

EXPANDED LITHOFACIES DESCRIPTIONS AND INTERPRETATIONS WITH LOCATIONS WHERE WELL EXPOSED

Facies association	Lithofacies	Locations	Description	Interpretation
Volcanogenic (James Ross Island Volcanic Group, including Upper Member of Hobbs Glacier Formation)	Hyaloclastite breccia	Hamilton Point Rabot Point Förster Cliffs/Fjordo Belén	Matrix- to clast-supported basalt breccia with 50-80% clasts. Typically dominated by angular and subangular cobble clasts, but also with pebbles and boulders. Intraclasts of laminate, contorted mudstone and diamictite in places. Crude, inclined stratification; coarse-tail grading within thick beds. Orange weathered tuffaceous matrix or (rarely) open-work gravel without matrix. Interbeds of discontinuous basalt flows. Loaded lower contacts	Avalanche and slump deposits of volcanic breccia forming volcanic delta foreset beds
	Basalt breccia	Pirrie Col	Pebble/cobble sized open framework breccia of angular basalt clasts	Extrusion and fracturing beneath ice
	Basalt pillow lava	Hamilton Point Rabot Point Förster Cliffs	Discontinuous lenses of basalt pillows interbedded with hyaloclastite breccia; pillows commonly disaggregated	Subaqueous/sub-ice extrusion
	Basalt caprock beds	Widespread throughout volcanic province	Represent topsets to lava-fed delta	Extrusive lava formed on delta-top as in subaerial conditions
	Basalt	Pirrie Col	A few cm-thick finely crystalline layer with chilled margins and contact-metamorphosed underlying diamictite	Extrusion following glacial sedimentation beneath ice
	Sandy breccia	Hamilton Point Rabot Point Fjordo Belén	Matrix-supported orange-weathering basalt breccia with 30-40% subangular/subrounded clasts arranged in diffuse clusters. Weakly stratified, locally showing coarse-tail normal grading. Loaded lower contacts.	Tuff and hyaloclastite, mixed by loading or slumping
	Coarse sandstone	Hamilton Point Rabot Point Förster Cliffs/Fjordo Belén	Stratified to massive buff/olive brown sandstone (including gritstone) of tuffaceous composition. Convolute bedding, graded bedding, wispy stratification and slump folds. Minor granule/pebble layers of basalt containing up to 70% clasts.	Ash deposited in subaqueous setting; coarse fraction deposited variably by sediment gravity flows or reworked by traction currents; fine fraction settled from suspension; subject to some additional reworking by slumping; minor ice-rafted component; some vesicular grains may be pyroclasts formed during explosive eruptions
	Fine/medium sandstone	Hamilton Point Rabot Point	Stratified buff sandstone of tuffaceous composition. Large ripples (50mm high; 0.2m amplitude, trough cross-lamination, intraclasts of fold hinges from slump folds in underlying laminated facies, convolute lamination.	
	Laminated sandstone, siltstone & claystone	Hamilton Point Rabot Point	Interlaminated tuffaceous gray claystone, siltstone and fine/medium sandstone (laminae 5-15 mm). Lithofacies varies from silt- to sand-dominated. Horizontally continuity in excess of several meters. Climbing-ripple cross-lamination, slump folds with décollement along laminae, starved ripples in sandstone, convolute lamination, high-angle normal microfaulting. Grains consist of glass fragments. Basalt granules disseminated in some horizons. Rare broken shell fragments.	
	Interlaminated gray siltstone and sandstone with disseminated clasts	Hamilton Point Rabot Point	Interlaminated coarse gray sandstone and siltstone. Minor normally graded beds. Dispersed vesicular glassy lapillae up to several mm in diameter.	
Interbedded siltstone & sandstone	Hamilton Point Rabot Point	Interbedded gray siltstone and buff fine/medium/coarse sandstone, with lenticular, disturbed beds exceeding 10 mm in thickness. Cross-lamination, slump folds, starved ripples.		

