



ERA	PERIOD/SUB-PERIOD	SERIES/ STAGE	GROUP/ FORMATION/ MEMBER		LITHOLOGY	THICKNESS (m)	VELOCITY (km/s ⁻¹)	
QUATERNARY	PLEISTOCENE AND HOLOCENE		Q		Undivided glacial and post-glacial sediments; raised beaches, marine silt, till and peat	0-110	?	
TERTIARY	NEOGENE	PLIOCENE	BEAUFORT FORMATION		Stratified gravel; marine mud; ?diamictite	0-30		
	UPPER CRETACEOUS AND PALEOGENE	ANGULAR UNCONFORMITY						
		PALEOCENE	EUREKA SOUND FORMATION	STRAND BAY FORMATION	Dark grey to dark brown shale; siltstone; prodeltaic	50+		
		MAASTRICHTIAN AND PALEOCENE		EXPEDITION FORMATION	Quartzose and carbonaceous sandstone; siltstone; coalified logs and wood; deltaic	<230	2.1-2.2	
MESOZOIC	UPPER CRETACEOUS	CENOMANIAN -MAASTRICHTIAN	KANGUK FORMATION		Grey-dark greenish-grey shale; siliceous and bentonitic; offshore marine	<370		
	LOWER AND UPPER CRETACEOUS	ALBIAN AND CENOMANIAN	HASSEL FORMATION		Sandstone; quartzose, pebbly carbonaceous; siltstone; silty shale; marine	80-220	2.2-2.6	
	LOWER CRETACEOUS	APTIAN AND ALBIAN	CHRISTOPHER FORMATION	MacDougall Point Member	Dark grey-dark greenish grey shale; siltstone; concretions	360-500	1.9-2.7	
				Invincible Point Member	Intercalated shale, siltstone; sandstone increasing to the top	300-450	2.5-3.4	
		BARREMIAN AND APTIAN	ISACHSEN FORMATION		Quartz sandstone; pebble conglomerate; siltstone; coal; minor shale (3 members on Sabine Peninsula)	20-200	2.5-3.4	
	UPPER JURASSIC AND LOWER CRETACEOUS	VOLGIAN THROUGH VALANGINIAN	DEER BAY FORMATION		Grey to greenish-grey siltstone; shale; sandstone; fossiliferous; arranged in coarsening-upward rhythms; offshore marine	0-294		
			UPPER JURASSIC	VOLGIAN	AWINGAK FORMATION	Quartzose sandstone; siltstone; fossiliferous; minor conglomerate; marginal marine	50-241	2.8-3.6
				OXFORDIAN AND KIMMERIDGIAN	RINGNES FORMATION	Dark grey to black shale; siltstone; minor fine-grained sandstone; common large concretions	5-100	
	MIDDLE JURASSIC	BATHONIAN AND CALLOVIAN	WILKIE POINT GROUP	HICCLES COVE FORMATION	Quartzose sandstone; calcareous sandstone; siltstone; phosphatic nodules; marine	0-110	?	
				BAJOCIAN	McCONNELL ISLAND FORMATION	Brown to grey shale; siltstone; ferruginous sandstone in lower part	0-30	?
	LOWER AND MIDDLE JURASSIC	PLIENSCHACHIAN -AALENIAN	WILKIE POINT GROUP	SANDY POINT and JAMESON BAY FORMATIONS (undivided)	Light grey, greenish-grey shale; siltstone; quartz sandstone (upper part); glauconitic; fossiliferous	50-300	2.7-3.3	
	UPPER TRIASSIC AND LOWER JURASSIC	UNCONFORMITY						
