluorescence in medium crystalline dolomite containing moldic and vuggy porosity lined with bitumen.

Binocular microscope image (3000x) – Pure Big Flat 3 (Map #19), 7715-16 feet, representative core chip with moldic/microvuggy porosity and bitumen (plus drilling mud).

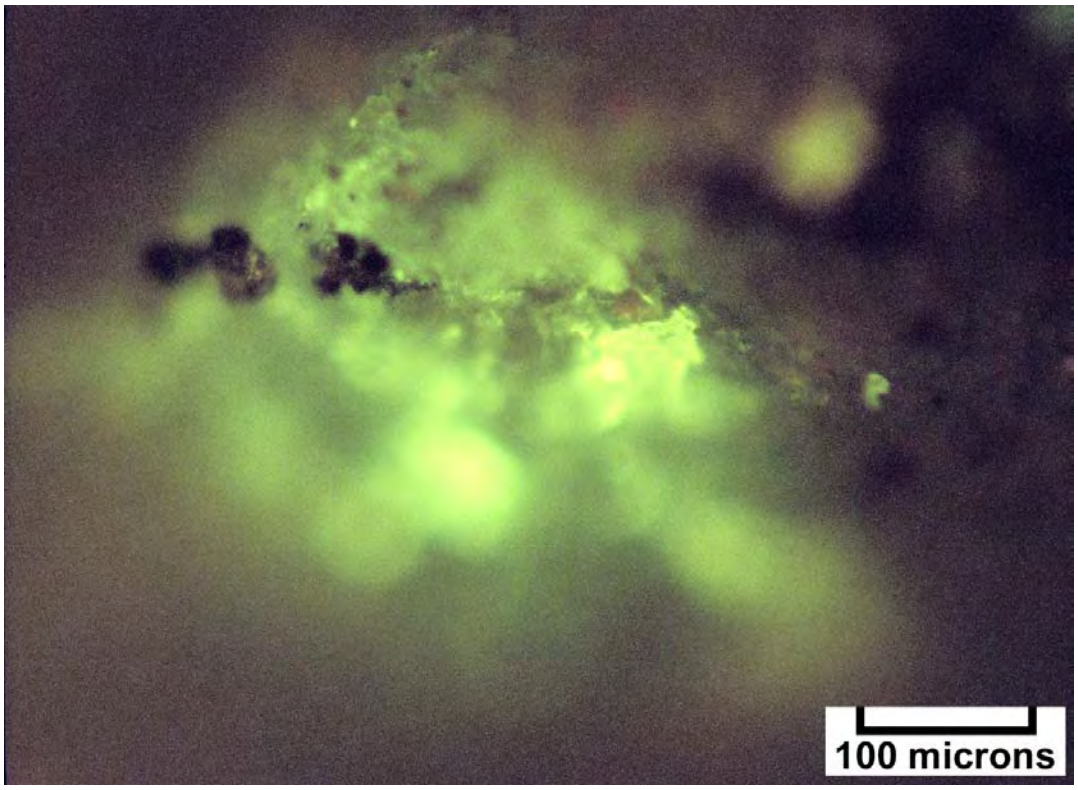


Photomicrograph – Pure Big Flat 3 (Map #19), 7716-17 feet, speckled dark yellow 0.5 epifluorescence in open pore with bitumen from a medium crystalline dolomite.

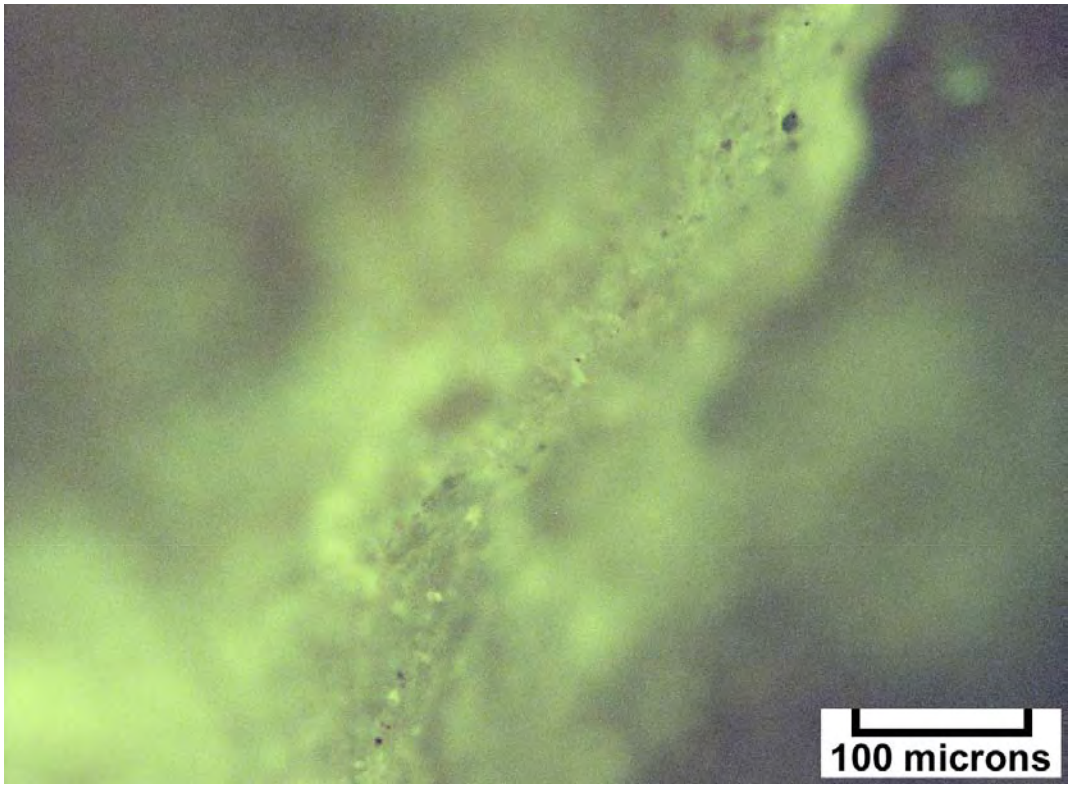
Binocular microscope image (1400x) – Pure Big Flat 3 (Map #19), 7716-17 feet, four representative samples used for grading showing tight white dolomite.



Photomicrograph – Pure Big Flat 3 (Map #19), 7717-18 feet, very speckled 1.2 epifluorescence on a bitumen surface and finely crystalline dolomite.

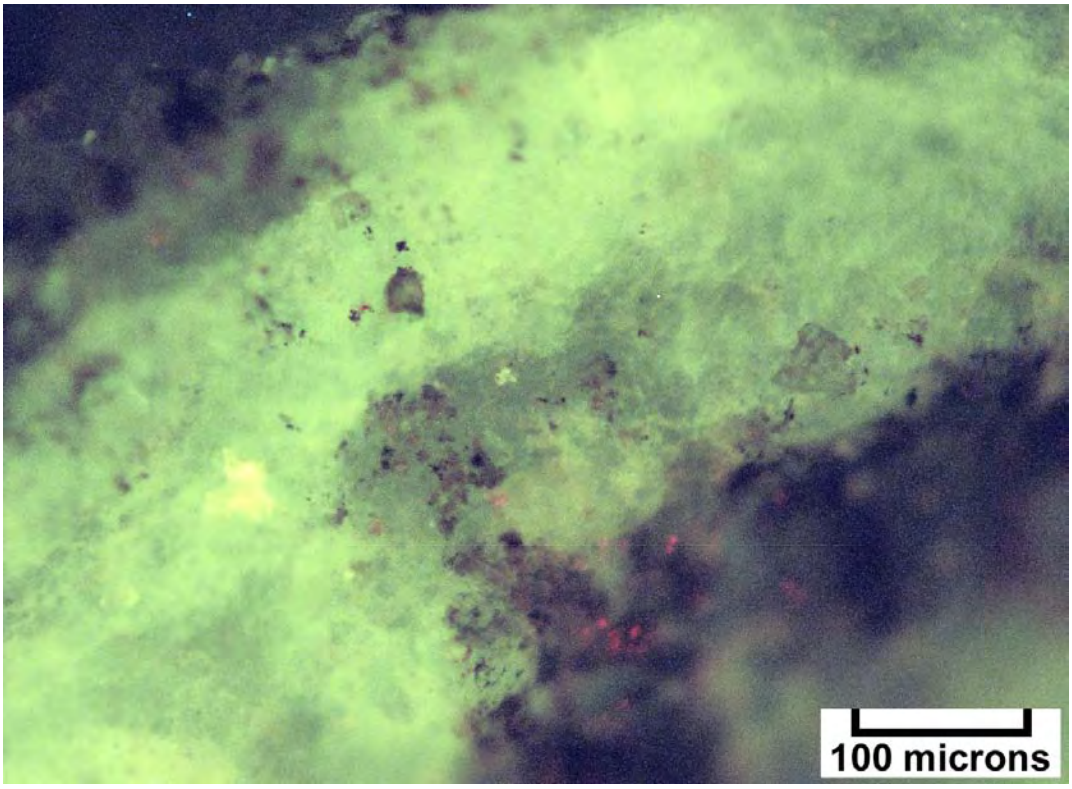


Photomicrograph – Pure Big Flat 3 (Map #19), 7718-19 feet, one bright patch of 0.3 epifluorescence with films around medium-sized dolomite crystals.

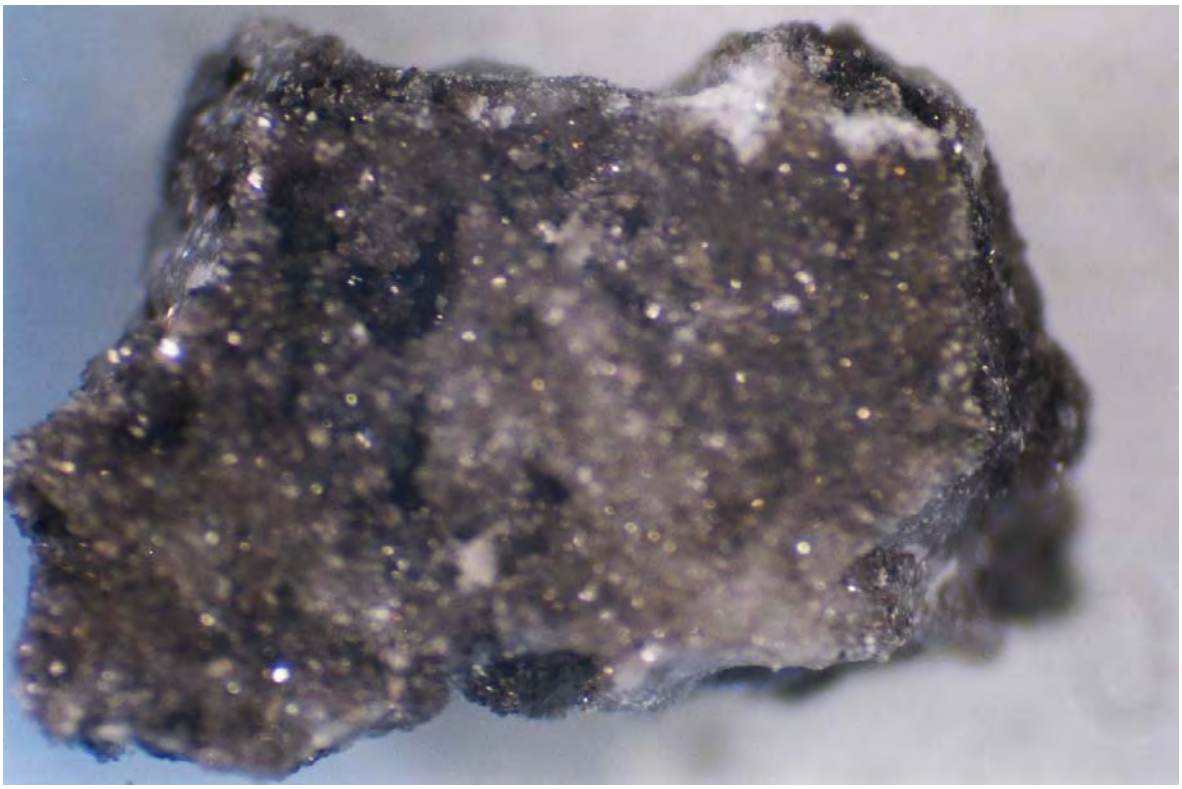


Photomicrograph – Pure Big Flat 3 (Map #19), 7719-20 feet, possible fracture showing good continuous 0.5 epifluorescence in a finely crystalline dolomite.

