Thin Section Analysis Report

Sample ID:	39-2112-2
Formation/Member Name:	Newburg
Lithologic Classification:	Sandstone
Depth/Depth Range:	5426.5 ft
Date of Analysis:	6/2/2017
Analyzed by:	L. Ditzler

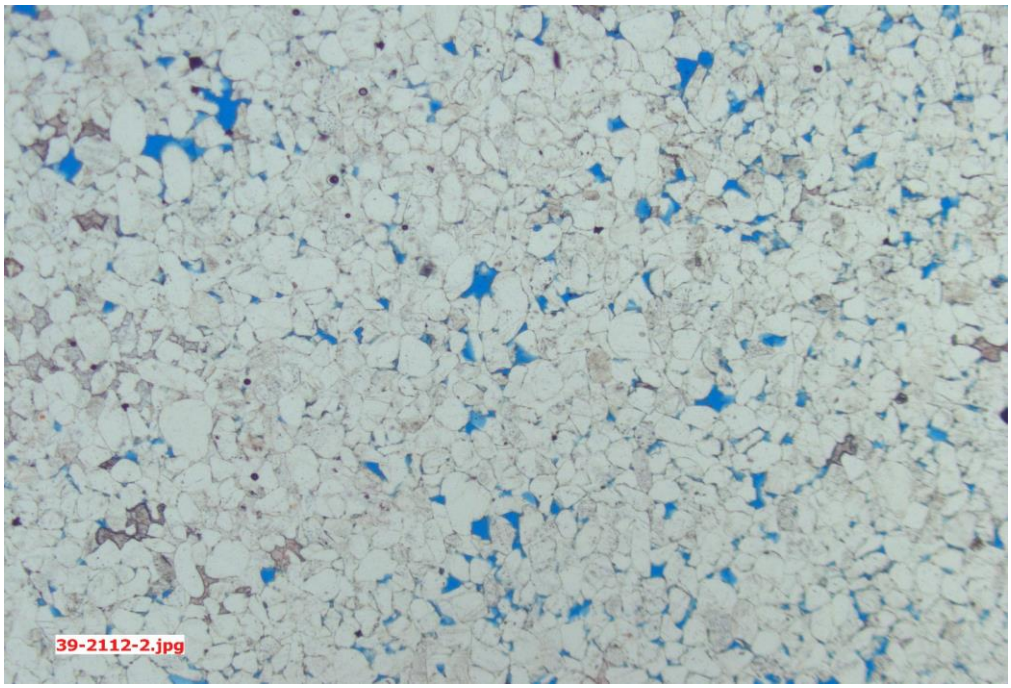
Texture		Comments
Grain Size	fine-grained, 125-177µ	
Rounding	well rounded to subrounded	
Sorting	very well sorted	

Composition/Detrital Minerals		Comments
Quartz		
Polycrystalline		
Monocrystalline	93%	
Microcrystalline		
Feldspar		
Plagioclase		
Orthoclase		
Microcline	<1%	
Carbonate		
Calcite		
Dolomite		
Aragonite		
Clay		
Illite		
Smectite		
Kaolinite		
Muscovite		
Chlorite		
Glauconite		
Rock Fragments		
Sedimentary		
Volcanic		
Metamorphic		
Other (Accessory Minerals)		
	tourmaline	
	zircon	

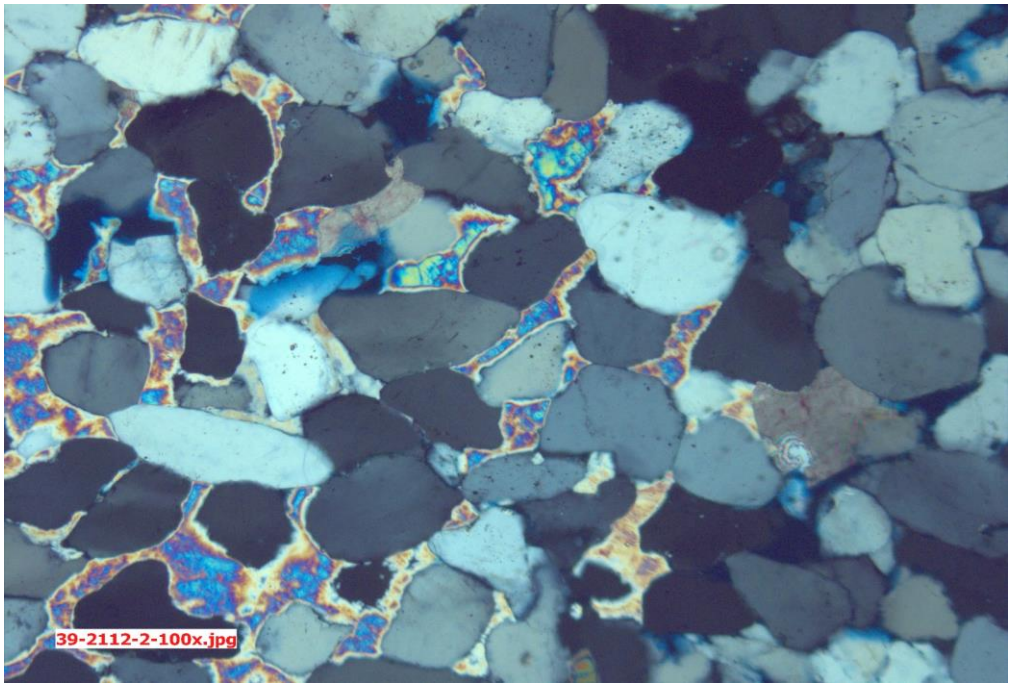
Cementing Materials		Comments
Quartz		overgrowths and intergranular
Feldspar		
Carbonate	2%	scattered patches
Clay		
Iron Oxide, Hydoxide and/or Sulfide		
Other	5%	mystery mineral, moderate relief, colorless, low to moderate birefringence, optically continuous patches, patchy distribution - locally abundant

