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GSC Open File 3458 (sheet 5 of 9)

EAST COAST BASIN ATLAS SERIES
GRAND BANKS OF NEWFOUNDLAND
BIOSTRATIGRAPHY AND MATURATION DATA 5
PALYNOSTRATIGRAPHIC CROSS-SECTIONS 1

CONTRIBUTORS

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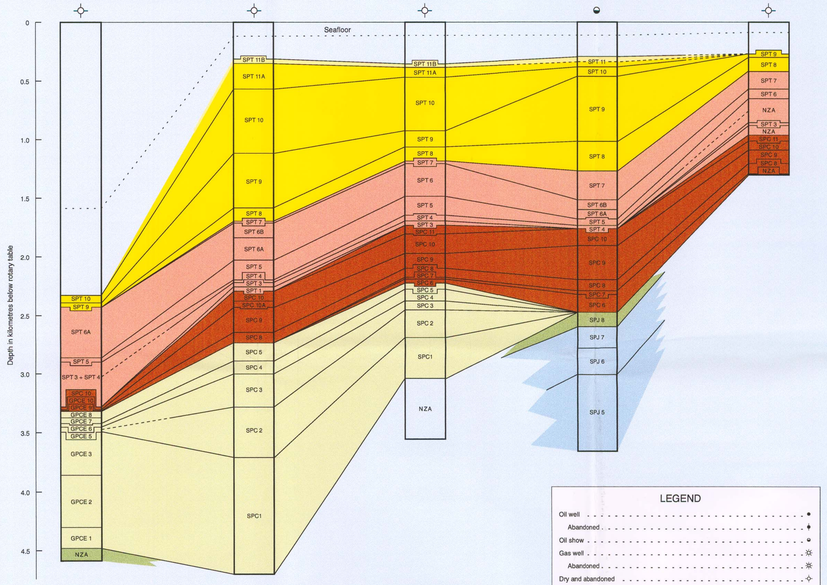

FIGURE 16. Palynostratigraphic cross-section A - A′, Narwhal F-99 to Twillick G-49

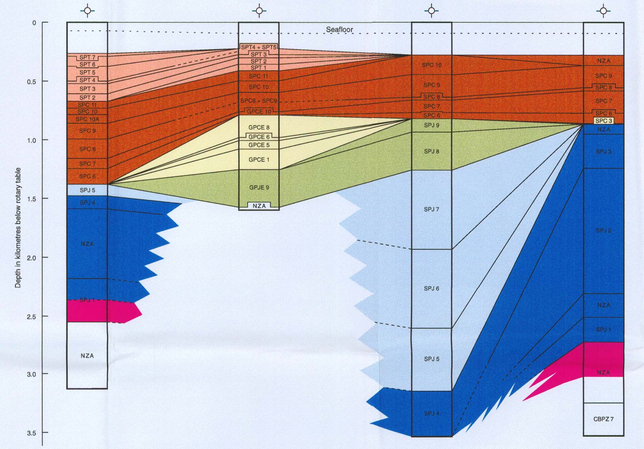

FIGURE 17. Palynostratigraphic cross-section B - B′, Razorbill F-54 to Sandpiper 2J-77

LEGEND

- Oil well
- Abandoned
- Oil show
- Gas well
- Abandoned
- Dry and abandoned
- Total depth ..... TD