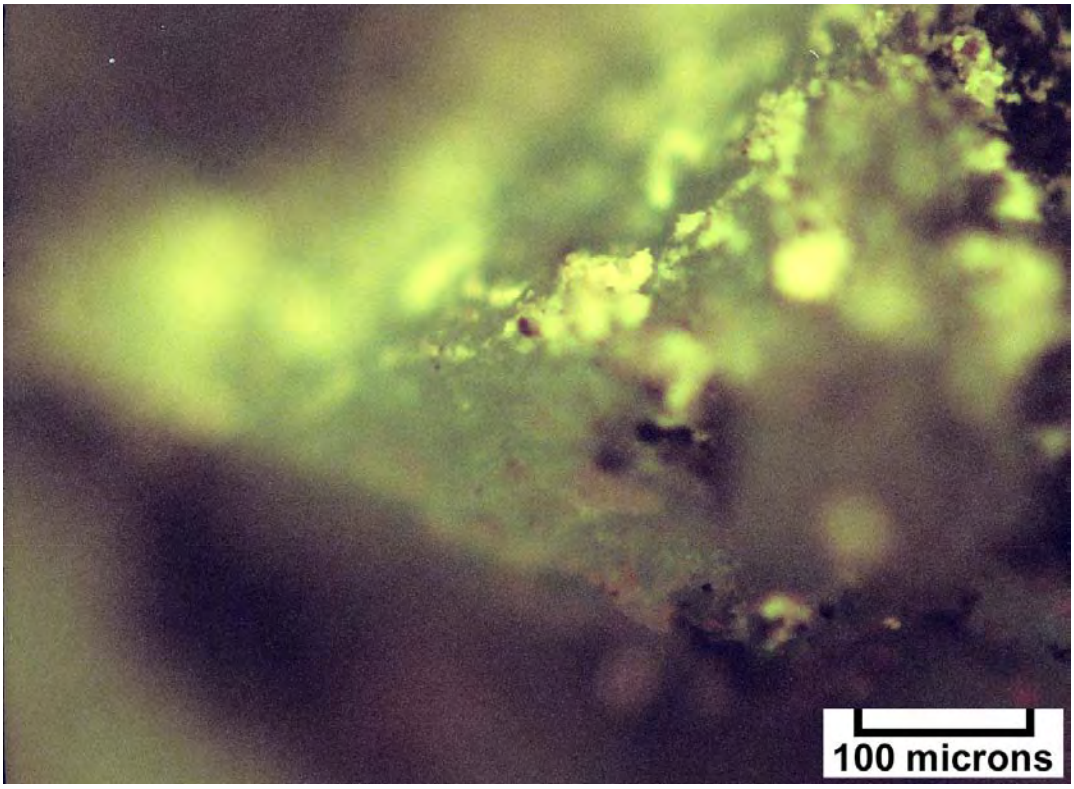
Binocular microscope image (1200x) – Pure Big Flat 3 (Map #19), 7719-20 feet, low porosity dolomite samples selected for epifluorescence grading.



Photomicrograph – Pure Big Flat 3 (Map #19), 7720-21 feet, good bright continuous medium yellow 1.5 epifluorescence in medium crystalline dolomite.

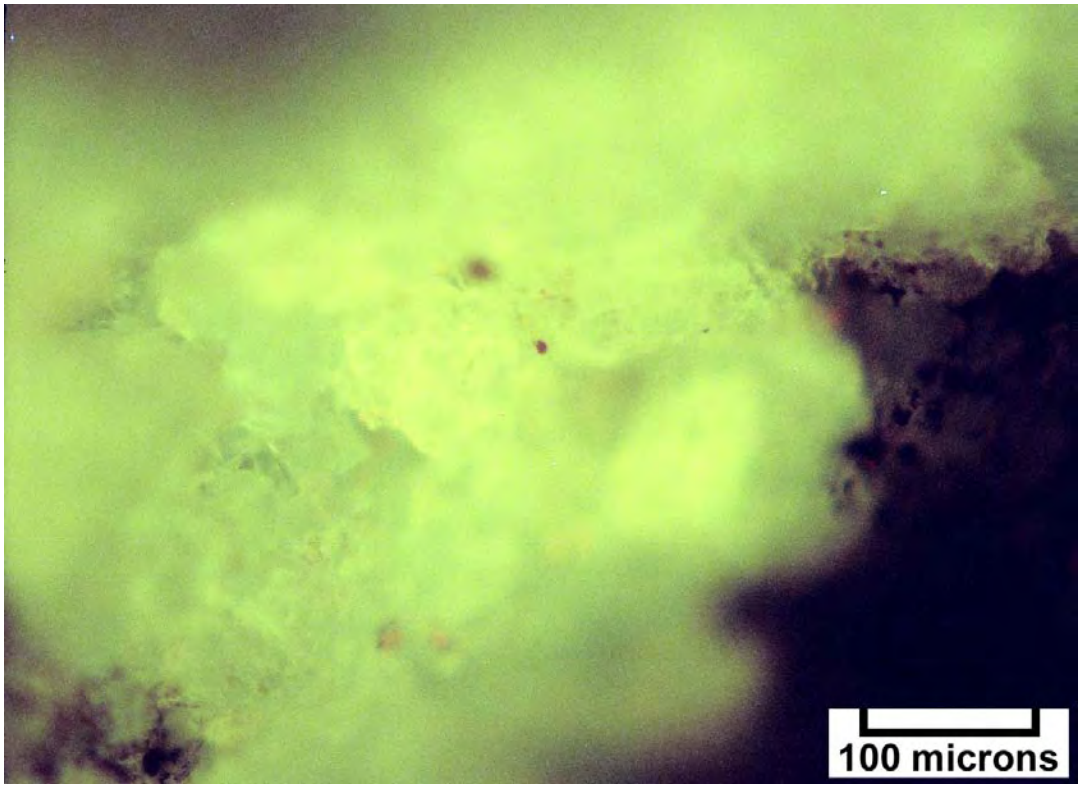


Binocular microscope image (2800x) – Pure Big Flat 3 (Map #19), 7720-21 feet, representative cutting showing porosity and bitumen in medium crystalline dolomite.

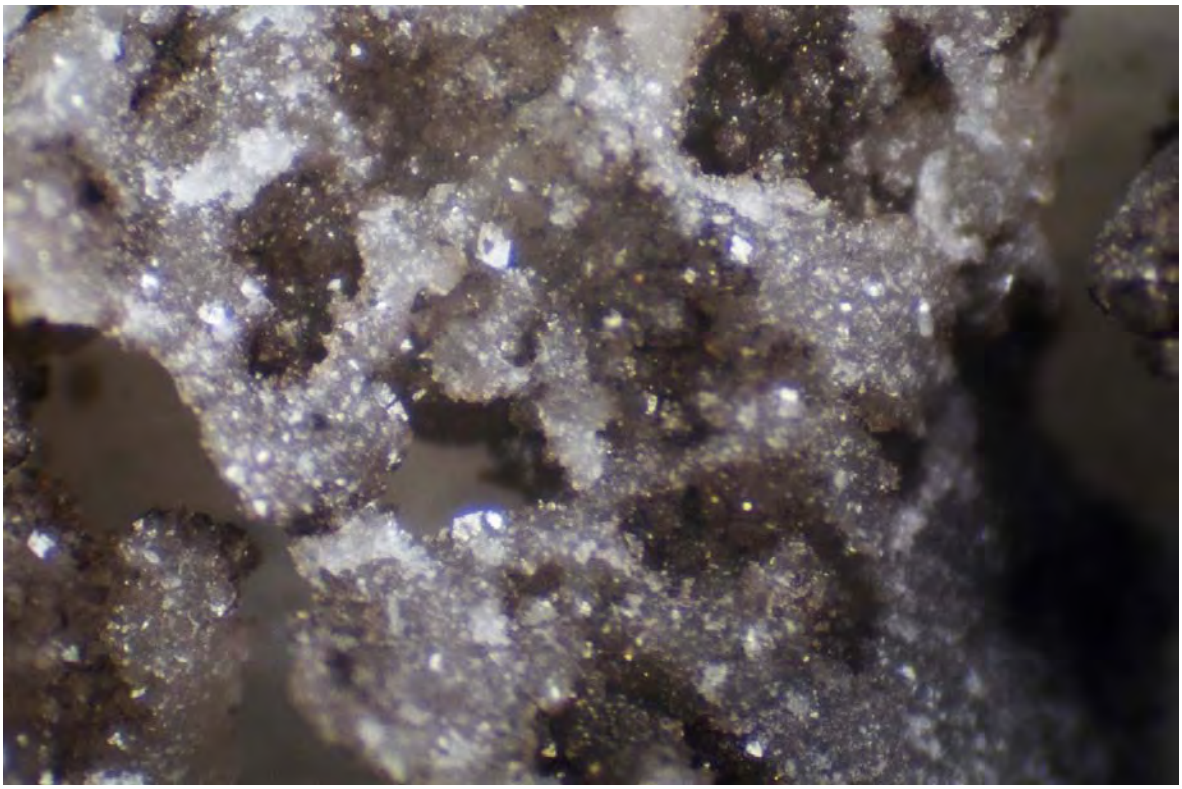


Photomicrograph – Pure Big Flat 3 (Map #19), 7721-22 feet, bitumen-lined pore with speckles of medium yellow 1.5 epifluorescence in medium crystalline dolomite.

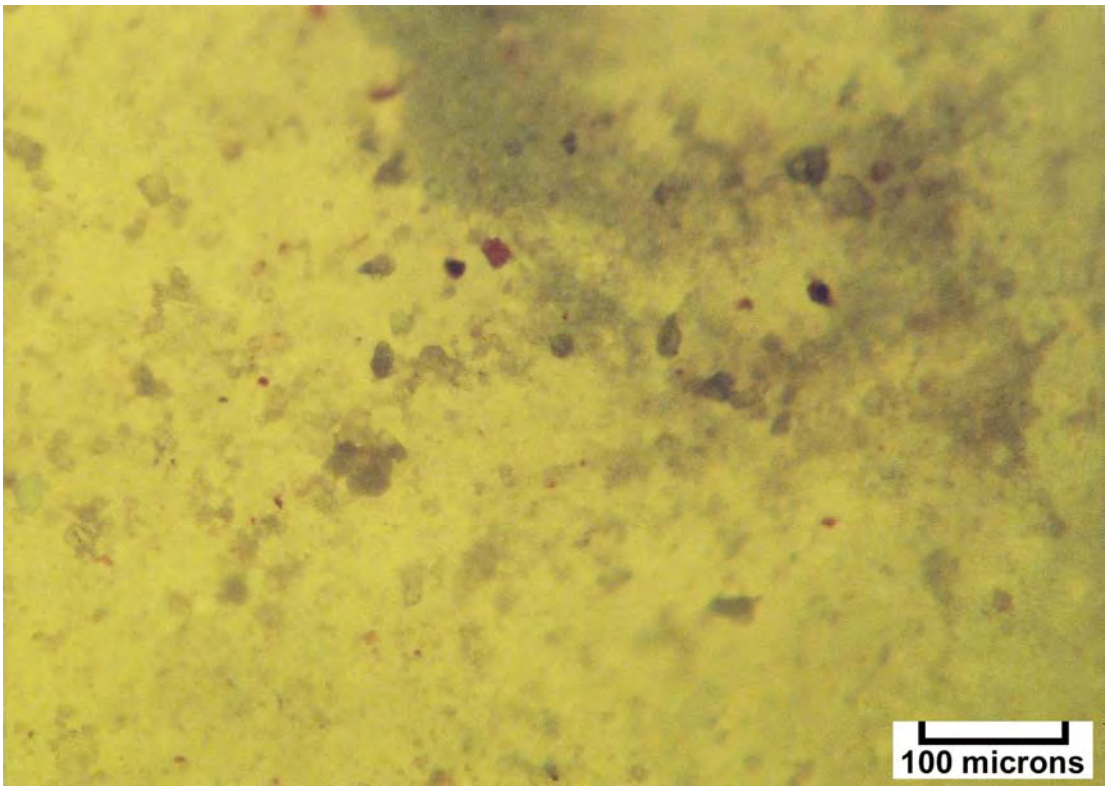
Binocular microscope image (1500x) – Pure Big Flat 3 (Map #19), 7721-22 feet, representative samples showing oil-stained porosity and bitumen (bladed) in medium crystalline dolomite.



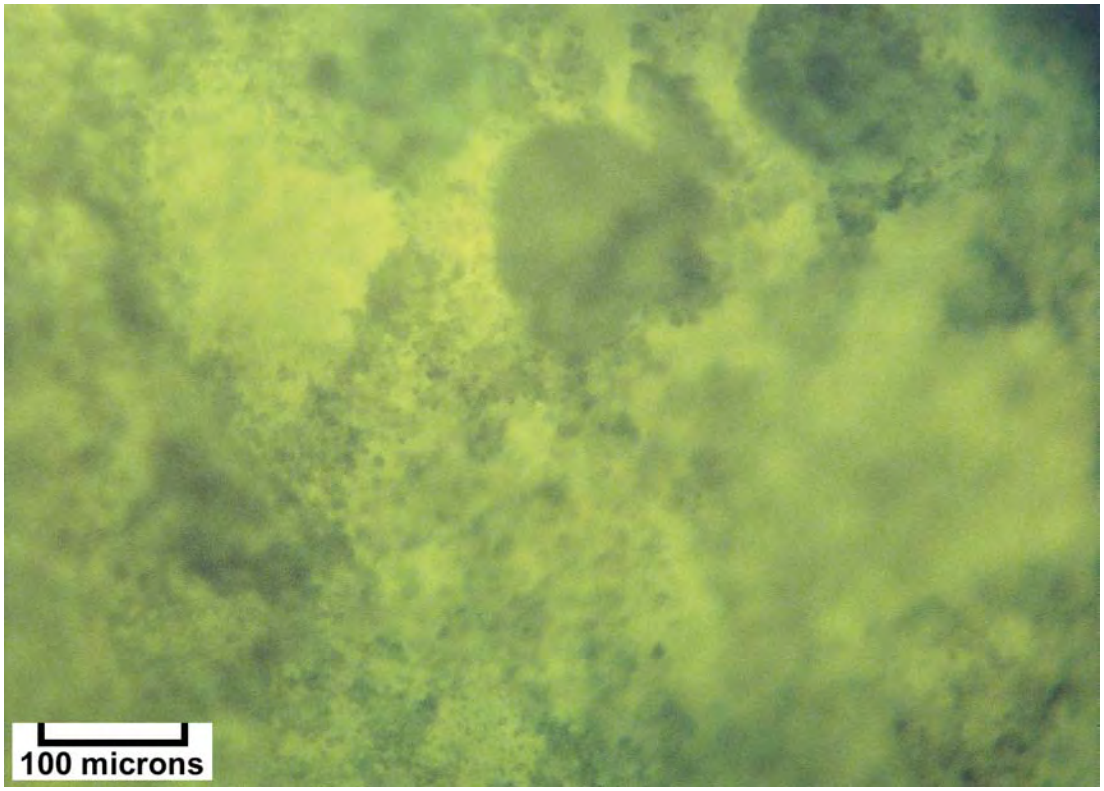
Photomicrograph – Pure Big Flat 3 (Map #19), 7723-24 feet, dim 0.3 epifluorescence with "dead" and "live" areas in medium crystalline dolomite.



