Thin Section Analysis Report

Sample ID:	LW-1
Formation/Member Name:	Oriskany
Lithologic Classification:	Calcareous Sandstone
Depth/Depth Range:	6963.1 ft
Date of Analysis:	6/27/2017
Analyzed by:	S. Shank

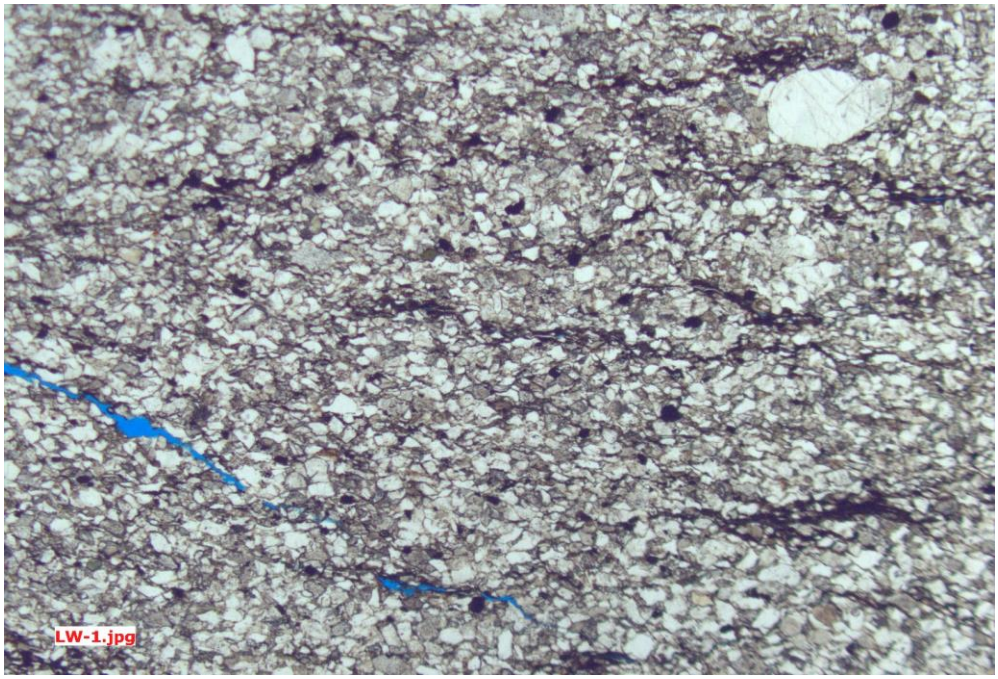
Texture		**Comments**
Grain Size	very fine to fine-grained	scattered, uncommon rounded medium to coarse sand grains
Rounding	rounded to angular	
Sorting	moderate	

Composition/Detrital Minerals		**Comments**
Quartz		
Polycrystalline	<1%	
Monocrystalline	65%	
Microcrystalline		
Feldspar		
Plagioclase		
Orthoclase		
Microcline	2%	total feldspar
Carbonate		
Calcite	<1%	few fossil fragments - brachiopods
Dolomite		
Aragonite		
Clay		
Illite		
Smectite		
Kaolinite		
Muscovite		
Chlorite		
Glauconite		
Rock Fragments		
Sedimentary		
Volcanic		
Metamorphic		
Other (Accessory Minerals)		
	tourmaline	
	opaques	
	5%	thin discontinuous laminae of unidentified red-brown clay/hematite mix?

Cementing Materials		**Comments**
Quartz		
Feldspar		
Carbonate	28%	
Clay		
Iron Oxide, Hydoxide and/or Sulfide		
Other		

Visual Porosity Estimate		**Comments**
	<1%	no intergranular porosity, few thin fractures - sometimes parallel to laminae

25x magnification, 5mm field of view



Thin Section Analysis Report

Sample ID:	LW-2
Formation/Member Name:	Oriskany
Lithologic Classification:	Sandy Limestone
Depth/Depth Range:	6985 ft
Date of Analysis:	6/27/2017
Analyzed by:	S. Shank