		NORIAN THROUGH SINEMURIAN		*HEIBERG GROUP (undivided)		Grey green shale; siltstone; sandstone; phosphatic concretions; marine; basal conglomerate	0-78	
	MIDDLE AND UPPER TRIASSIC	ANISIAN THROUGH NORIAN	*SCHEI POINT GROUP		Calcareous, fossiliferous sandstone; limestone; minor shale	0-750	3.6-4.4	
	LOWER TRIASSIC	GRIESBACHIAN THROUGH SPATHIAN	BJORNE FORMATION		Variegated coarse sandstone; conglomerate; minor shale; alluvial and deltaic	50-1345	2.4-3.8	
			*BLIND FIORD FORMATION		Grey-green siltstone; shale; marine	0-230	4.0-4.6	
	DEVONIAN CLASTIC WEDGE	UPPER PERMIAN	WORDIAN	TROLD FIORD FORMATION		Glauconitic and peloidal sandstone; spiculitic chert; minor conglomerate	0-230	3.4
				DEGERBÖLS FORMATION		Fossiliferous limestone; unrestricted shallow marine	0-720	4.1-4.8
		LOWER AND UPPER PERMIAN	ROADIAN THROUGH ?POST-WORDIAN	*VAN HAUEN FORMATION		Dark grey to black chert; shale; siltstone; basinal; periodically starved	<558-1085+	4.4-4.6 3.2-3.4 3.4-3.8
LOWER PERMIAN		ROADIAN	ASSISTANCE FORMATION		Grey, grey-green sandstone; variably glauconitic; fossiliferous ironstone	15-54	3.2	
			SABINE BAY FORMATION		Quartzose sandstone; pebbly, carbonaceous; chert pebble	19-120		
		UNCONFORMITY						
		ARTINSKIAN	GREAT BEAR CAPE and *RAINES FORMATIONS	Fossiliferous limestone; variably pebbly, arenaceous; calcareous sandstone		10-195	4.8-5.0	
				*TRAPPERS COVE FORMATION		Chert; mudrocks		?
MIDDLE CARBONIFEROUS THROUGH LOWER PERMIAN		BASHKIRIAN THROUGH SAKMARIAN	*HARE FIORD FORMATION		Siltstone; dark limestone, variably fossiliferous and argillaceous; basinal	730-1850+	4.4-5.0	
			CANYON FIORD FORMATION		Redbed sandstone; siltstone conglomerate; breccia; alluvial; shallow marine	0-1800+	3.5-5.6	
LOWER AND MIDDLE CARBONIFEROUS		SERPUKHOVIAN AND BASHKIRIAN	INTRUSIVE CONTACT					
			OTTO FIORD FORMATION (in diapirs)		Anhydrite; gypsum; limestone; dolostone; probable salt in subsurface; intrudes Paleocene and older in diapirs	?	?	
?LOWER AND ?MIDDLE CARBONIFEROUS			*SEISMIC UNIT sCar		Divergent reflective unit filling sub-Hare Fiord grabens	0-?1200	?	
UPPER DEVONIAN	FAMENNIAN	PARRY ISLANDS FORMATION	Consett Head Member	Quartz sandstone; coal	65+	3.3-3.7		
				Grey shale; siderite nodules	65			
				Quartz sandstone	195-250			
			Cape Fortune Member	Grey-green fossiliferous sandstone; siltstone; mudrock; minor limestone	50-420			
			Burnett Point Member	Quartzose and cherty sandstone; chert pebble conglomerate	202-310			
	FRASNIAN	BEVERLEY INLET FORMATION	Quartzose, cherty sandstone, siltstone; shale; common plant fragments; minor coal	280-750+	3.3-3.8			