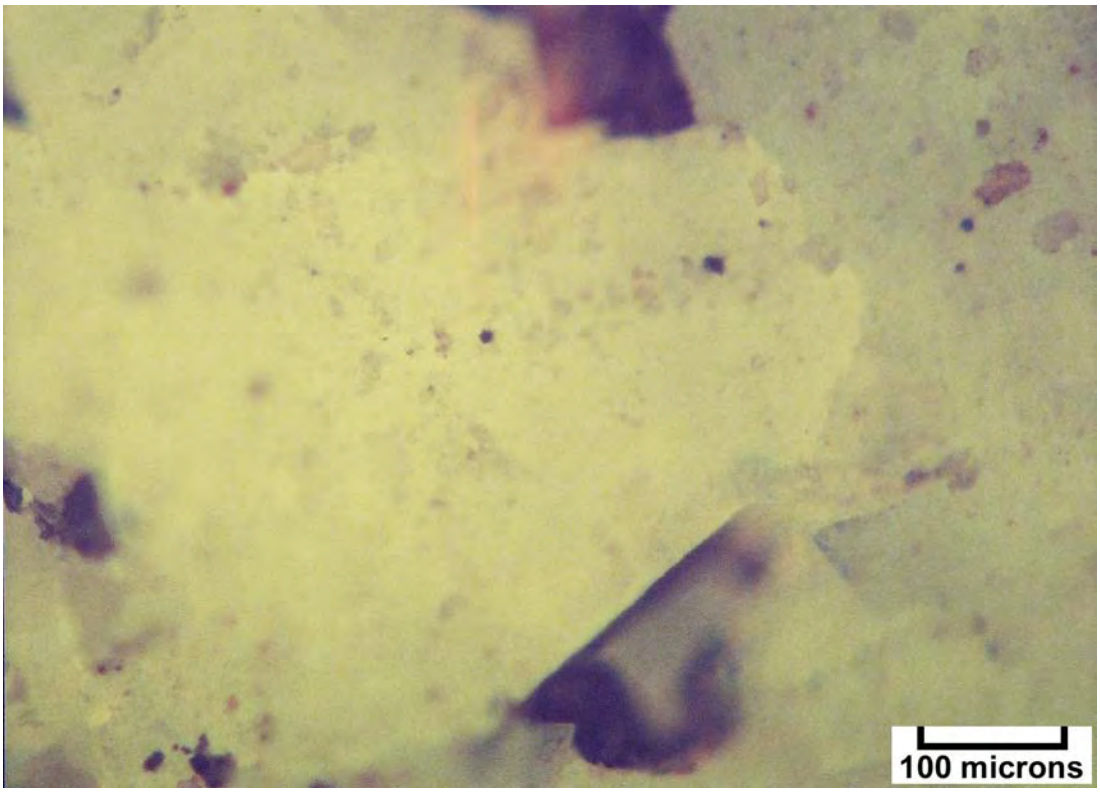
Binocular microscope image (4500x) – Pure Big Flat 3 (Map #19), 7724-25 feet, close-up of open dolomite-lined and oil-stained vugs and bitumen in medium crystal dolomite matrix.



Photomicrograph – British America Federal Ornsby 1 (Map #20), 7740-50 feet, 2.0 epifluorescence in high porosity and low permeability very finely crystalline dolomite containing no bitumen.

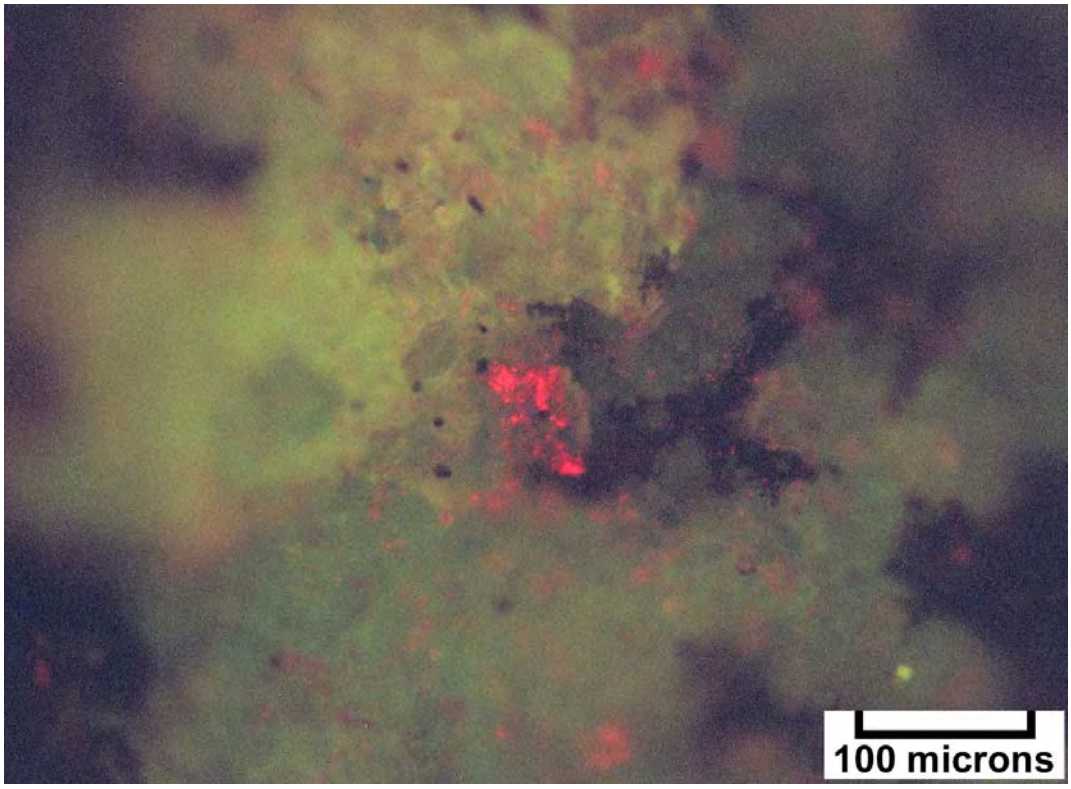


Photomicrograph – British America Federal Ornsby 1 (Map #20), 7800-10 feet, 1.5 epifluorescence in moderately high porosity and low permeability finely crystalline dolomite containing no bitumen.

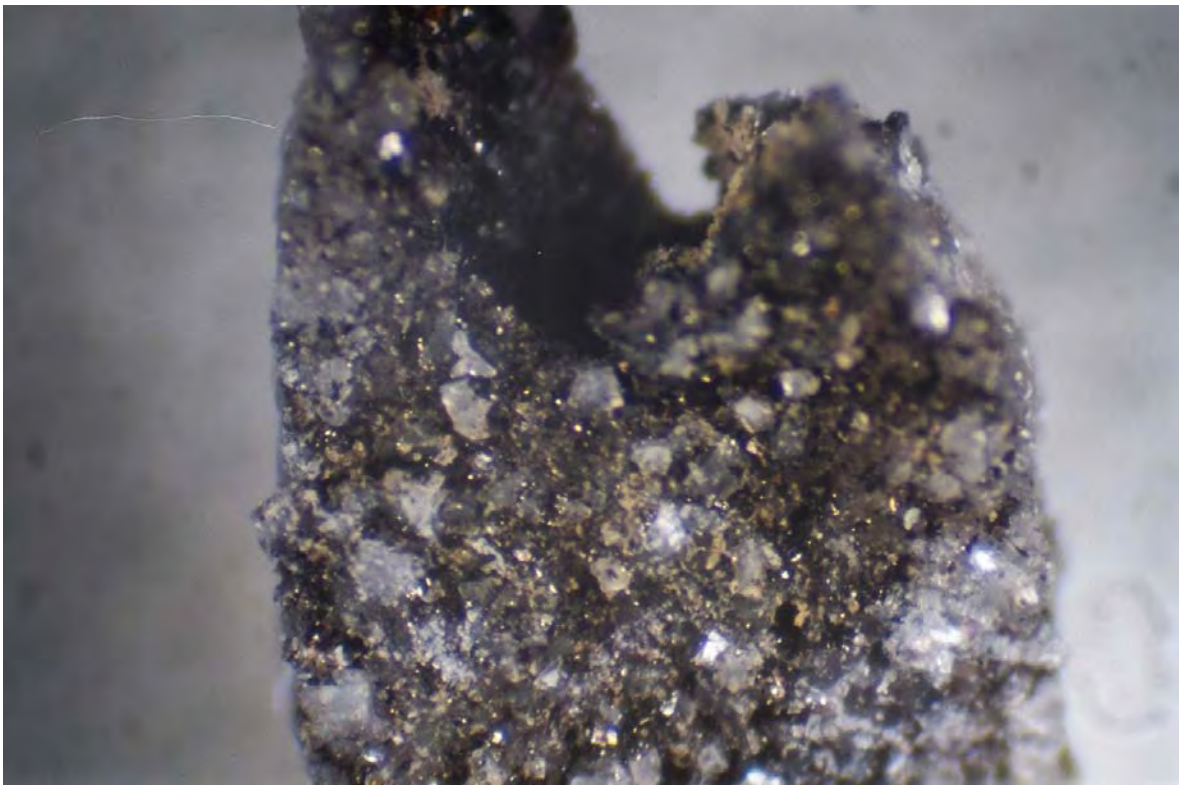


Photomicrograph – Gulf Lockhard Federal 1 (Map #25), 5145-50 feet, 1.8 epifluorescence in coarsely crystalline dolomite with good intercrystalline porosity.

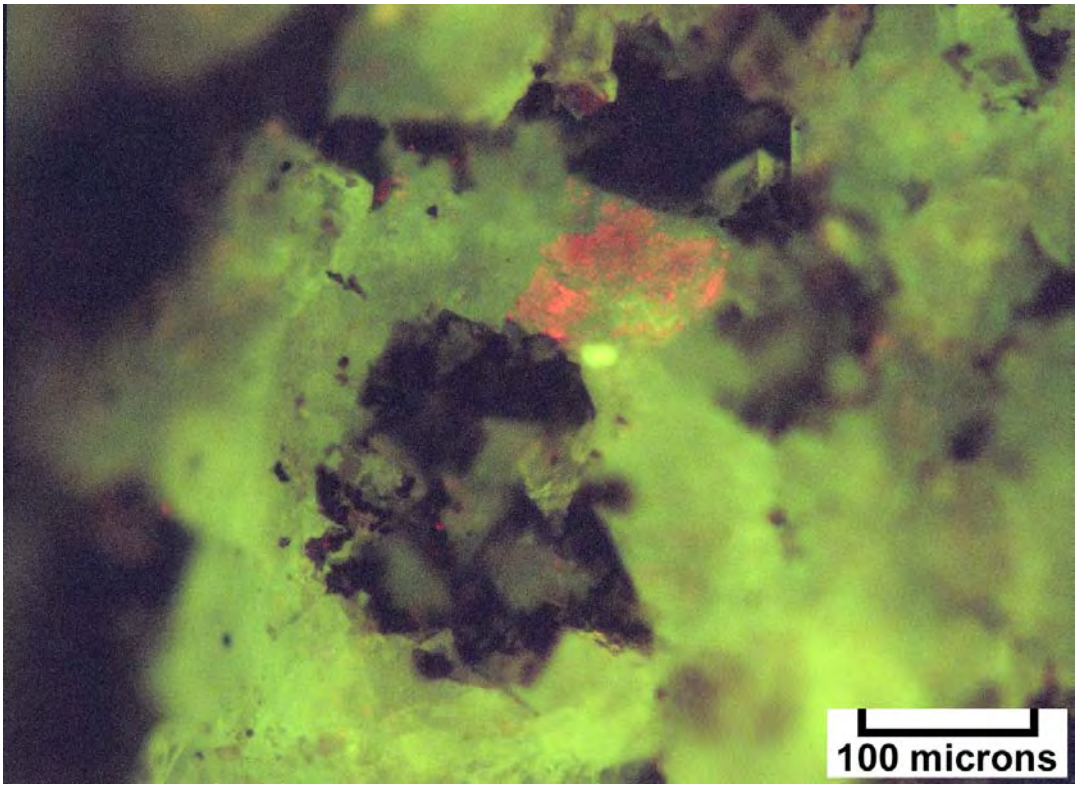
Binocular microscope image (1400x) – Richfield Hatch Mesa 1 (Map #26), 7810-20 feet, representative samples with crinoid moldic porosity and mini-vugs in medium crystalline dolomite.



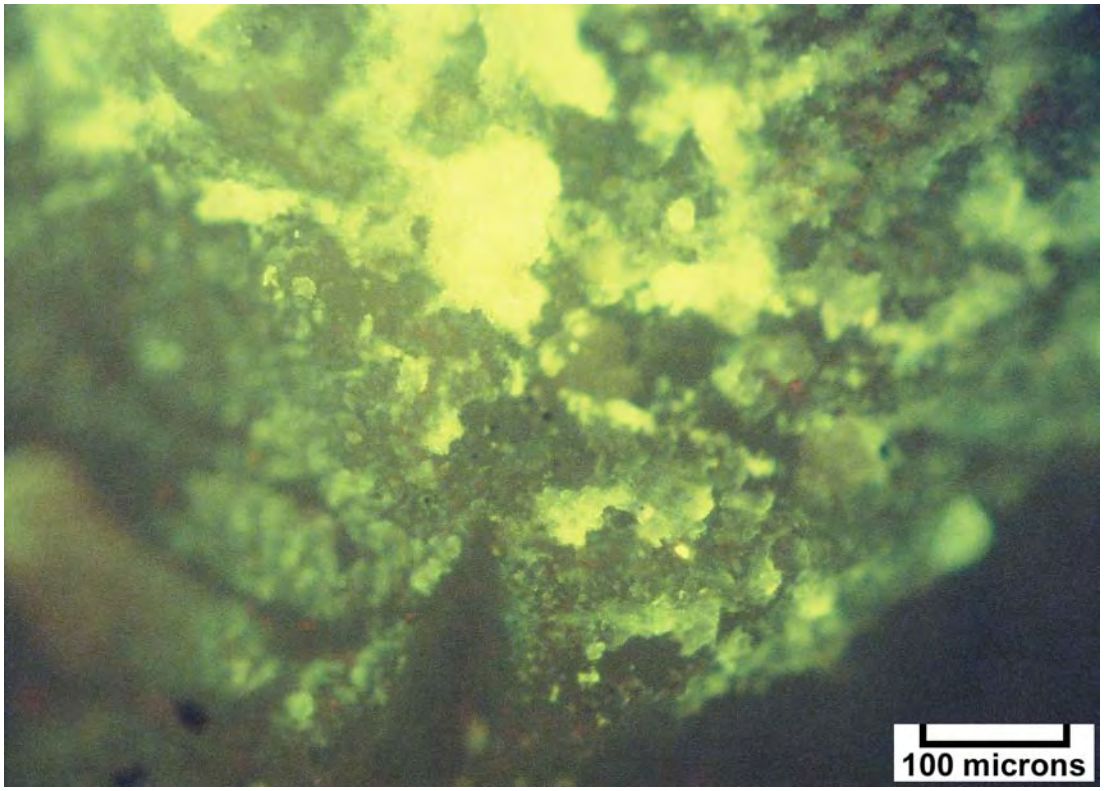
Photomicrograph – Pure USA Big Indian 1 (Map #27), 10,024-29 feet, speckles of 0.5 epifluorescence in coarse crystalline dolomite surrounding dead bitumen-lined pores.



