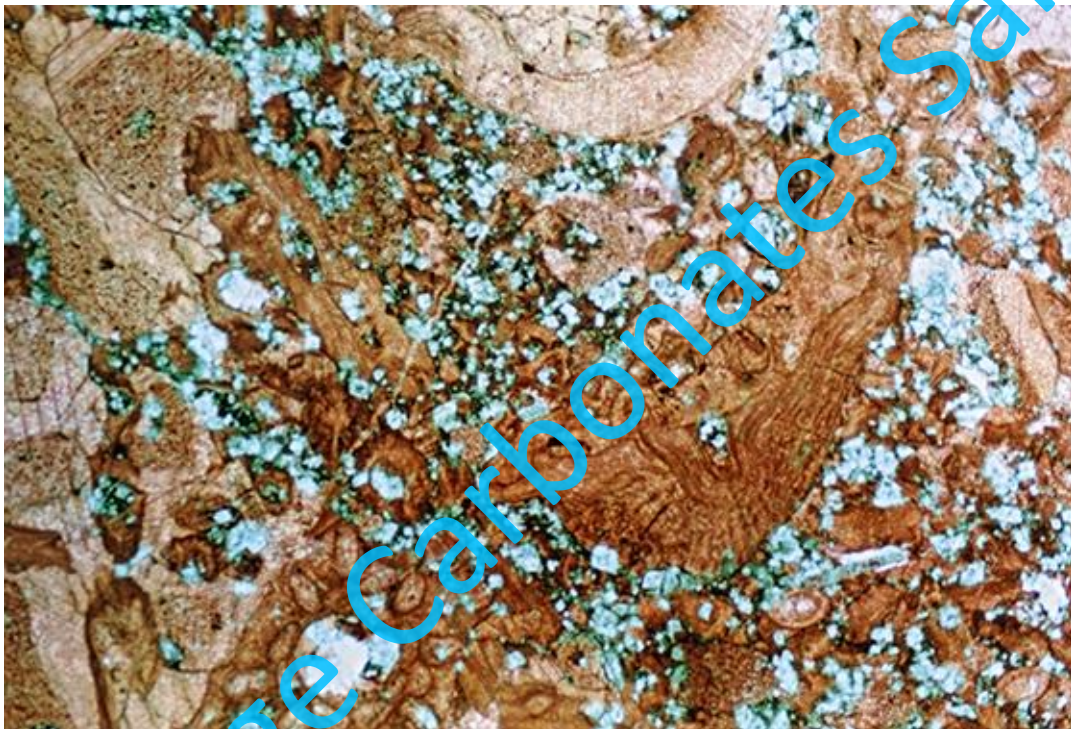




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Microfacies Atlas of Barents Shelf Wells: 7229/11-1



1. INTRODUCTION

1.1. Outline

The three Microfacies Atlases contain a total of some 750 photomicrographs that illustrate the range of microfacies, diagenetic textures and pore types from core and SWC samples from throughout the late Palaeozoic section of the key stratigraphic wells 7128/6-1, 7128/4-1 and 7229/11-1 on the Finnmark Platform.

The annotated photomicrographs presented in the Atlases below are print resolution jpegs. In addition, these images are also presented as separate files on a CD-ROM in the following formats:

- High resolution jpeg images.
- Print resolution jpeg images suitable for incorporation into reports.
- Screen resolution jpeg images suitable for incorporation into presentations.

Individual files are stored in folders according to well name and can be searched by their depth which forms part of the file name.

For each thin section, pore types are summarized and a qualitative estimation of the amount of porosity is colour coded (right). Note that this refers to the porosity

	None
	Poor
	Moderate
	Good

in the thin section as a whole and may not be specifically illustrated in the photomicrograph. Each microfacies image is accompanied by a summary diagram showing the inferred depositional setting in the relevant depositional system.

The lithostratigraphic nomenclature follows that of Larssen *et al.* (2002).

