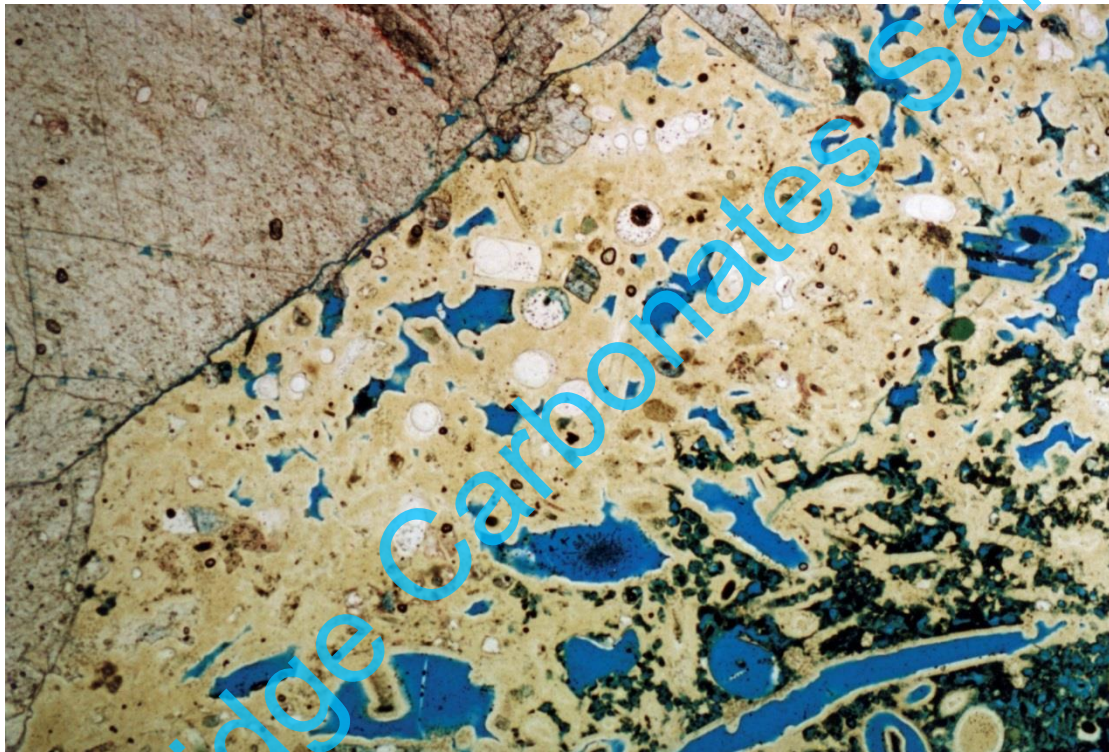


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**Microfacies Atlas of Barents Shelf Wells: 7128/4-1**

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## 1. INTRODUCTION

### 1.1. Outline

The three Microfacies Atlases contain a total of some 700 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	None
Poor	Poor
Moderate	Moderate
Good	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).

### 1.1. 'Basement'

The lowermost core in 7128/4-1 has been considered as pre-Devonian basement, however, the following features suggest that this core has not undergone the same degree of metamorphism as seen in the 7128/6-1 basement core.

- Sandstone intervals show a similar level of diagenetic alteration and compaction as those seen in core from the Billefjorden Group in 7128/4-1 and 7128/6-1.
- There is no indication of increased crystallinity of clays.
- Intergranular pores are preserved in sandstone layers.

- There is no development of cleavage.

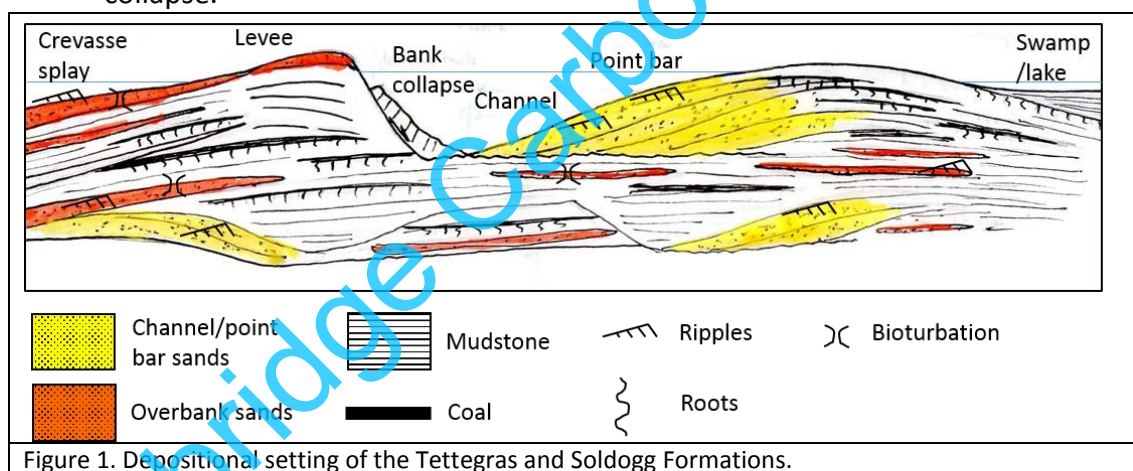
This core is therefore interpreted to be part of the Soldogg Formation. The high angle of dip and the presence of thrust-like discontinuities throughout the core are interpreted as soft sediment deformation caused by collapse of a channel bank rather than tectonic deformation.