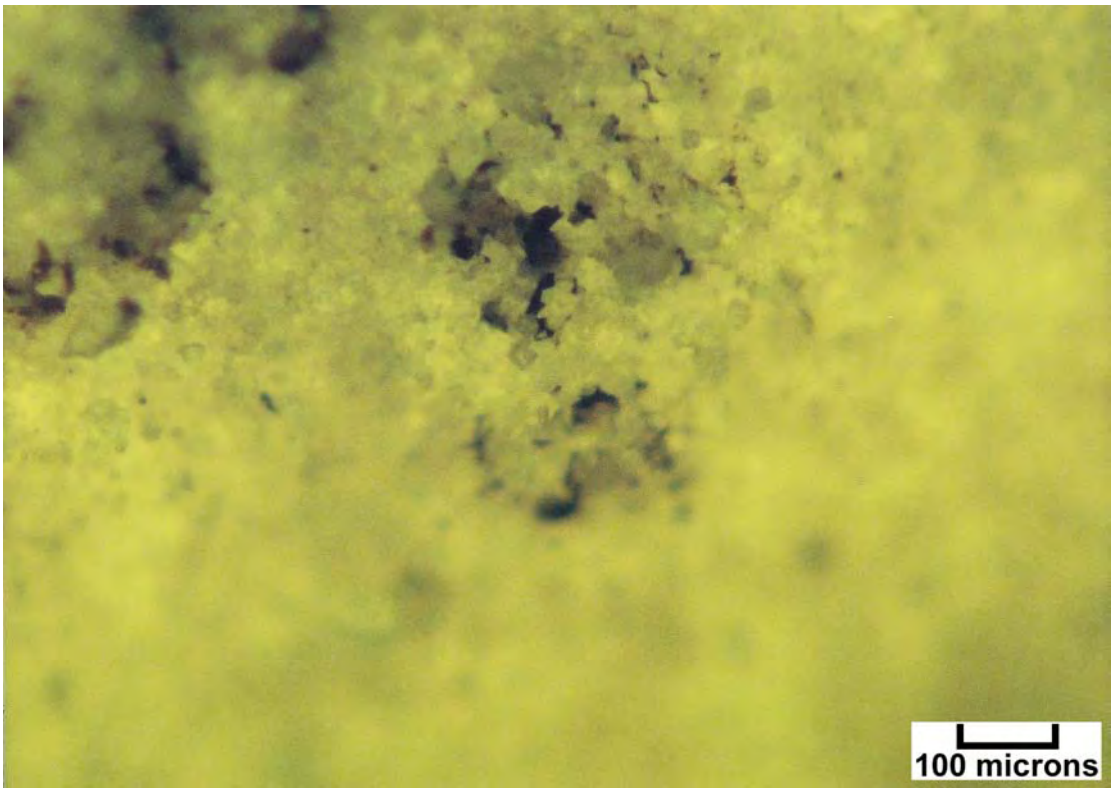
Binocular microscope image (4500x) – Pure USA Big Indian 1 (Map #27), 10,024-29 feet, closeup of a single vug lined with dolomite crystals and bitumen.



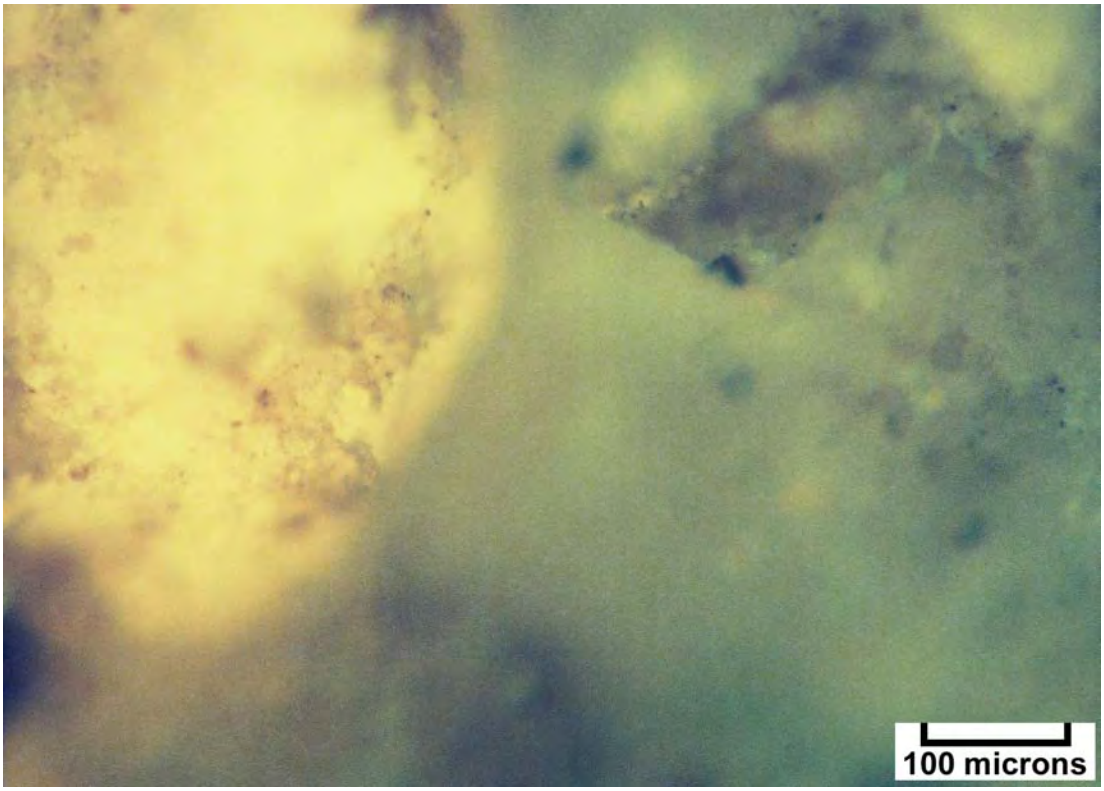
Photomicrograph – Pure USA Big Indian 1 (Map #27), 10,086-90 feet, 1.5 epifluorescence in coarsely crystalline dolomite containing good intercrystalline dolomite and bitumen.



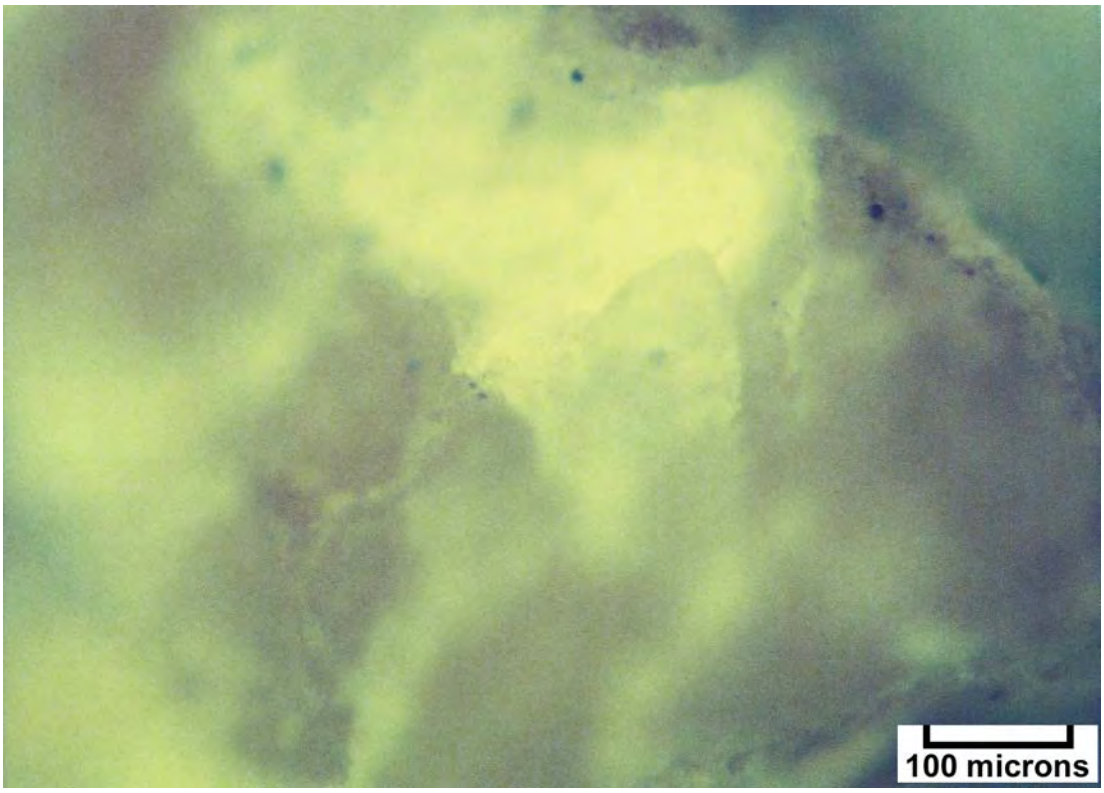
Photomicrograph – Belco State 1 (Map #28), 9835-36 feet, bright yellow 2.5 epifluorescence in medium to coarse dolomite with a trace of bitumen.



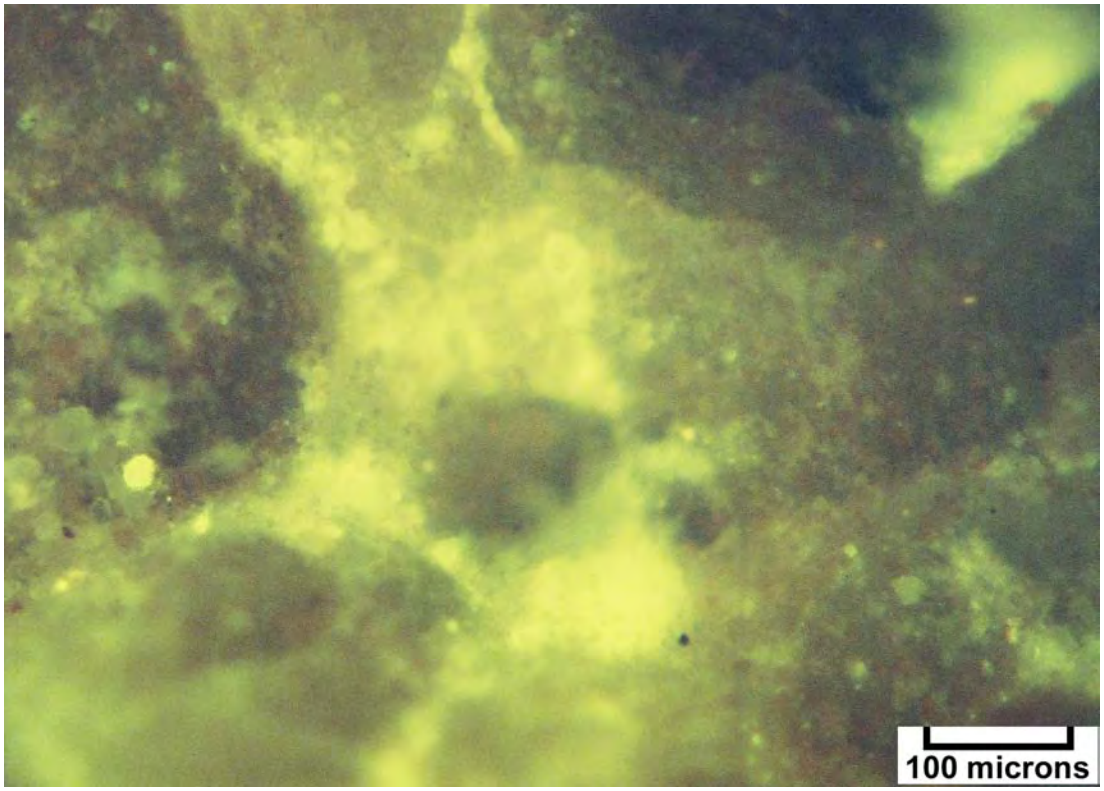
Photomicrograph – Belco State 1 (Map #28), 9850-51 feet, 1.5 epifluorescence with a good oil show in a 0.0 epifluorescence matrix of medium crystalline dolomite.