1.2. Sipsdalen Group/Ørn Formation

Age: late Gzelian to early Sakmarian

Depositional system: These are warm water sediments deposited prior to the closure of the Urals seaway. Figure 1 shows a carbonate-dominated ramp system. Shallow marine microfacies are poorly represented in 7229/11-1 with the possible development of restricted evaporitic peritidal facies. Mid- carbonate ramp microfacies are represented by bioturbated

wackestone with *in situ* and reworked rugose corals deposited below normal wave base. The mid-ramp setting often contains tabular bioherms dominated by phylloid algae with occasional *Tubiphytes*. Deep water microfacies deposited below normal wave base include bioturbated wackestone/carbonate mudstone and siltstone.

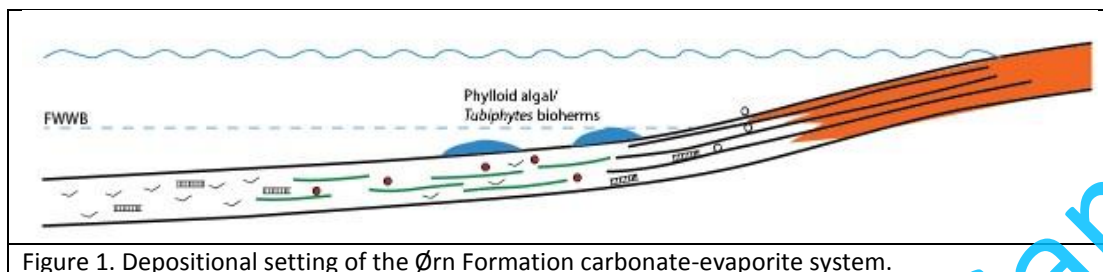


Figure 1. Depositional setting of the Ørn Formation carbonate-evaporite system.

Figure 2 shows the depositional setting following a period of evaporitic draw down. Evaporation resulted in gypsum precipitation that were later transported into deep water forming a margin gypsum wedge.

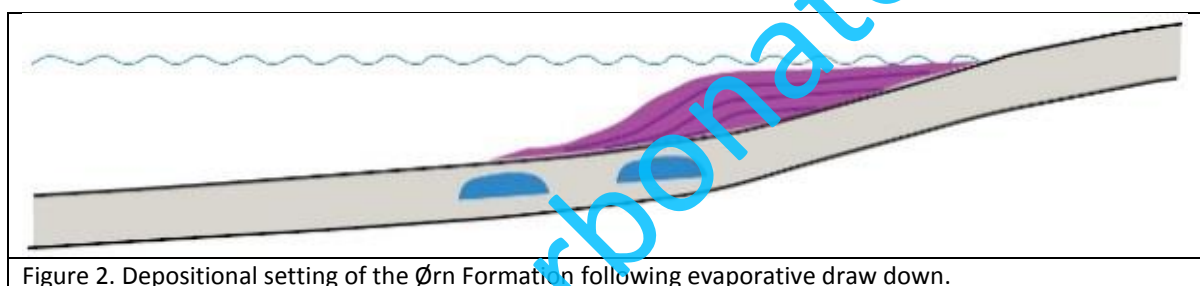


Figure 2. Depositional setting of the Ørn Formation following evaporative draw down.

Distribution of porosity: There is some intergranular porosity in high energy near-shore carbonates and siliciclastic microfacies. Dolomitised intervals have good reservoir quality with the development of intercrystal and mouldic pores.

1.3. Bjarmeland Group/Polarrev Formation

Age: mid to late Sakmarian, to possible ?earliest Artinskian

Depositional system: The Polarrev Formation comprises carbonate buildups (Figure 3), most of which is made up of carbonate mud that often shows a micropeloidal texture. Other components include fenestrate bryozoans, often preserved as intact sheets but not in their growth position, brachiopods, crinoids and occasional fusulinids, Tubiphytes and other tubular algae. Early marine cavities that formed as shelter cavities around fenestrate bryozoan sheets. These cavities are often lined by botryoidal fans of fibrous marine calcite cement. The carbonate mud matrix of the carbonate buildups are likely to have been