	Tuffaceous sandstone fining up to mudstone	Terrapin Hill	Airfall ash, resedimented as turbidite in a lake basin	
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Glacigenic (including Hobbs Glacier Formation; lower Member)	Sandy conglomerate	Förster Valley	Discrete beds of massive sandy conglomerate with sharp loaded lower contact and sharp upper contact. Clast content 60-80%, size ranging from pebble to cobble and occasional boulders, predominantly of local origin (basalt, hyaloclastite, Cretaceous sandstone) but with <1% exotic clasts. Clast shape predominantly subangular and subrounded. Fine-grained lithologies are striated. Normal coarse-tail grading present in some beds.	Subaqueous gravity-flow comprising debris previously deposited subglacially
	Muddy conglomerate	Förster Valley	Massive muddy conglomerate with poorly exposed upper and lower contacts. Clast content 50-70%, size ranging from pebble to boulder, predominantly of local origin (especially basalt and hyaloclastite) but with <1% exotic clasts derived from the Antarctic Peninsula. Clast shape predominantly subangular and subrounded. Fine-grained lithologies are commonly striated. Clast fabrics range from strong to weak.	Basal till (strong fabric) or slightly remobilized basal till (weak fabric).
	Diamictite, weakly stratified	Hamilton Point Rabot Point Whisky Bay	Clast-rich gray sandy/silty diamictite in beds up to 1.5 m thick. Friable. Typically 20-30% cobble-sized subangular and subrounded clasts of both local and distal (Antarctic Peninsula) provenance dominant. Wispy stratification; diffuse gravel stringers and clusters; coarse-tail grading in some beds. Some clasts are faceted or striated; others are coated with bryozoa. At Rabot Point brown diamictite has vertical calcite veins along fractures, and intraclasts of buff sandstone	Proximal glaciomarine; slumped or debris flow
	Diamictite, massive	Hamilton Point Rabot Point	Clast-rich to clast-poor gray, buff, olive brown sandy/silty diamictite in beds up to 1 m thick; also occur as thin (<0.1m) lenses within mudstone and laminated beds. Friable. Typically 20-40% gravel content, but locally < 5%. Some clasts are faceted or striated; some of basalt have exfoliating weathering rims. Cobble-sized subangular and subrounded clasts of both local and distal (Antarctic Peninsula) provenance dominant. Variable clast distribution. At Rabot Point, 'rafts' of sandstone from underlying bed and numerous intraclasts of sandstone.	Weak fabric: subaqueous glacigenic debris flow. Strong fabric: contact metamorphosed basal till
	Diamicton, massive	Pirrie Col	Unconsolidated clast-rich gray sandy diamicton	Basal till
	Mudstone	Hamilton Point Rabot Point	Massive greenish gray mudstone with concretions up to 0.35 x 0.15 m. Beds are lens-shaped, extending to 10 m horizontally and 2m in thickness. Base is loaded and there are rare lonestones. Calcite veining in places.	Distal glaciomarine
Cretaceous clastic sediments	Mud/mudstone	Hamilton Point	Massive soft gray mud or friable mudstone; unconformably below ...	Marine
	Siltstone		Massive siltstone with weak bedding defined by white calcite veins; brecciated contact; unconformably below.....	
	Sandstone	Whisky Bay Terrapin Hill to Fjordo Belen	Well sorted medium sandstone; up to 10° angular unconformity with overlying diamictite. Concretions up to 5 m in diameter in Terrapin Hill area, some of which have striated and beveled tops.	

Other JRIVG sedimentary facies; not logged	Silty conglomerate	N. Lachman Crags	Weakly to well stratified conglomerate with subrounded to well rounded clasts. Matrix-supported with clasts to boulder-size. Rare exotic clasts. Striated pavement in vicinity but relationship obscured.	Glaciofluvial
	Sandy conglomerate	Stoneley Point Fjordo Belén	Weakly stratified clast-supported conglomerate with 10% matrix. Clasts of local (volcanic) provenance are mainly pebbles with rare cobbles. At Fjordo Belén clasts are striated and include exotic lithologies	Subaqueous debris flowage of glacial debris
	Well stratified diamictite	Kerick Col	Millimeter- and centimeter-thick beds of buff-colored muddy and sandy diamictite. Clasts mainly of granules and subrounded and subangular pebbles and a few cobbles. Laminae beneath dispersed clasts commonly loaded. clast-rich diamictite beds show an erosional or loaded base.	Iceberg-rafted sediment with dropstones and subaqueous debris flowage