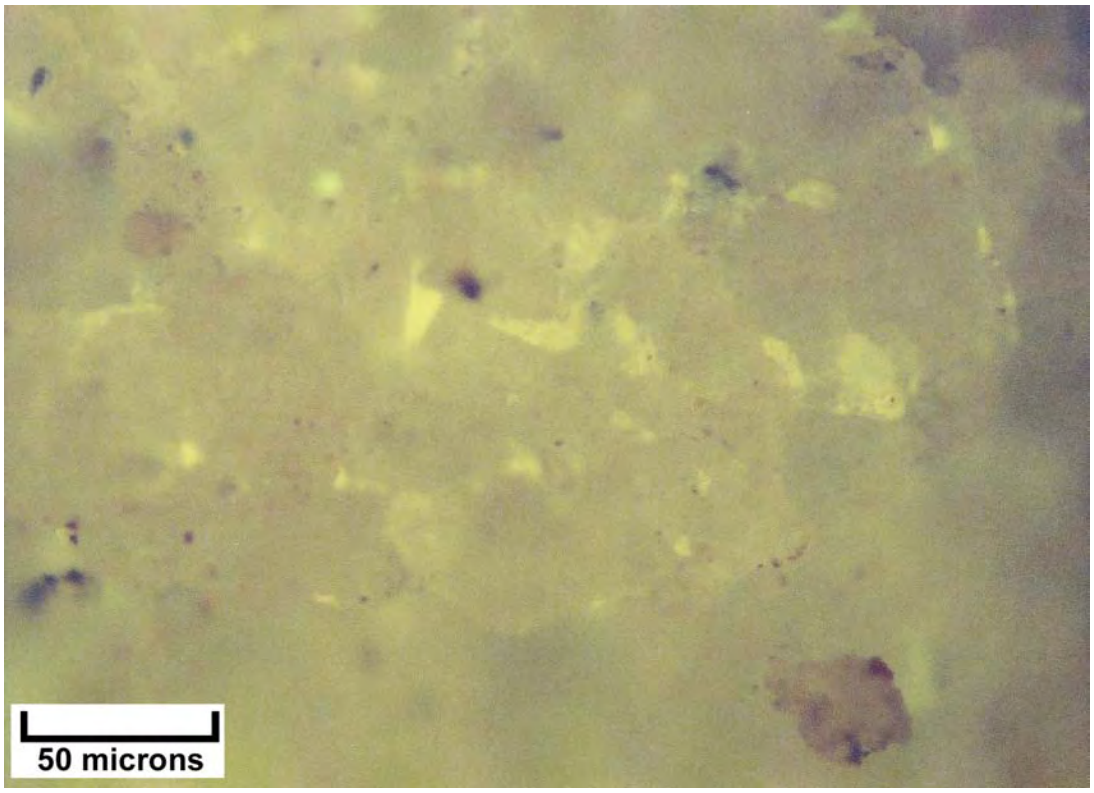
Photomicrograph – Pure NW Lisbon State A-1 (Map #29), 9710-15 feet, two types of epifluorescence: pale-green yellow at 0.5 and bright yellow at 2.0, indicating two oils or partially degraded oil.



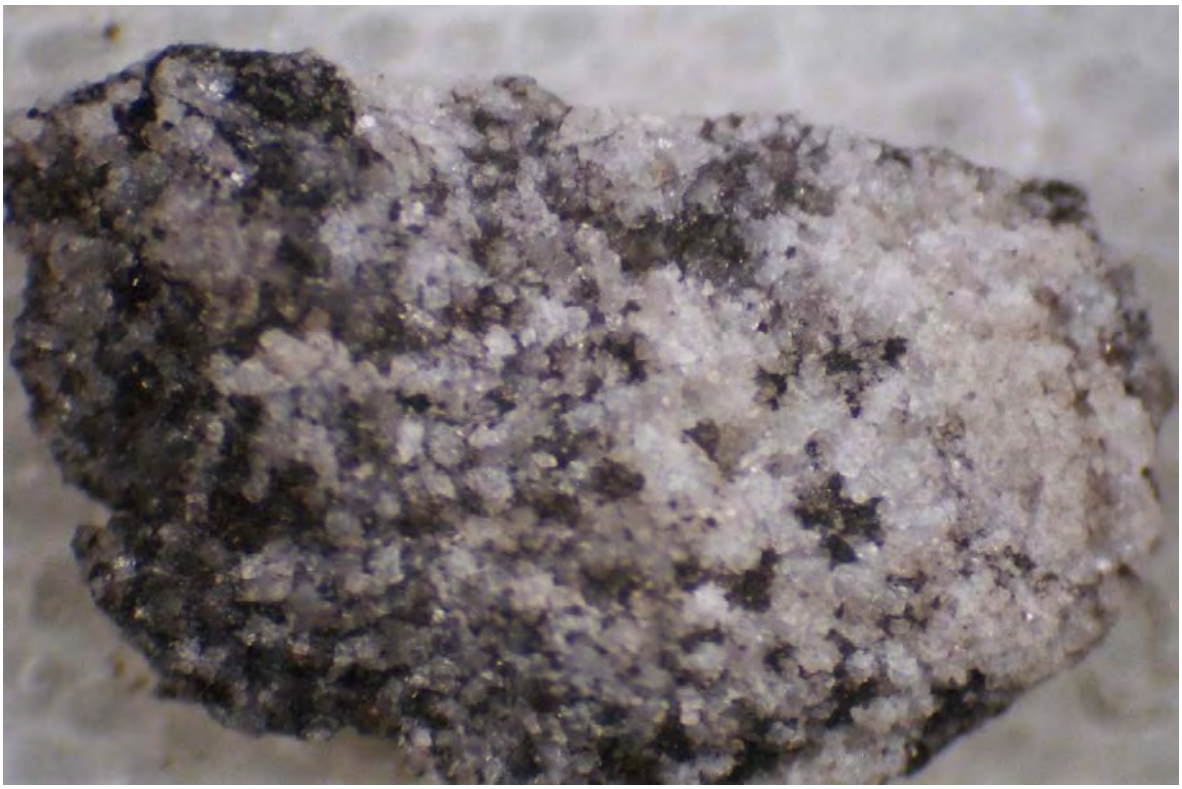
Photomicrograph – Pure NW Lisbon State A-1 (Map #29), 9715-20 feet, patch of 2.0 epifluorescence in coarse grained dolomite.



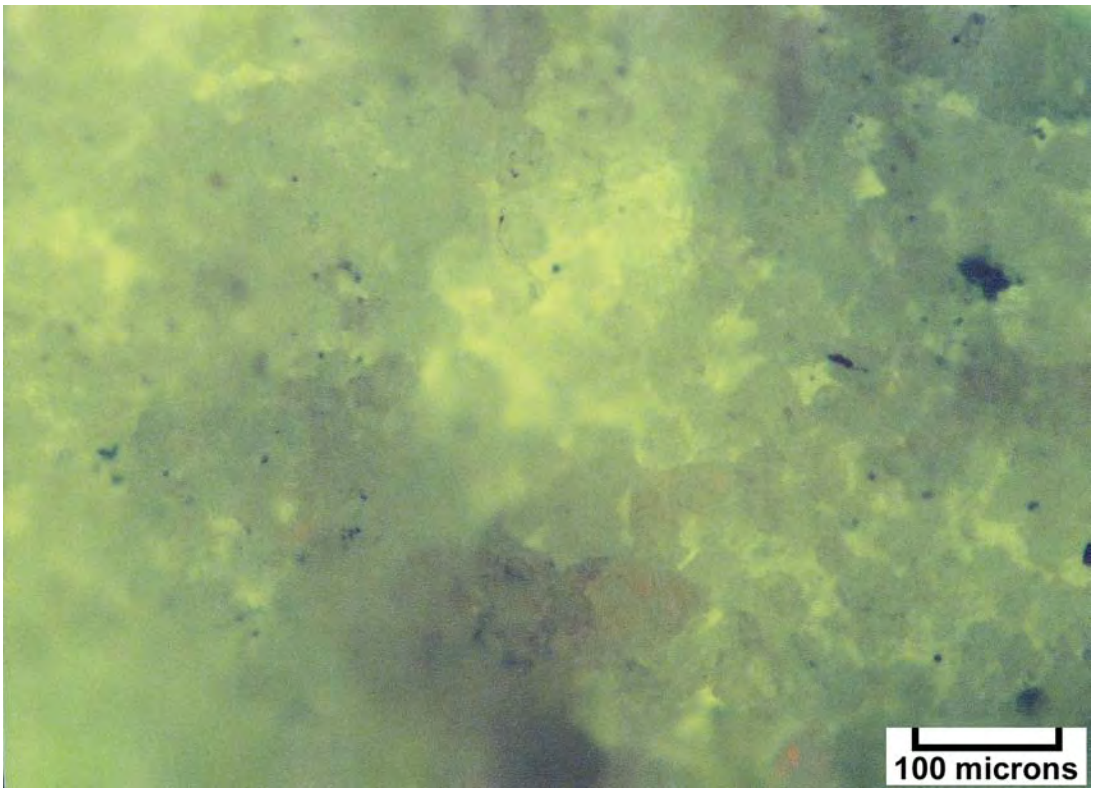
Photomicrograph – Pure NW Lisbon State A-1 (Map #29), 9720-25 feet, 1.5 epifluorescence along a microfracture.



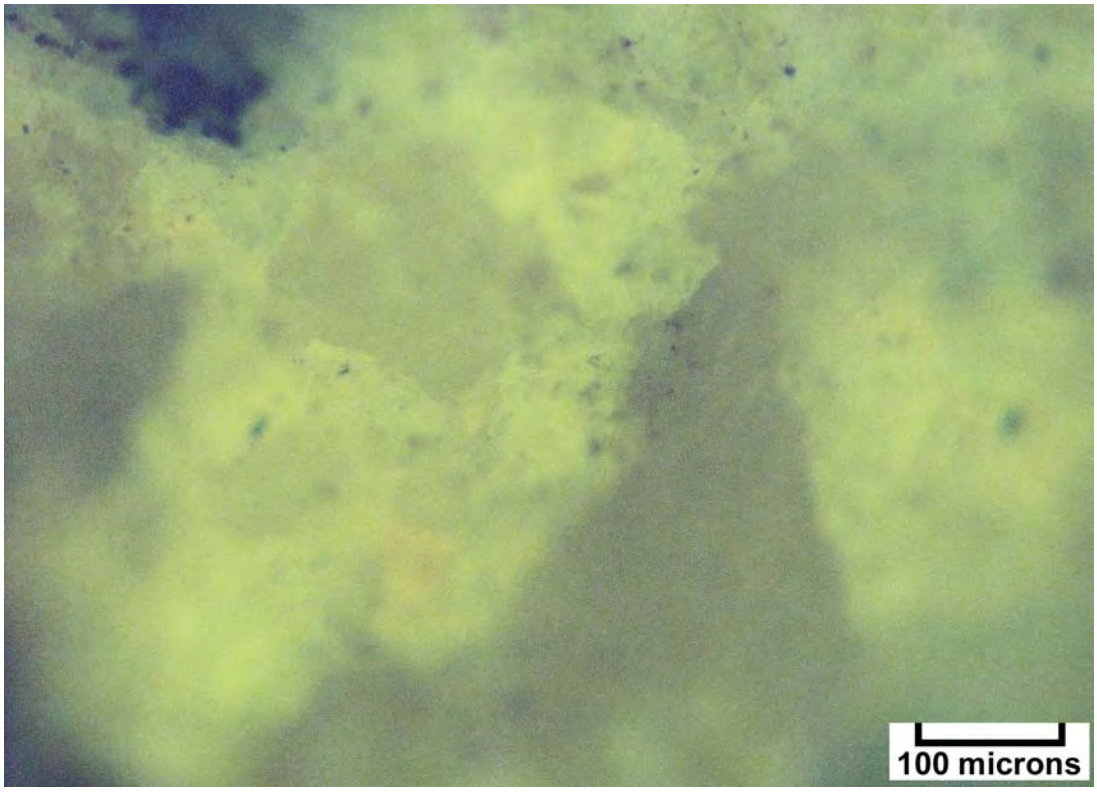
Photomicrograph – Pure NW Lisbon State 814-A (Map #31), 8870-75 feet, closeup of possible oil films and 2.5 epifluorescence in coarsely crystalline dolomite.



Binocular microscope image (3700x) – Pure Lisbon 814-A (Map #31), 8870-75 feet, dolomite with fair intercrystalline porosity and bitumen from a producing oil well at Lisbon field.

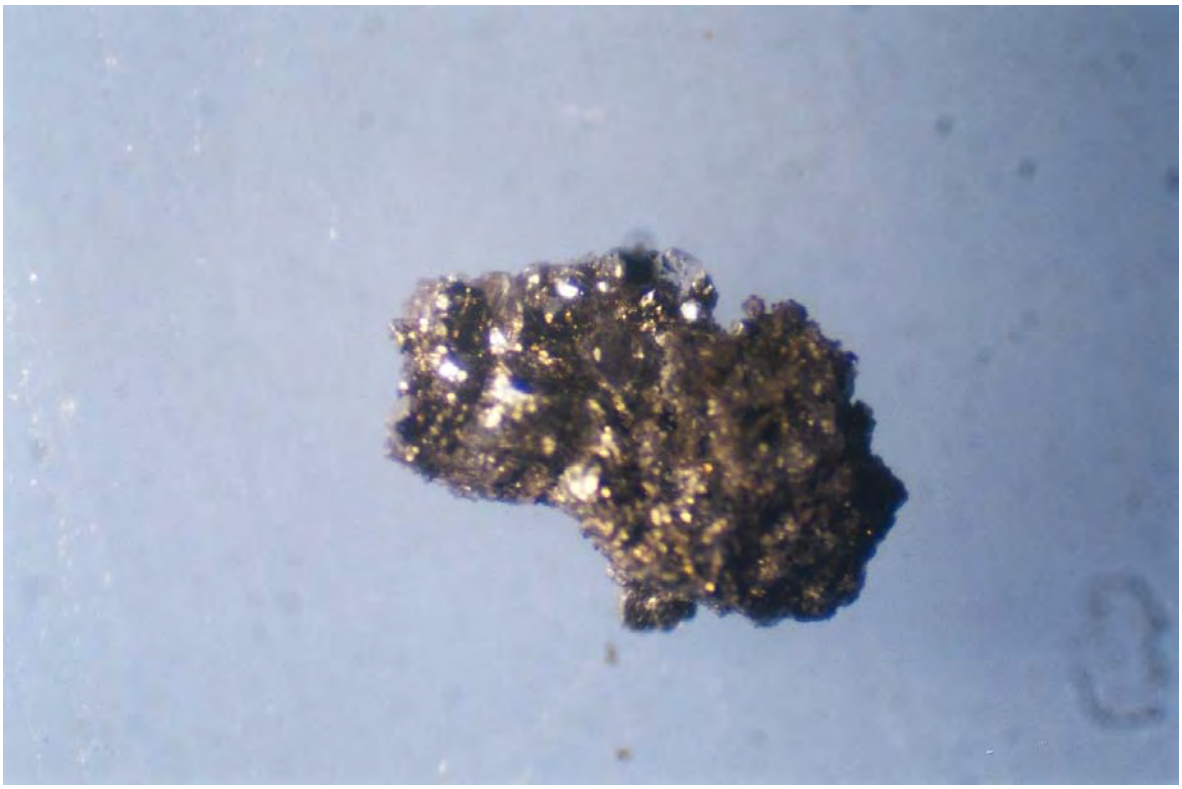


Photomicrograph – Pure Lisbon 814-A (Map #31), 8875-80 feet, 3.0 epifluorescence in medium crystalline dolomite with good oil saturation throughout.