2. MICROFACIES ATLAS

Well:	7229/11-1	
Depth MD m:	4613.60	
Formation:	GIPSDALEN GP/ØRN FM	
	Intercrystal pores	
Dolomitised siltstone. FOV: 1.25mm, ppl, swc		Dolomitised siltstone. FOV: 1.25mm, xpl, swc

Well:	7229/11-1	
Depth MD m:	4613.00	
Formation:	GIPSDALEN GP/ØRN FM	
Dolomitised siltstone. FOV: 5mm, ppl, swc		

Cambridge Carbonates Sample



Well:	7229/11-1	
Depth MD m:	4439.80	
Formation:	GIPSDALEN GP/ØRN FM	
<p>Very fine grained bioclastic peloidal packstone/ grainstone. FOV: 5mm, ppl, swc</p>		

Well:	7229/11-1	
Depth MD m:	4406.50	
Formation:	GIPSDALEN GP/ØRN FM	
<p>Replacive silica in silty fusulinid bryozoan bioclast packstone/siltstone. FOV: 5mm, ppl, swc</p>		
<p>Replacive silica in silty fusulinid bryozoan bioclast packstone/siltstone. FOV: 5mm, xpl, swc</p>		



Well:	7229/11-1	
Depth MD m:	4382.56	
Formation:	GIPSDALEN GP/ØRN FM	
Laminated anhydrite. FOV: 5mm, ppl	Laminated anhydrite. FOV: 5mm, xpl	
Acicular gypsum pseudomorphs. FOV: 1.25mm, ppl	Acicular gypsum pseudomorphs. FOV: 1.25mm, xpl	
Laminated gypsum partly recrystallised to felted anhydrite. FOV: 5mm, xpl		

Cambridge Carbonates Sample



Well:	7229/11-1		
Depth MD m:	4256.45		
Formation:	BJARMELAND GP/POLARREV FM		
<p>Silicified ramose bryozoan in argillaceous bioclastic packstone. FOV: 5mm, ppl</p>			<p>Silicified ramose bryozoan in argillaceous bioclastic packstone. FOV: 5mm, xpl</p>
<p>Silicified ramose bryozoan in argillaceous bioclastic packstone with terrigenous grains. FOV: 5mm, ppl</p>			

Well:	7229/11-1		
Depth MD m:	4239.74		
Formation:	BJARMELAND GP/POLARREV FM		
<p>Framework cemented by fibrous spar with trapped micropeloidal micrite. FOV: 5mm, ppl</p>			



Well:	7229/11-1	
Depth MD m:	4179.60	
Formation:	BJARMELAND GP/POLARREV FM	
<p>Cavity partly supported by fenestrate bryozoan cemented by early fibrous calcite cement. FOV: 5mm, ppl</p>		

Well:	7229/11-1	
Depth MD m:	4176.22	
Formation:	BJARMELAND GP/POLARREV FM	
<p>Bioclastic grainstone FOV: 5mm, ppl</p>		

Cambridge Carbonates Sample



Well:	7229/11-1		
Depth MD m:	4089.72		
Formation:	BJARMELAND GP/POLARREV FM		
		<p>Early fibrous calcite cement. FOV: 5mm, ppl</p>	<p>Early fibrous calcite cement with syntaxial nucleation of later calcite cement. FOV: 5mm, xpl with gypsum plate</p>
		<p>Detail of early fibrous calcite cement comprising crystals of inclusion-rich and inclusion-poor calcite. FOV: 1.25mm, ppl</p>	<p>Detail of early fibrous calcite cement comprising crystals of inclusion-rich and inclusion-poor calcite. FOV: 1.25mm, xpl</p>
		<p>Late calcite spar overlies radial fibrous cement. FOV: 5mm, ppl</p>	<p>Late calcite spar overlies radial fibrous cement. FOV: 5mm, xpl with gypsum plate</p>



Well:	7229/11-1	
Depth MD m:	3909.00	
Formation:	TEMPELFJORDEN GP/RØYE FM	
Pyritised allochems in glauconitic siltstone. FOV: 5mm, ppl, swc		

Cambridge Carbonates Sample