## 1.2. Billefjorden Group: Tettegras and Soldogg Formations

**Age:** Viséan

**Depositional system:** Both the Tettegras and Soldogg Formations are terrestrial coal-bearing fluvial systems. Depositional settings include:

- Medium- to coarse grained sands, sometimes with rip-up clasts, represent fluvial channel or point bar sands.
- Laminated fine to medium sands with wave ripples and escape burrows may represent crevasse splay sands. These sometimes contain roots and may be overlain by organic-rich mudstone or coals.
- Mudstones represent inter-channel swamp or lake deposits.
- Slumped and laminated fine sandstone and siltstone are interpreted as channel bank collapse.



The Soldogg Formation has a cleaner gamma signature than the Tettegras Formation suggesting that it contains a higher proportion of clean sandstone beds. This suggests that major fluvial channels were more prevalent in the Soldogg Formation, whereas the Tettegras Formation was dominated by overbank and flood plain sediments with fewer, smaller fluvial channels.



2. MICROFACIES ATLAS

Well:	7128/4-1	
Depth MD m:	2527.60	
Formation:	BILLEFJORDEN GP/SOLDOGG FM	
	Intergranular pores	
<p>Laminated fine sandstone and siltstone. Graded overbank and overturned deposits in core. FOV: 5mm, ppl</p>		

Well:	7128/4-1	
Depth MD m:	2526.70	
Formation:	BILLEFJORDEN GP/SOLDOGG FM	
	Intergranular pores	
<p>Laminated siltstone/sandstone. FOV: 5mm, ppl</p>		
<p>Shale clast in medium grained sandstone. FOV: 5mm, ppl</p>		



Well:	7128/4-1	
Depth MD m:	2368.50	
Formation:	BILLEFJORDEN GP/SOLDOGG FM	
	Intergranular and feldspar mouldic pores	
Kaolinite infilling feldspar mouldic pores. Channel sandstone. FOV: 1.25mm, xpl	Kaolinite infilling feldspar mouldic pores. FOV: 1.25mm, xpl plus gypsum plate	
Kaolinite infilling feldspar mouldic pores. FOV: 1.25mm, ppl	Kaolinite infilling feldspar mouldic pores. FOV: 1.25mm, xpl plus gypsum plate	

Well:	7128/4-1	
Depth MD m:	2365.50	
Formation:	BILLEFJORDEN GP/SOLDOGG FM	
	Intergranular and feldspar mouldic pores	
Clear intergranular and mouldic porosity infilled with kaolinite. Crevasse splay sandstone. FOV: 1.25mm, ppl		



Well:	7128/4-1	
Depth MD m:	1865.00	
Formation:	GIPSDALEN GP/ØRN FM	
<p>Coated grains and terrigenous grains. FOV: 5mm, ppl</p>		

Well:	7128/4-1	
Depth MD m:	1864.00	
Formation:	GIPSDALEN GP/ØRN FM	
<p>Internal pore in fusulinid</p>		
<p>Fusulinid siltstone/very fine grained packstone. FOV: 5mm, ppl</p>		

Cambridge Carbonates Sample



Well:	7128/4-1		
Depth MD m:	1847.00		
Formation:	GIPSDALEN GP/ØRN FM		
	Internal pores in coral		
	Coral cavities infilled by saddle dolomite, anhydrite and mega quartz. FOV: 2.5mm, xpl		Coral lined by prismatic calcite crystals. FOV: 5mm, ppl
	<i>Ortonella</i> encrusting rugose coral. FOV: 1.25mm, ppl		

Well:	7128/4-1		
Depth MD m:	1845.00		
Formation:	GIPSDALEN GP/ØRN FM		
	Microporosity		
	Dolomitised bioclast packstone. FOV: 5mm, ppl		Partly dolomitised grainstone/packstone. FOV: 5mm, ppl



Well:	7128/4-1	
Depth MD m:	1820.75	
Formation:	GIPSDALEN GP/ØRN FM	
	Intergranular pores	
Partly cemented crinoid grainstone. FOV: 5mm, ppl		
Micritised and encrusted brachiopod fragment in bioclast grainstone. FOV: 5mm, ppl		

Well:	7128/4-1	
Depth MD m:	1820.00	
Formation:	BJARMELAND GP/ISBJØRN FM	
	Microporosity	
Silicified packstone. FOV: 5mm, ppl		



Well:	7128/4-1		
Depth MD m:	1576.21		
Formation:	TEMPELFJORDEN GP/RØYE FM		
	Spicule moulds		
Spiculite mould filled by ferroan calcite. FOV: 5mm, ppl		Spiculite mould filled by ferroan calcite. FOV: 1.25mm, xpl plus gypsum plate	
Spiculite packstone with green clay matrix. FOV: 1.25mm, xpl			

Well:	7128/4-1		
Depth MD m:	1576.12		
Formation:	TEMPELFJORDEN GP/RØYE FM		
	Intergranular, spicule moulds and internal spicule pores		
Spicule moulds infilled with silica cement; green clay matrix in intergranular pores. FOV: 5mm ppl			



Well:	7128/4-1		
Depth MD m:	1574.45		
Formation:	TEMPELFJORDEN GP/RØYE FM		
	Intergranular, spicule moulds and internal spicule pores		
	Matrix in poorly developed spiculite moulds. FOV: 1.25mm, ppl		
	Hydrocarbon in spiculite mould. FOV: 1.25mm, ppl		
	Matrix in poorly developed spiculite mould. FOV: 1.25mm, ppl		
	Glaucinite peloids. FOV: 5mm, ppl		

Cambridge Carbonates Sample