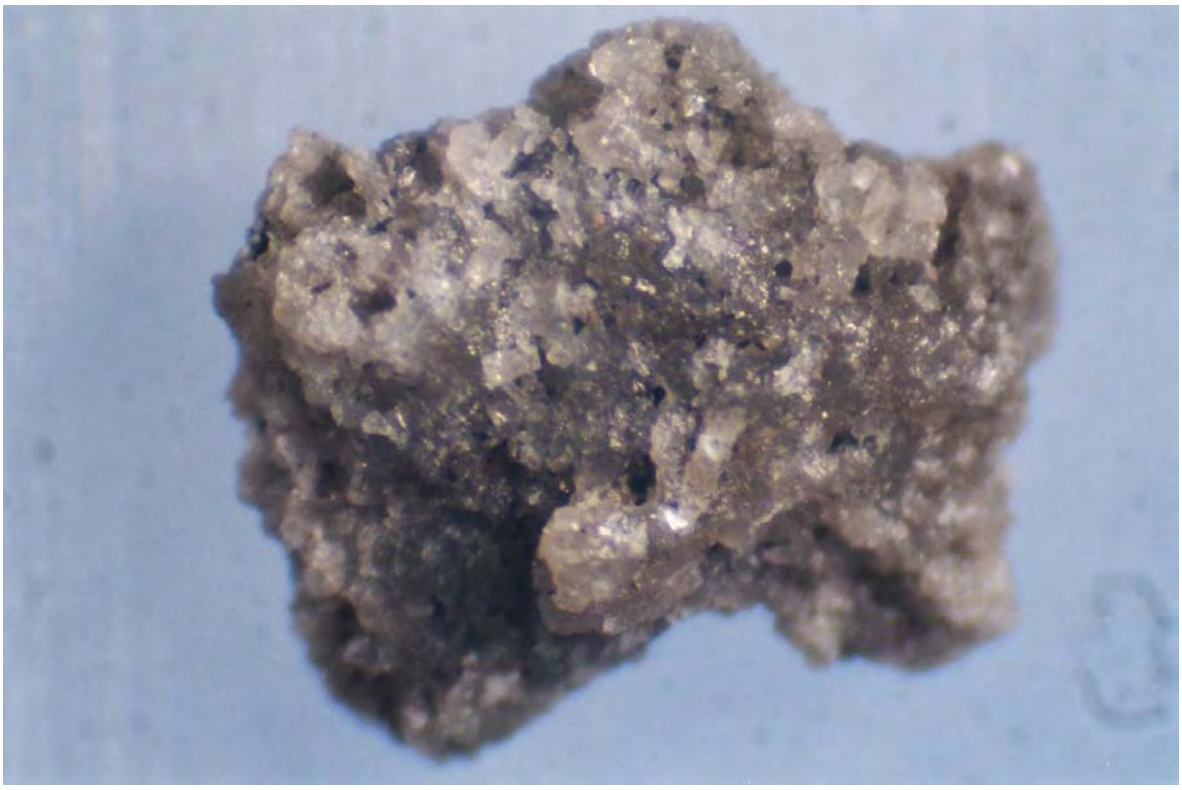


Photomicrograph – Pure Lisbon 814-A (Map #31), 8890-95 feet, representative sample with good bright 1.8 epifluorescence in a medium crystalline dolomite containing bitumen.

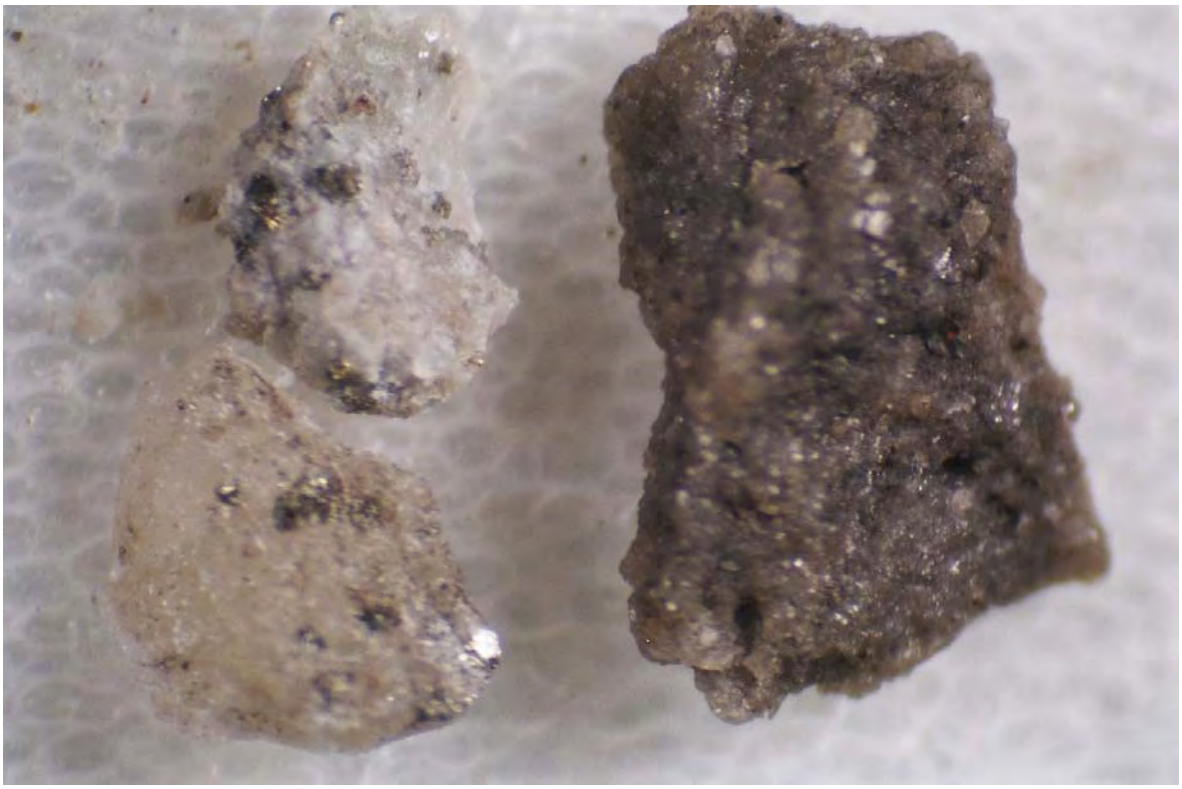
Binocular microscope image (2500x) – Pure Lisbon 814-A (Map #31), 8890-95 feet, three samples with modest porosity, bitumen, and sulfides. Note possible oil stain in the left hand sample.



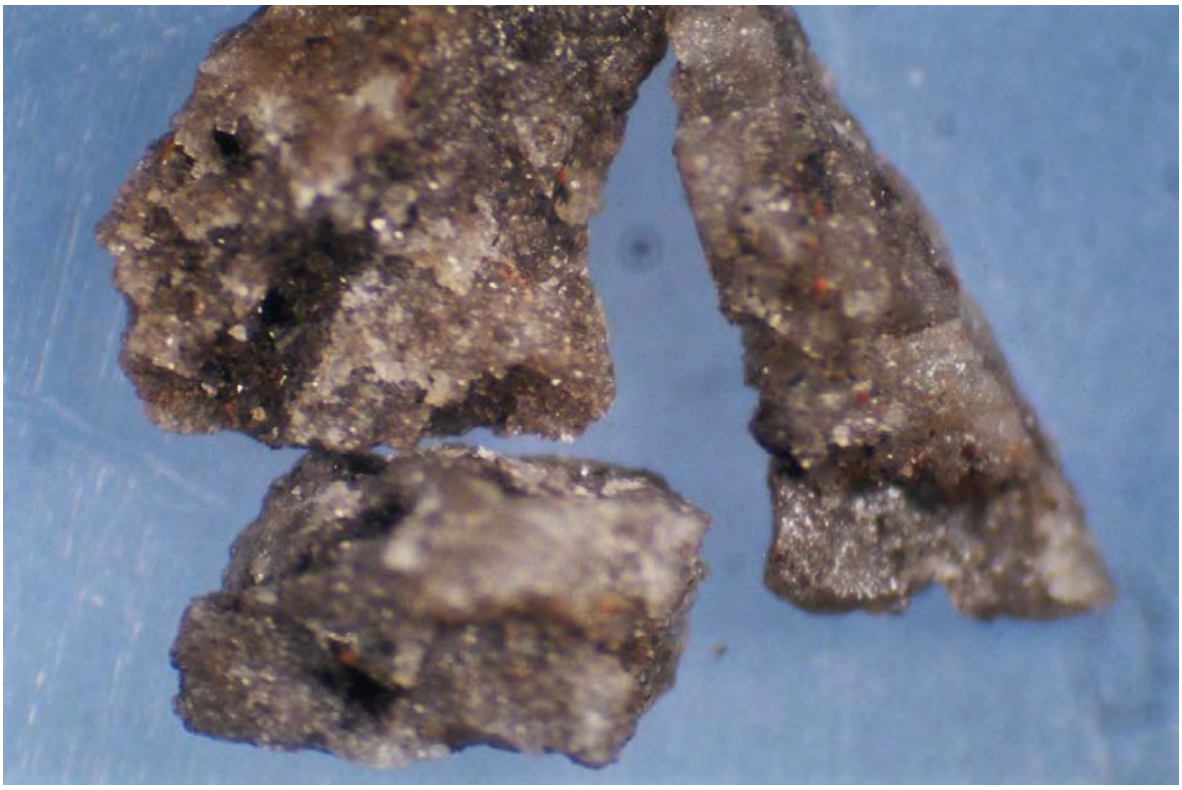
Binocular microscope image (4500x) – Pure Lisbon 814-A (Map #31), 8895-8900 feet, cluster of sulfides, probably pyrite.



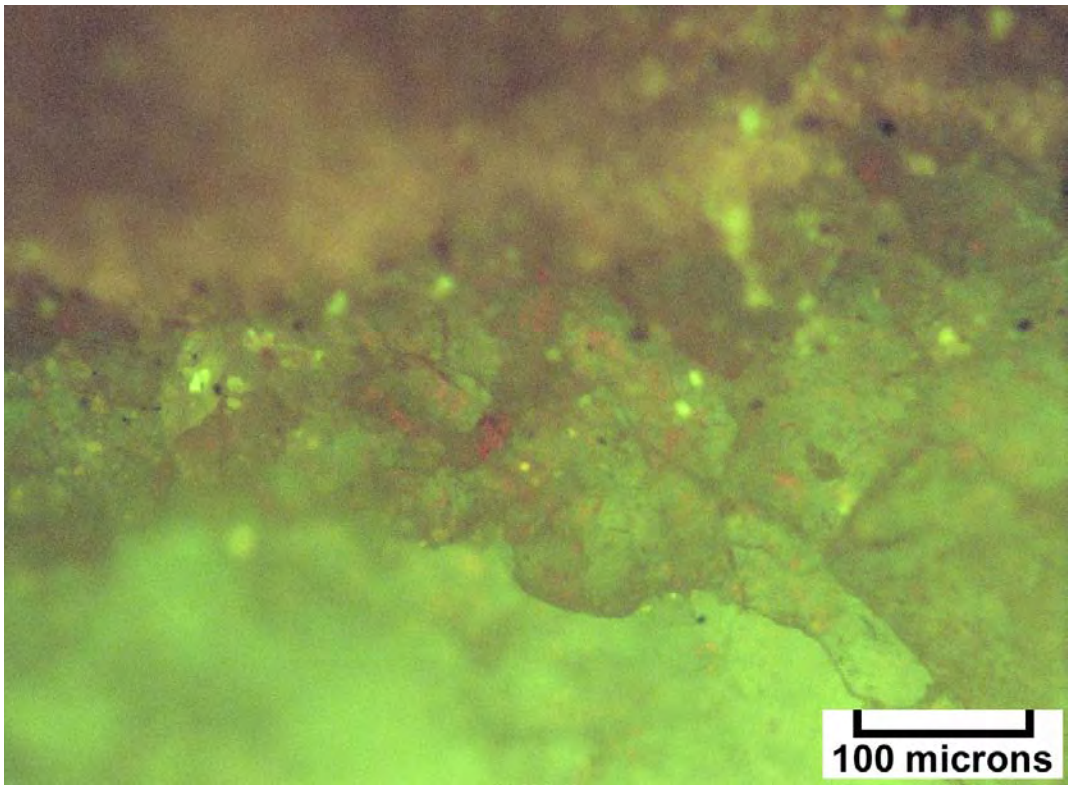
Binocular microscope image (4500x) – Pure Lisbon 814-A (Map #31), 8900-05 feet, single dolomite cutting with intercrystalline porosity and traces of bitumen.