SVERDRUP BASIN SUCCESSION (SUCCESSION 3)

DEVONIAN CLASTIC WEDGE

* Subsurface only

ERA	PERIOD/SUB-PERIOD	SERIES/ STAGE	GROUP/ FORMATION/ MEMBER		LITHOLOGY	THICKNESS (m)	VELOCITY (km/s ⁻¹)					
PALEOZOIC	MIDDLE DEVONIAN	GIVETIAN	HECLA BAY FORMATION		Quartzose sandstone; minor siltstone; chert pebble conglomerate in upper part (locally)	<200-1300	3.7-4.3	DEVONIAN CLASTIC WEDGE				
			WEATHERALL FORMATION		Sandstone, siltstone, shale arranged in coarsening upward cycles	750-1500	3.6-4.3					
		EIFELIAN AND GIVETIAN	CAPE DE BRAY FORMATION		Mudrock, siltstone; minor sandstone; large clinoforms; basin fill	100-1300	3.5-3.9					
		EIFELIAN	BLACKLEY FORMATION		Argillaceous and lithic sandstone; with sole markings; siltstone	700+	EST. 3.7					
	UPPER SILURIAN TO ?MIDDLE DEVONIAN	LUDLOW TO ?EIFELIAN	IBBETT BAY FORMATION	Upper black shale member		Grey to black shale; siliceous pyritic, graptolitic; chert	562	EST. 5.0	DEEP WATER BASIN			
	UPPER SILURIAN	LUDLOW		Brown mudrock member		Siliceous and argillaceous siltstone; silty dolostone, orange-brown weathering	64					
	UPPER ORDOVICIAN TO ?UPPER SILURIAN	CARADOC TO ?LUDLOW		Lower black shale member		Graptolitic shale; radiolarian chert; grey-black dolostone	192					
	?MIDDLE AND UPPER ORDOVICIAN	?LLANDEILO AND CARADOC		Dolostone member		Dark brown dolostone, silty and argillaceous; shale	290					
	LOWER AND MIDDLE ORDOVICIAN	ARENIG THROUGH LLANDEILO		Chert member		Black radiolarian chert; graptolitic shale	87					
	LOWER ORDOVICIAN	TREMADOC AND ARENIG	CANROBERT FORMATION		Yellowish-grey dolostone; dolarenite; breccia; conglomerate; quartz sandstone	463+	EST. 5.5					
	LOWER AND MIDDLE DEVONIAN	EMSIAN AND EIFELIAN	BLUE FIORD FORMATION		Light brown limestone; stromatolitic, fossiliferous, petrolierous; dolostone	0-1250	5.0-6.2	SHELF AND SHELF RIM	FRANKLINIAN SUCCESSION (SUCCESSION 2)			
			LOCHKOVIAN TO ?EIFELIAN		KITSON FORMATION	Dark grey-black shale; dark limestone, argillaceous and feld; starved	89-269			4.0-4.1		
		UPPER SILURIAN	LUDLOW AND ?PRIDOLI	BARLOW INLET FORMATION		Limestone; dolostone; numerous shallowing-upward cycles (av. 3 m.)	177-474			4.9-5.8		
				DOURO FORMATION		Nodular limestone; dolostone; 18 shallowing-upward cycles	154-237					
			LUDLOW	CAPE STORM FORMATION		Yellowish brown micritic limestone; ledge-forming	116-136					
				UPPER ORDOVICIAN TO ?UPPER SILURIAN	ASHGILL TO ?LUDLOW	ALLEN BAY FORMATION					Grey, dark grey, brownish dolostone; fossiliferous, cryptalgal; limestone	98-438
		UPPER ORDOVICIAN TO MIDDLE DEVONIAN	ASHGILL TO EIFELIAN	CAPE PHILLIPS FORMATION		Black, dark grey graptolitic shale; dark argillaceous, cryptalgal; limestone dolostone; chert	420-980			4.0-5.5		
		UPPER ORDOVICIAN	ASHGILL	IRENE BAY FORMATION		Grey to grey-green limestone with argillaceous partings; locally condensed	?0-46			5.8-6.4 (south) 5.0-5.1 (north)		
			CARADOC AND ASHGILL	THUMB MOUNTAIN FORMATION		Grey, brownish grey dolostone; minor limestone, anhydrite	~200-396			5.5-7.3		
		LOWER, MIDDLE AND UPPER ORDOVICIAN	ARENIG TO CARADOC	BAY FIORD FORMATION	Upper part		Dolostone; anhydrite; nodular chert			290-680	6.3	INTRA-SHELF BASIN AND EMBAYMENT
	Lower part				Salt; anhydrite; argillaceous dolostone; mudrock	<120-880	5.3					