For zone codes, see Figure 20

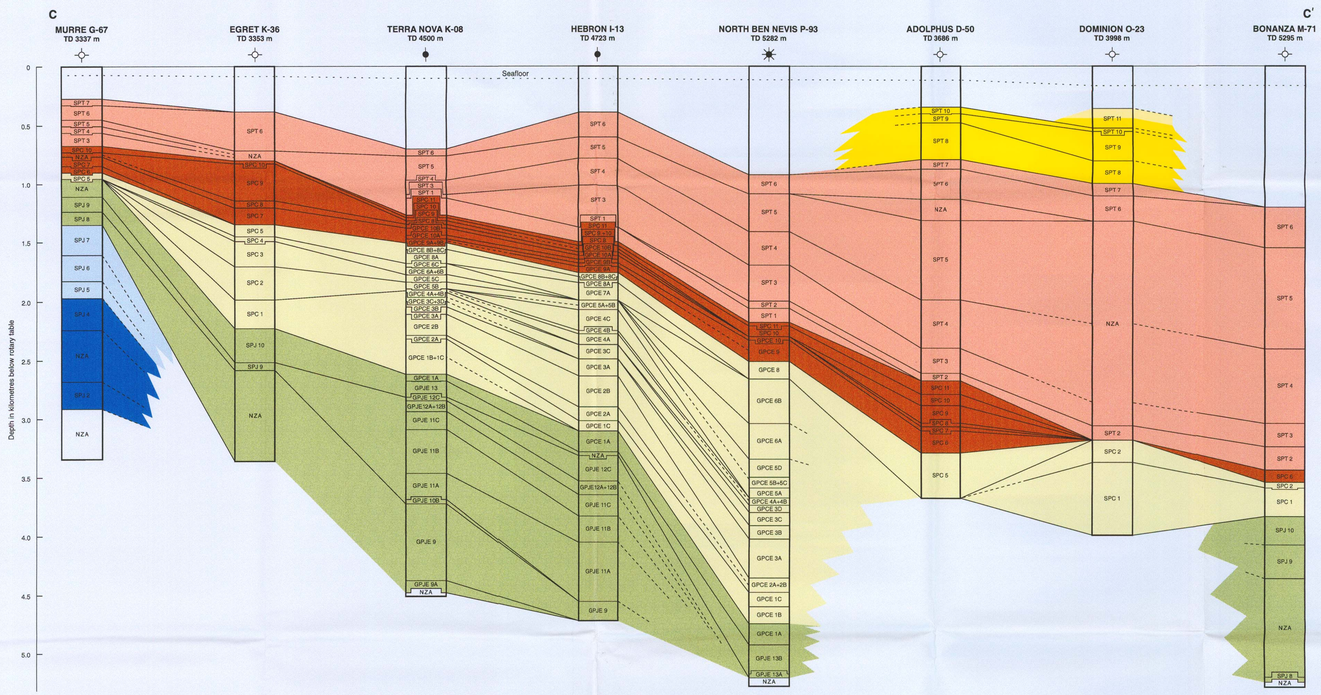

FIGURE 18. Palynostratigraphic cross-section C - C′, Murre G-67 to Bonanza M-71

GEOCHRONOLOGIC UNIT				G S C		DAVIES
				ZONE CODE	SUBZONE CODE	ZONE CODE
QUATERNARY		Pleistocene		SPT 11	SPT 11B	
TERTIARY	NEOGENE	Pliocene			SPT 11A	
		Miocene	L	SPT 10		
			M	SPT 9		
			E	SPT 8		
	PALEOGENE	Oligocene	L	SPT 7		
			E	SPT 6	SPT 6B	
					SPT 6A	
		Eocene	L	SPT 5		
			M	SPT 4		
			E	SPT 3		
		Paleocene	L	SPT 2		
			E	SPT 1		
CRETACEOUS	LATE	Maastrichtian		SPC		
		Campanian		SPC 10	SPT 10A	
		Santonian		SPC 9		
		Coniacian		SPC 8		
		Turonian		SPC 7		GPCE 10
		Cenomanian		SPC 6		GPCE 9
	EARLY	Albian		SPC 5	SPC 5B	GPCE 8
						GPCE 7
		Aptian		SPC 4	SPC 4A	GPCE 6
		Barremian		SPC 3		GPCE 5
		Hauterivian		SPC 2		
		Valanginian		SPC 1		GPCE 4
						GPCE 3
		Berriasian				GPCE 2
						GPCE 1
JURASSIC	LATE	Portlandian		SPJ 10		GPJE 13
		Kimmeridgian		SPJ 9		GPJE 12
						GPJE 11
		Oxfordian		SPJ 8		GPJE 10
					SPJ 8A	
	MIDDLE	Callovian		SPJ 7	SPJ 7B	
					SPJ 7A	
		Bathonian		SPJ 6		
		Bajocian				
		Aalenian		SPJ 5		
	EARLY	Toarcian		SPJ 4		
		Pliensbachian		SPJ 3		
		Sinemurian		SPJ 2		
		Hettangian		SPJ 1		
L. TRIASSIC		Rhaetian				
		Norian				
		Carnian				

FIGURE 20. Generalized stratigraphy, incorporating an explanation of the zone codes used in the cross-sections [CBPZ? = Toumaisian (Carboniferous); NZA = no zonal assignment]

PALYNOSTRATIGRAPHIC CROSS-SECTION A-A′ (Figure 16)

For the course of this section, see the location map (Figure 19). The section shows the stratigraphy, as delineated by palynological zonations, from the South Whale Sub-basin of the Scotian Basin (Narwhal F-99, Puffin B-90, Kittiwake P-11 and Heron H-73) onto the South Bank High (Twillick G-49). For an explanation of the zone codes, see Figure 20. The colours differentiate Middle and Upper Jurassic, Lower and Upper Cretaceous, Paleogene, Miocene, and Plio-Pleistocene rocks.

The oldest rocks in the section are the Middle Jurassic strata penetrated in Heron H-73. Only two wells penetrated Upper Jurassic strata. Heron H-73 and Narwhal F-99. Lower Cretaceous rocks were penetrated in the three western wells (Narwhal F-99, Puffin B-90 and Kittiwake P-11), but they were not reached in Twillick G-49 and appear to be missing in Heron H-73, where Upper Cretaceous strata directly overlie Jurassic strata. Rocks of Late Cretaceous age are present in all wells, although in Narwhal F-99 they are only thinly developed. Paleogene strata as a whole are uniformly thick in all five wells. A thick development of Neogene strata was recovered from the middle three wells, in contrast to the thin Neogene recorded in Narwhal F-99 and Twillick G-49. In Narwhal F-99 the thin Neogene almost certainly results from the lack of recovery, and hence analysis, in the top 800 m of the well; in Twillick G-49 the thin Neogene reflects limited deposition or non-deposition on the South Bank High.