Visual Porosity Estimate	Comments
3%	intergranular, patchy distribution

25x magnification, 5mm field of view



100x magnification, 1.25mm field of view



Thin Section Analysis Report

Sample ID: 39-2112-4
Formation/Member Name: Newburg
Lithologic Classification: Calcareous Sandstone
Depth/Depth Range: 5428.2 ft
Date of Analysis: 6/13/2017
Analyzed by: S. Shank

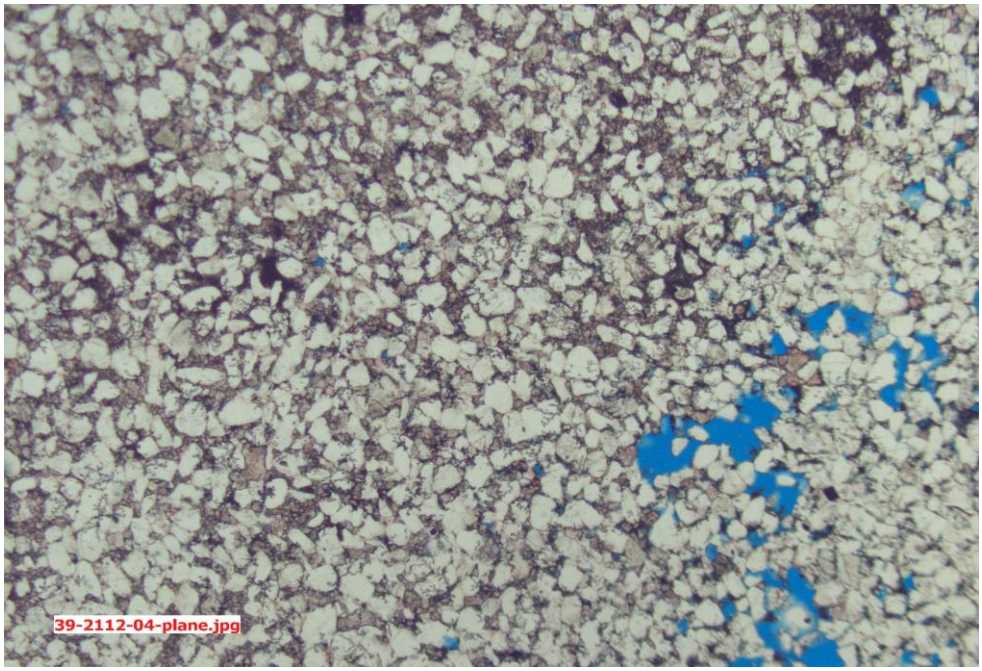
Texture		Comments
Grain Size	fine-grained, 125-177µ	
Rounding	well rounded to subrounded	
Sorting	well sorted	