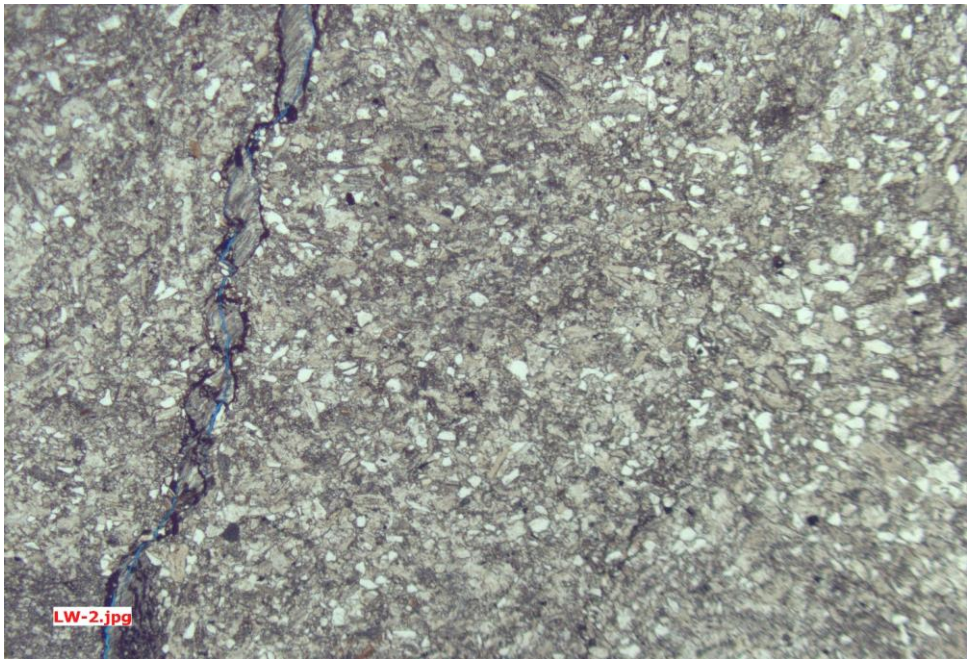
Texture		Comments
Grain Size	very fine to fine-grained	
Rounding	rounded to angular	
Sorting	moderate to well sorted	

Composition/Detrital Minerals		Comments
Quartz		
Polycrystalline	<1%	
Monocrystalline	15%	scattered, matrix supported
Microcrystalline		
Feldspar		
Plagioclase		
Orthoclase		
Microcline	<1%	total feldspar
Carbonate		
Calcite	80%	highly variable, patchy distribution of fine-grained calcite and coarser=recrystallized calcite, scattered fossil brachiopod fragments
Dolomite		
Aragonite		
Clay		
Illite		
Smectite		
Kaolinite		
Muscovite		
Chlorite		
Glauconite		
Rock Fragments		
Sedimentary		
Volcanic		
Metamorphic		
Other (Accessory Minerals)		
	5%	thin discontinuous laminae of unidentified red-brown clay/hematite mix?

Cementing Materials		Comments
Quartz		
Feldspar		
Carbonate		
Clay		
Iron Oxide, Hydoxide and/or Sulfide	5%	secondary, thin discontinuous, wavy laminae of unidentified red-brown clay/hematite mix?
Other		

Visual Porosity Estimate	Comments
<1%	no intergranular porosity, few thin fractures - sometimes parallel to laminae

25x magnification, 5mm field of view



Thin Section Analysis Report

Sample ID:	LW-3
Formation/Member Name:	Oriskany
Lithologic Classification:	Calcareous Sandstone
Depth/Depth Range:	6988.7 ft
Date of Analysis:	6/27/2017
Analyzed by:	S. Shank

Texture		Comments
Grain Size	very fine to fine-grained	scattered, uncommon rounded medium sand grains
Rounding	rounded to angular	
Sorting	moderate	

Composition/Detrital Minerals		Comments
Quartz		
Polycrystalline	<1%	
Monocrystalline	48%	
Microcrystalline		
Feldspar		
Plagioclase		
Orthoclase		
Microcline	2%	total feldspar
Carbonate		
Calcite	45%	fine-grained to coarse crystalline, few fossil fragments - brachiopods?
Dolomite		
Aragonite		
Clay		
Illite		
Smectite		
Kaolinite		
Muscovite		
Chlorite		
Glauconite		
Rock Fragments		
Sedimentary		
Volcanic		
Metamorphic		
Other (Accessory Minerals)		
	tourmaline	
	opaques	
	5%	thin discontinuous laminae of unidentified red-brown clay/hematite mix?

Cementing Materials		Comments
Quartz		
Feldspar		
Carbonate		
Clay		
Iron Oxide, Hydoxide and/or Sulfide		
Other		

Visual Porosity Estimate		Comments
	<1%	no intergranular porosity, some porosity associated with laminae

25x magnification, 5mm field of view