	LOWER ORDOVICIAN	TREMADOC AND ARENIG	ELEANOR RIVER FORMATION		Dolostone; argillaceous dolostone; minor nodular chert	Max. 732+	5.4-6.4					
	INTERPRETED ERA/ PERIOD/ SUB-PERIOD			*UNIT NAMES		INTERNAL REFLECTION CONFIGURATIONS	THICKNESS	VELOCITY				
	?PALEOZOIC	?LOWER ORDOVICIAN (?TREMADOC AND ARENIG)		SEISMIC UNIT s _O <i>(includes CANROBERT and ELEANOR RIVER FORMATIONS in upper part)</i>		SE, CENTRAL AREAS: tabular parallel; internally reflection-free or weakly reflective NW: Strong parallel internal reflections; tabular	240-400 ms (720-1200 m)	5.4-6.4	SOUTHERN SHELF			
?MIDDLE CAMBRIAN TO ?LOWER ORDOVICIAN		SEISMIC UNIT s _{Co}		SE: Weak parallel continuous internal reflections, basal sequence boundary NW: Strong continuous, mildly divergent internal reflections; basal flooding surface	185-390 ms (530-1110 m)							
?MIDDLE AND ?UPPER CAMBRIAN		SEISMIC UNIT s _{Co} ⁴		S.LIMIT: Strongly divergent; N: Growth faulting; disrupted reflections, weak grading to strong; basal onlap	?0-1100 ms (?0-3100 m)							
?LOWER AND ?MIDDLE CAMBRIAN		SEISMIC UNIT s _{Co} ³		E: Strongly reflective, mildly divergent, basal onlap W: Reflection-free, tabular	?0-350 ms (?0-1000 m) 350-480 ms (1000-1370 m)							
?LOWER CAMBRIAN		SEISMIC UNIT s _{Co} ²		SE: Reflection-free, tabular NW: Discontinuous reflections, variable reflectivity; local clinoforms	350-450 ms (1000-1300 m) 450-860 ms (1300-2450 m)							
		SEISMIC UNIT s _{Co} ^{1c}		SE: Strong, continuous reflections, mildly divergent; basal onlap (one example) NW: Reflection-free, gradational base	<100-300 ms (~250-850 m) 300-420 ms (850-1200 m)							
		SEISMIC UNIT s _{Co} ^{1b}		SE: Mildly reflective, parallel continuous or reflection-free; basal reflection Central: Moderately reflective, discontinuous NW: Strongly reflective, discontinuous	250-320 ms (710-910 m) 320-400 ms (910-1140 m) 320 ms (910 m)							
		SEISMIC UNIT s _{Co} ^{1a}		Incised valley fill, basal onlap; apparent toplap	?0-220 ms (?0-630m)							
ANGULAR UNCONFORMITY												
?PRECAMBRIAN		?UPPER PROTEROZOIC		UNIT s _{E2}	UPPER UNREFLECTIVE SUCCESSION	Weak and discontinuous, or reflection-free; toplap truncation	0-1400ms (0-4000 m)	EST. 5.7			?PRECAMBRIAN SEISMIC STRATIGRAPHY (SUCCESSION 1)	
	?UPPER MIDDLE AND ?LOWER UPPER PROTEROZOIC		UNIT s _{E2}	STRONGLY REFLECTIVE SUCCESSION	Strongly reflective; discontinuous; weakly reflective medial part; cross-cutting reflectors	1300-1400 ms (4100-4400 m)	EST. 6.2					
	?LOWER PROTEROZOIC AND/OR ?LOWER MIDDLE PROTEROZOIC		UNIT s _{E1}	LOWER UNREFLECTIVE SUCCESSION	Mostly reflection-free; several strong reflection segments	650-2600+ ms (2000-8100 m+)						
	?ARCHEAN OR ?LOWER PROTEROZOIC		UNIT s _{A&E}	SUB-?PROTEROZOIC ACOUSTIC BASEMENT	Short subhorizontal reflection segments (noise?), strong continuous upper reflector	1300 ms+ (4100 m+)						

DEVONIAN CLASTIC WEDGE

DEEP WATER BASIN

SHELF AND SHELF RIM

FRANKLINIAN SUCCESSION (SUCCESSION 2)

INTRA-SHELF BASIN AND EMBAYMENT

SOUTHERN SHELF

Table 2. Formations and seismic units, Melville Island

Geology by J.C. Harrison 1984, 1985 and 1987

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Table 2

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