Facies	Occurrence	Sedimentology	Interpretation
F1: Mudstone			
F1A: Massive to laminated clayey mudstone (Fig. 4F)	LB Fm, cm-to m-scale successions. Rare transitional occurrences with F2 occur in Bb Fm.	F1A consists of dark grey to black, massive-appearing or faintly laminated clayey mudstone. Generally, the deposits appear unbioturbated, but thin intensively bioturbated intervals exist (BI 0-6). The deposits are bioturbated with indistinct, sub-mm to mm-scale burrow mottling, rare diminutive *Zoophycos* and *Chondrites*. F1A is rich in fossils and is associated with stratigraphic condensation.	Sub-storm wave base basinal mudstone in dysoxic-anoxic half-graben.
F1B: Color-banded mudstone (Fig. 4E)	LB Fm, cm-to m-scale intervals	F1B consists of unbioturbated interlaminated clayey mud, pyrite-rich mud, and ankerite-rich mud. The sub-facies is fossil-rich bearing ammonites, belemnites and bivalves. Small-scale soft-sedimentary deformation structures such as slumps and loading structures are common. F1B is associated with stratigraphic condensation.	Sub-storm wave base basinal mudstone in anoxic-euxinic half graben.
F1C: Ankerite/dolomite cemented mudstone (Fig. 4A)	Bb Fm, forms mainly dm-scale occurrences.	F1C consist of ankerite- and dolomite-cemented mudstone, which character-ristically shows inter-laminated mudstone and bioclasts (Olivarius et al., 2023). The bioclasts are replaced by pyrite and ankerite. Although poorly preserved, their typical circular or vase-shaped cross-sections are suggestive of calcispheres and calpionellids, respectively. Locally, F1C shows soft sedimentary deformation. Authigenic minerals include common pyrite and phosphate minerals.	Sediment-starved episodes commonly associated with transgressions. Some occurrences potentially redeposited.
F2: Heteroliths (vf. sand-silt-clay)			
F2A: Parallel-laminated clay and silt (Fig. 3A)	Bb Fm, m-scale occurrences	F2A consists of fine-grained heterolithic interlamination, typically parallel-laminated silt and clay. Lamina pinch-outs and erosional scours are rare or absent. Locally present are thin (~1 mm-thick), tabular-shaped, normally graded silt-clay couplets. The deposits appear unbioturbated, or bear diminutive *Chondrites,* ?*Zoophycos, Phycosiphon* and indistinct burrow mottling (BI 0-5).	Dysoxic, generally low-energy environment close to maximum storm wave base. Transitional occurrences with F1A approach anoxic conditions.
F2B: Interlaminated - lenticularly laminated vf. sand, silt and clay (Figs. 3B-E, 4C)	Bb Fm, cm-scale intervals, typically in upper part of UC successions	F2B is a broad sub-facies type normally consisting of interlaminated clay and silt and lensoidal siltstone. It is normally unbioturbated, but may contain locally *Nereites* and *Chondrites.* Lamina truncations, low-relief erosional scours, lamina pinch-outs occur frequently. Moreover, down-lapping to top-lapping lamina contacts occur locally forming low-relief cross lamination (Fig. 3). Two types of erosionally-based normally graded lamina sets and beds are present: **Type 1** comprises a few mm-thick silt-clay couplets that show locally tripartite microstructure: a basal micro-scoured contact below mm-scale coarse siltstone or very fine grained sandstone lamina (unit A). The basal unit A is abruptly overlain by mm-thick parallel laminated clay and silt (unit B), which further grade into a (unit C) structureless clayey mud-drape. **Type 2** shows tabular, sharp-based silt-clay lamina/beds. These beds are clay-dominated and are composed of a basal, ~0.5-2 mm-thick lenticular silt layer, which grades upwards into a massive mm- to cm-scale clay bed. Locally, the structureless-appearing beds contain outsized sand grains and appear ungraded. Their top may show soft-sedimentary deformation such as loading structures. Clay-dominated normally-graded laminae sets up few cm thick are common in BH-1 during Phase 2.	Gravity flow and wave-modified gravity flow (Type 1; Mac-quaker et al., 2010) processes in dysoxic offshore setting. The cross-laminated occur-rences may represent mud-floccule ripples (cf. Schieber et al., 2007). Type 2 beds are interpreted as gravity flow deposits associ-ated with increasing fault activity. The structureless mud-litho-some may represent fluid muds and low-strength debrites.
F3: Sandstone			
F3: Ripple-cross laminated silt and sand (Figs. 3F and G)	Bb Fm, cm-scale intervals, top of UC successions	F3 consists of ripple cross-laminated silt and very fine-grained sand. The ripples have asymmetric to symmetric profile, shown irregular lower bounding surfaces and common foreset offshoots. Ripples can be confined into a few cm-thick scour-and-fill structures (Fig. 3).	Wave-ripples, locally associated with storm-generated gutter casts
F4: Slump unit (Fig. 4B and D)	Bb Fm (mainly Lower Volgian), LB Fm.	Characterized by slump-folding and/or contorted bedding.	Associated with slope-instability

S1. Sedimentary facies covering the black mudstone interval. LB–Lindemans Bugt Fm; Bb–Bernbjerg Fm; vf– very fine.