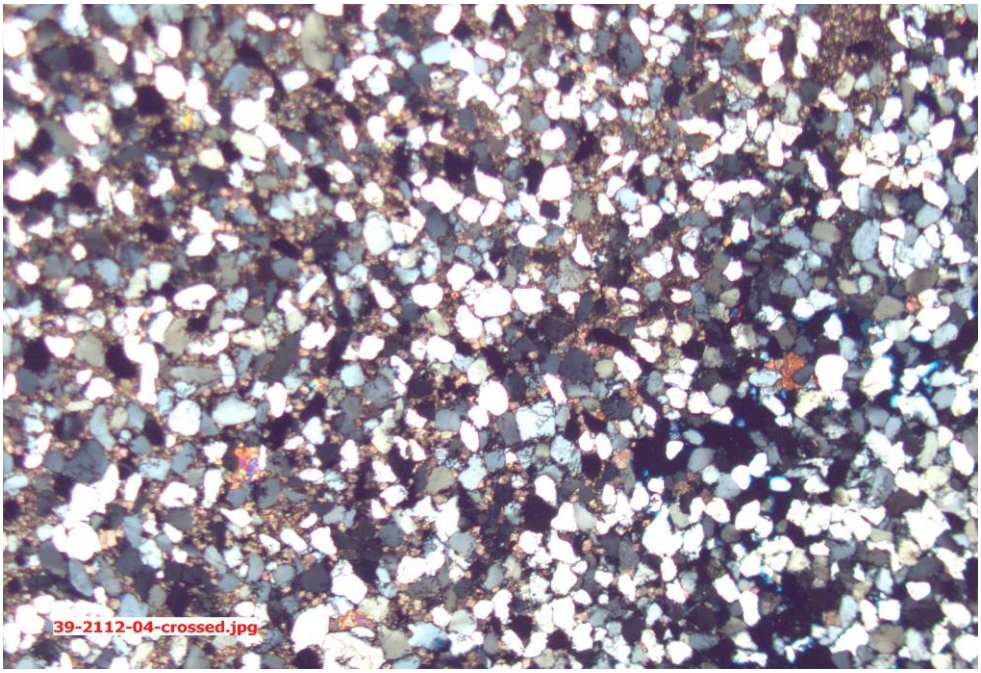
Composition/Detrital Minerals		Comments
Quartz		
Polycrystalline		
Monocrystalline	75%	
Microcrystalline		
Feldspar		
Plagioclase		
Orthoclase		
Microcline		
Carbonate		
Calcite		
Dolomite		
Aragonite		
Clay		
Illite		
Smectite		
Kaolinite		
Muscovite		
Chlorite		
Glauconite		
Rock Fragments		
Sedimentary		
Volcanic		
Metamorphic		
Other (Accessory Minerals)		
	tourmaline	

Cementing Materials		Comments
Quartz		
Feldspar		
Carbonate	25%	
Clay		
Iron Oxide, Hydoxide and/or Sulfide		
Other	<1	mystery mineral, colorless, moderate relief

Visual Porosity Estimate	Comments
2%	very patchy distribution, most of section of almost no porosity

25x magnification, 5mm field of view





Thin Section Analysis Report

Sample ID:	39-2112-6	
Formation/Member Name:	Newburg	
Lithologic Classification:	Quartz Sandstone	
Depth/Depth Range:	5430 ft	
Date of Analysis:	6/13/2017	
Analyzed by:	S. Shank	25x magnification, 5mm field of view

Texture		**Comments**
Grain Size	fine-grained, 125-177µ	
Rounding	well rounded to subrounded	
Sorting	well sorted	

Composition/Detrital Minerals		**Comments**
Quartz		
Polycrystalline		
Monocrystalline	99%	
Microcrystalline		
Feldspar		
Plagioclase		
Orthoclase		
Microcline		
Carbonate		
Calcite		
Dolomite		
Aragonite		
Clay		
Illite		
Smectite		
Kaolinite		
Muscovite		
Chlorite		
Glauconite		
Rock Fragments		
Sedimentary		
Volcanic		
Metamorphic		
Other (Accessory Minerals)		
	tourmaline	well rounded grains not uncommon

Cementing Materials		**Comments**
Quartz	overgrowths and intertitial patches	well cemented
Feldspar		
Carbonate	<1%	
Clay		
Iron Oxide, Hydoxide and/or Sulfide		
Other	<1%	one patch of colorless, moderate relief mystery mineral

Visual Porosity Estimate	**Comments**
5%	common intergranular and larger voids

25x magnification, 5mm field of view



Thin Section Analysis Report

Sample ID:	39-2112-9
Formation/Member Name:	Newburg
Lithologic Classification:	Calcareous Sandstone
Depth/Depth Range:	5432.5 ft
Date of Analysis:	6/13/2017
Analyzed by:	S. Shank

Texture		Comments
Grain Size	fine-grained, 125-250µ	
Rounding	well rounded to subangular	
Sorting	well sorted	

Composition/Detrital Minerals		Comments
Quartz		
Polycrystalline		
Monocrystalline	70%	
Microcrystalline		
Feldspar		
Plagioclase		
Orthoclase		
Microcline		
Carbonate		
Calcite		
Dolomite		
Aragonite		
Clay		
Illite		
Smectite		
Kaolinite		
Muscovite		
Chlorite		
Glauconite		
Rock Fragments		
Sedimentary		
Volcanic		
Metamorphic		
Other (Accessory Minerals)		

Cementing Materials		Comments
Quartz		
Feldspar		
Carbonate	30%	well cemented, locally abundant - matrix supported patches
Clay		
Iron Oxide, Hydoxide and/or Sulfide		
Other		

Visual Porosity Estimate	Comments
<1%	almost no intergranular porosity, some along thin fracture

25x magnification, 5mm field of view