PALYNOSTRATIGRAPHIC CROSS-SECTION B-B′ (Figure 17)

For the course of this section, see the location map (Figure 19). The section shows the stratigraphy, as delineated by palynological zonations, within the Whale Basin. It comprises three deep wells (Razorbill F-54, Eider M-75 and Sandpiper 2J-77) and one shallow well (Grand Falls H-09). For an explanation of the zone codes, see Figure 20. The colours differentiate Upper Triassic, Lower, Middle and Upper Jurassic, Lower and Upper Cretaceous, and Paleogene rocks.

Upper Triassic strata were reached in the two end wells of the section, Razorbill F-54 and Sandpiper 2J-77. Lower Jurassic strata dominate the middle depth of Sandpiper 2J-77, are encountered at the bottom of Eider M-75 and are also well represented in Razorbill F-54. Middle and Upper Jurassic strata dominate Eider M-75 and are encountered in the bottom of the short Grand Falls H-09 well. However, in Sandpiper 2J-77, Upper Cretaceous strata almost directly overlie Lower Jurassic strata with only a thin wedge of intervening Lower Cretaceous rocks; and in Razorbill F-54, Upper Jurassic strata directly overlie Aalenian-Bajocian rocks.

Apart from the thin development in Sandpiper 2J-77, Lower Cretaceous rocks occur only in Grand Falls H-09. Upper Cretaceous strata are moderately well developed in all four wells. Strata of Paleogene age were proven in the tops of all wells in the section except Eider M-75, which topped in Upper Cretaceous strata.

PALYNOSTRATIGRAPHIC CROSS-SECTION C-C′ (Figure 18)

For the course of this section, see the location map (Figure 19). The section shows the stratigraphy, as delineated by the palynological zonations, from the Jeanne d'Arc Basin (Murre G-67, Egret K-36, Terra Nova K-08, Hebron I-13, North Ben Nevis P-93 and Adolphus D-50) onto the North Ridge (Dominion O-23 and Bonanza M-71). For an explanation of the zone codes, see Figure 20. The colours differentiate Lower, Middle and Upper Jurassic, Lower and Upper Cretaceous, Paleogene, Miocene and Plio-Pleistocene rocks.

There is a general deepening of zonal boundaries and thickening of strata towards the north-east in the Jeanne d'Arc Basin, and a moderate reversal of this trend over the North Ridge. Lower and Middle Jurassic strata are penetrated only in the southwestern-most well, Murre G-67. In that well there is a moderate development of Upper Jurassic rocks; these thicken to the northeast and are well represented in Egret K-36, Terra Nova K-08 and Hebron I-13. They are also penetrated in the bottom of the next well to the northeast, North Ben Nevis P-93, which is the section's deepest well. Upper Jurassic rocks are not penetrated in Adolphus D-50 and Dominion O-23, but are present again in Bonanza M-71.

Cretaceous strata are well, and more or less completely, represented in the middle wells of the section: Egret K-36, Terra Nova K-08, Hebron I-13 and North Ben Nevis P-93. However, in Murre G-67, Albian-Campanian strata are thinly developed and rest directly on Jurassic strata; Adolphus D-50 bottomed in Albian strata; in Dominion O-23 Paleocene strata directly overlie Hauterivian strata; and in Bonanza M-71 Paleocene rocks directly overlie strata of Cenomanian age which, in their turn, directly overlie Berriasian-Hauterivian strata.

Paleogene rocks consistently thicken towards the northeast and dominate Adolphus D-50 and the two North Ridge wells. Neogene strata were proven only in Adolphus D-50 and Dominion O-23.

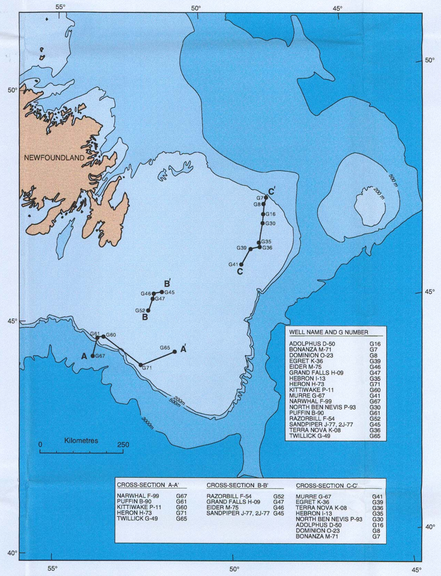

FIGURE 19. Well location map and index

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