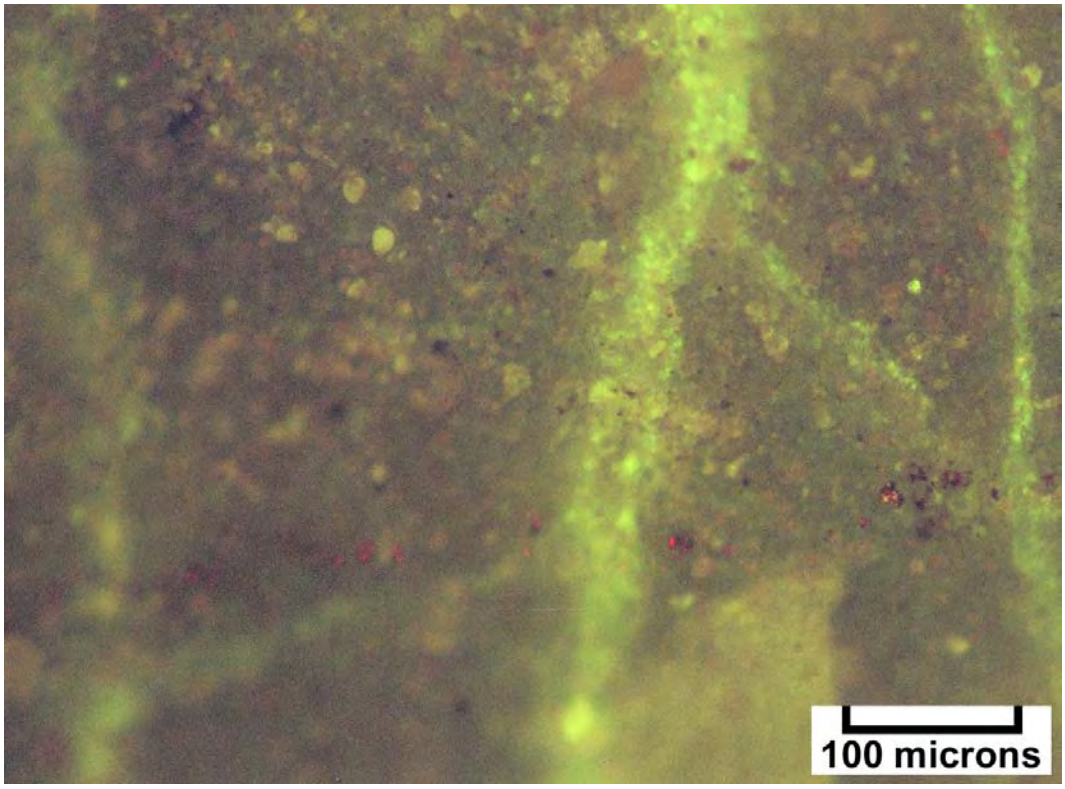
Binocular microscope image (2500x) – Pure Lisbon 814-A (Map #31), 8910-15 feet, dolomite cuttings, the large sample containing intercrystalline porosity, the two small samples showing sulfides.



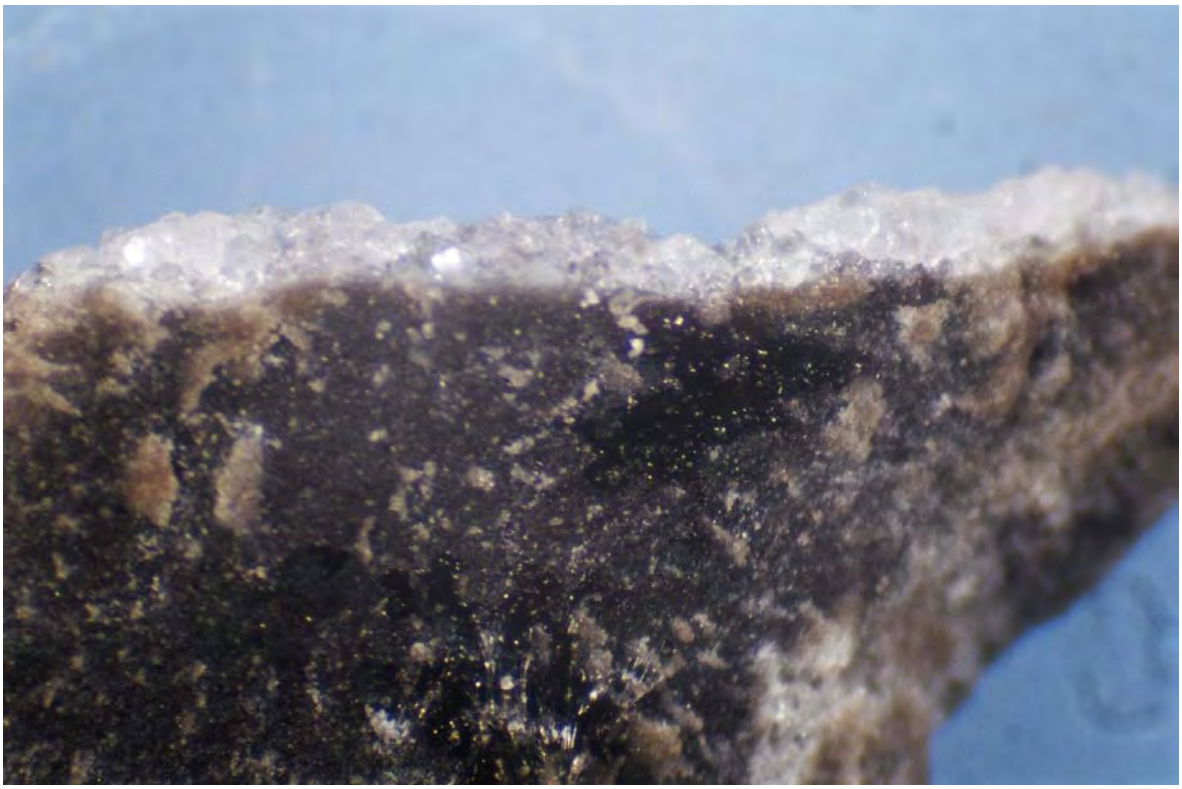
Binocular microscope image (3100x) – Pure Lisbon 814-A (Map #31), 8925-30 feet, dolomite cuttings containing intercrystalline and microvuggy porosity.



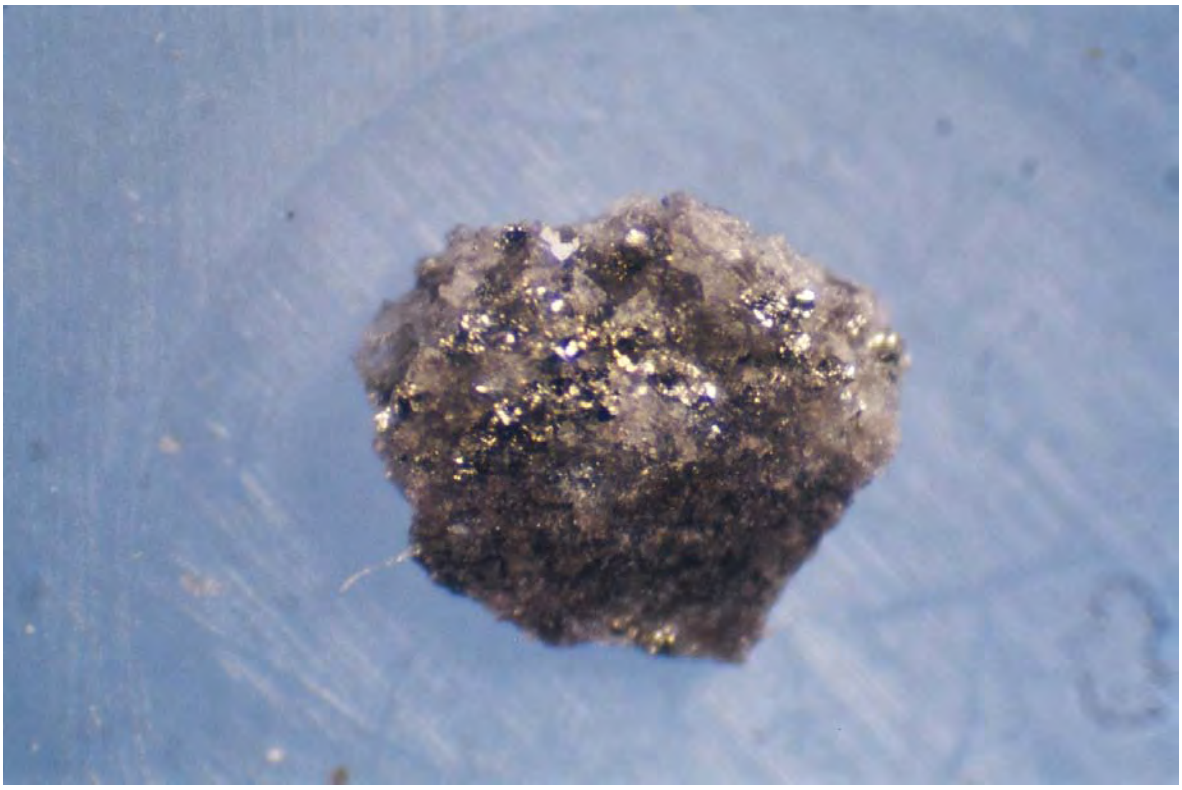
Photomicrograph – Pure Spiller Canyon State 1 (Map #32), 9090-9100 feet, dull pale yellow 0.2 epifluorescence in medium crystalline dolomite.



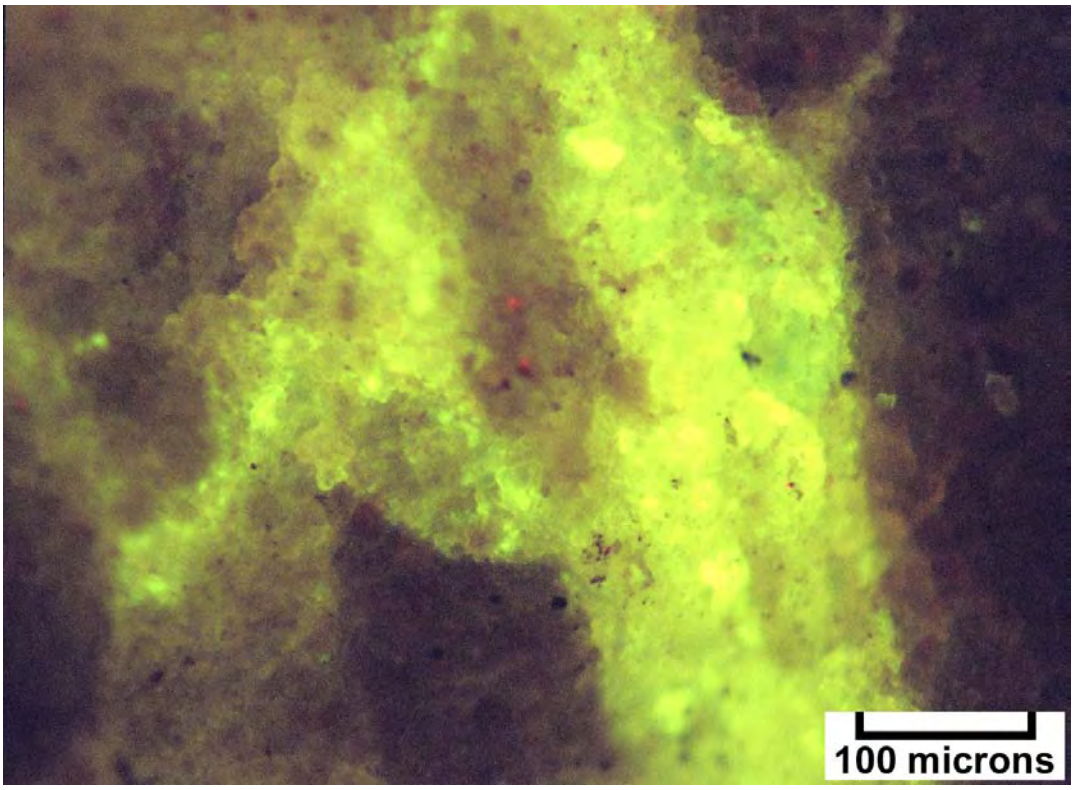
Photomicrograph – Pure Spiller Canyon State 1 (Map #32), 9100-10 feet, 0.5 epifluorescence along swarms of fractures in medium crystalline dolomite.



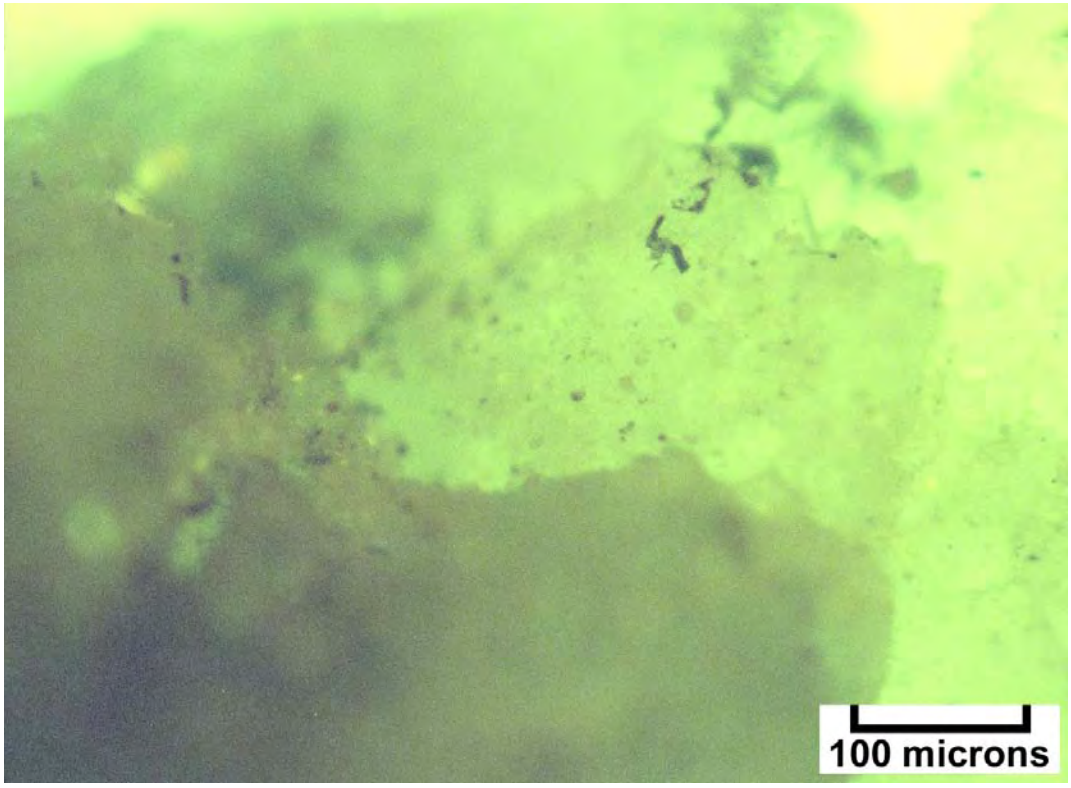
Binocular microscope image (3700x) –Pure Spiller Canyon State 1 (Map #32), 9100-10 feet, dense dolomite cutting with white dolomite crystals lining fracture.



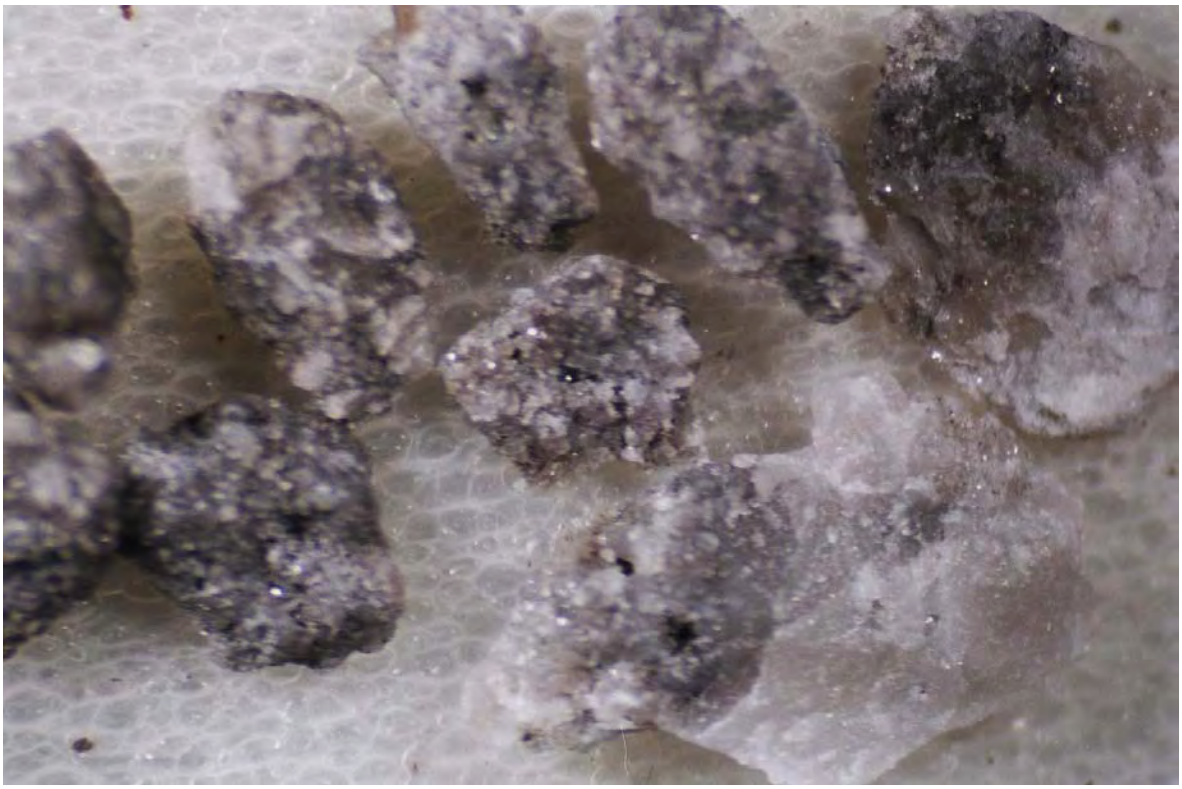
Binocular microscope image (4500x) – Pure Spiller Canyon State 1 (Map #32), 9150-60 feet, sulfides replacing dolomite.



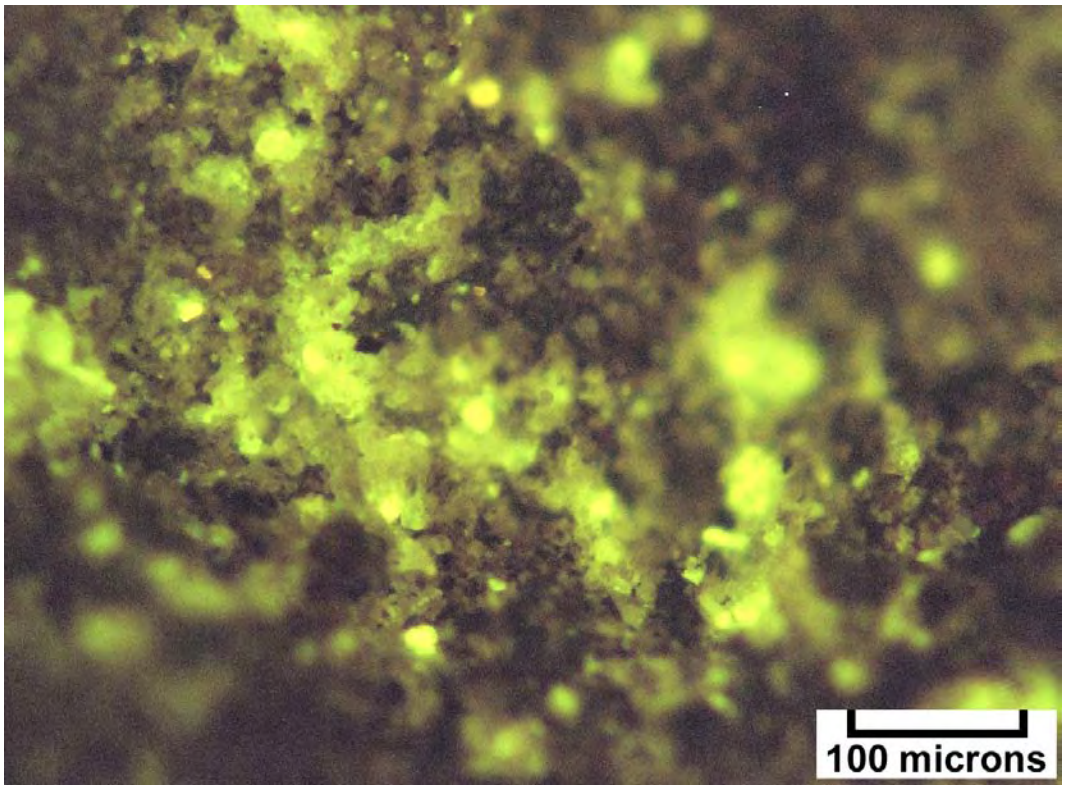
Photomicrograph – Pure Spiller Canyon State 1 (Map #32), 9190-9200 feet, fracture swarm lined with dolomite displaying pale yellow 1.0 epifluorescence.



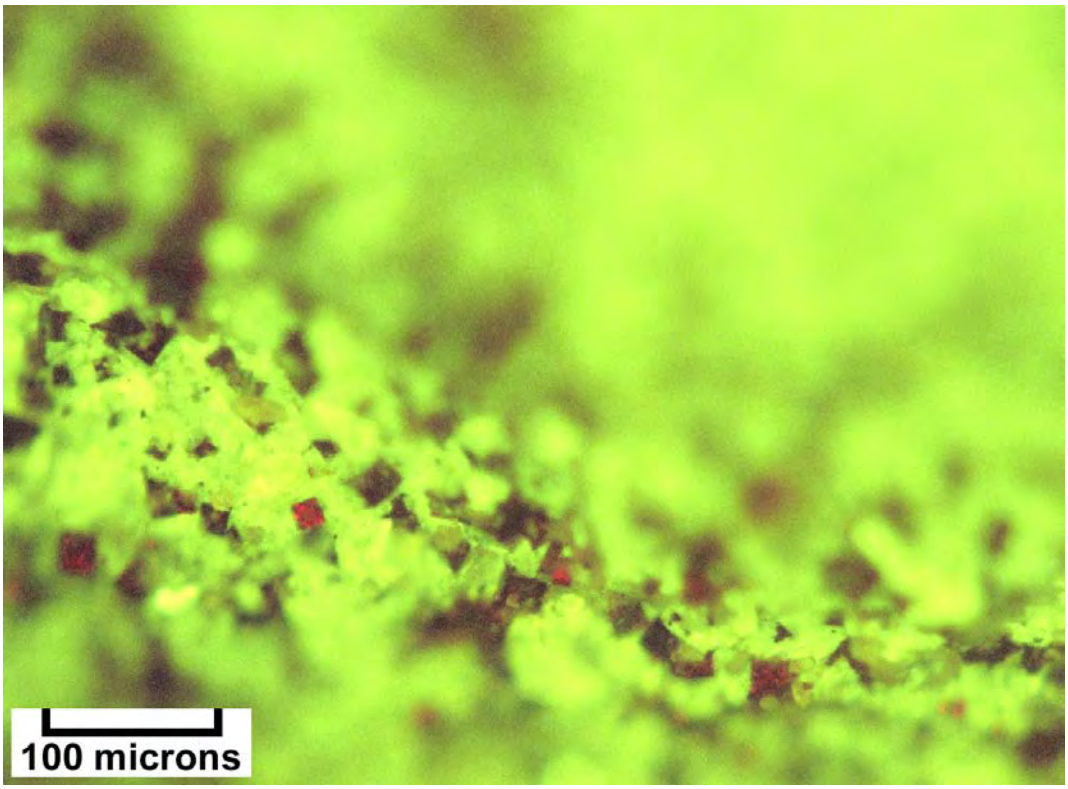
Photomicrograph – Pure Spiller Canyon State 1 (Map #32), 9330-40 feet, 0.7 epifluorescence in "dead" matrix with minor bitumen.



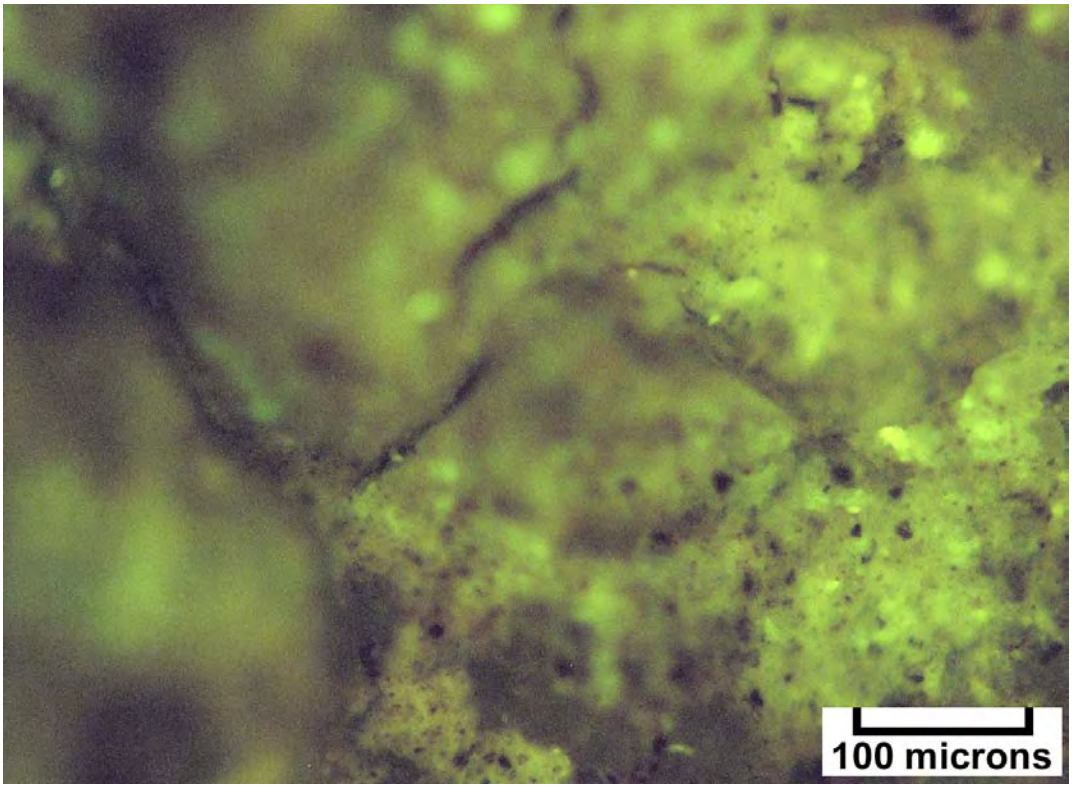
Binocular microscope image (1700x) – Pure Spiller Canyon State 1 (Map #32), 9330-40 feet, samples of dolomite with good intercrystalline porosity and bitumen.



Photomicrograph – Pure Spiller Canyon State 1 (Map #32), 9360-70 feet, speckled 1.5 epifluorescence around small dolomite crystals.



Photomicrograph – Pure Spiller Canyon State 1 (Map #32), 9380-90 feet, speckled 1.5 epifluorescence showing bitumen and small crystals with pale yellow epifluorescence.



Photomicrograph – Pure Spiller Canyon State 1 (Map #32), 9410-20 feet, very dull 1.0 epifluorescence in medium crystalline dolomite with minor speckles of 1.5 epifluorescence.