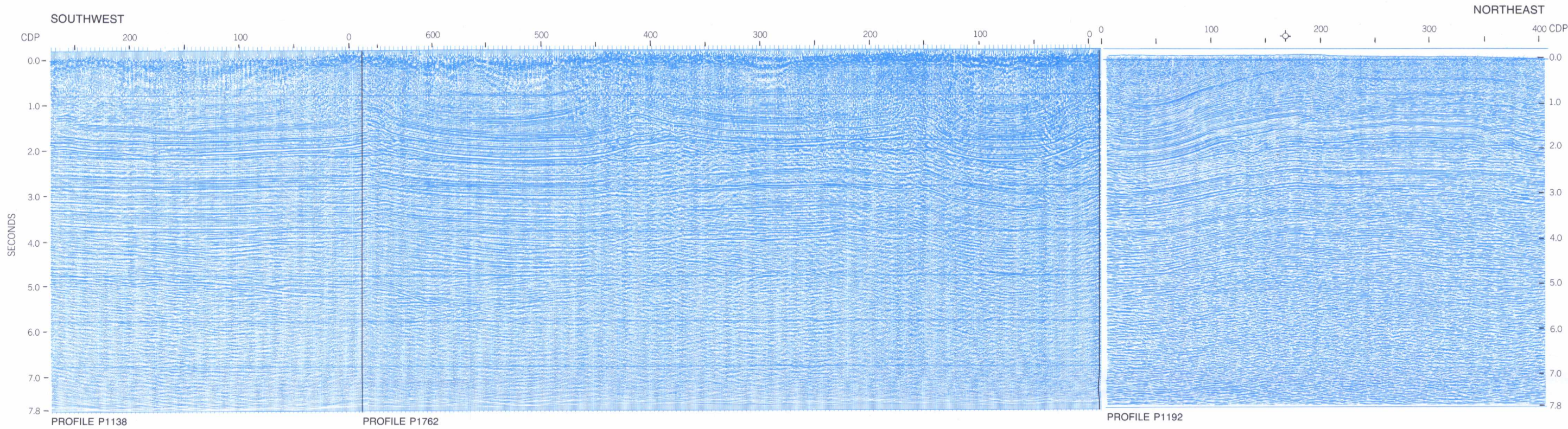




SEISMIC REFLECTION DATA



NOTES TO ACCOMPANY SECTION G
(Seismic profiles P1762, P1192 and half of P1138)

- Acquisition and processing
- Profiles P1138 and P1762 intersect where the two profiles are spliced.
 - Profiles P1762 and P1192 do not intersect. Splice is made where the two lines are closest. CDP 0 on P1192 is 6.0 km southeast and on strike from the north end of profile P1762. Offset of surveys has resulted in some mismatch of deep reflectors.
 - The steep southerly dip of reflectors below unit OeF1 and north of CDP 32 on P1762 is probably too great to be attributed to residual velocity pull-up. The pull-up, whether it is a structural feature or geophysical artifact, does not extend onto P1192.
 - Depression of reflections below the lower Bay Fiord (OeF1) and between CDP 116 and 140, profile P1192, is attributed to a tectonically thickened column of salt in this part of OeF1.

- Seismic stratigraphic features
- The contact between the Cape De Bray (Dca) and Weatherall (Dw) Formations is a markedly diachronous surface drawn above regionally extensive clinoform reflectors. This diachronous character is displayed below CDP 64, P1138, where a topset reflector above the Cape De Bray rolls into a clinoform. To the south the topset reflector marking the top of the Cape De Bray is stratigraphically higher.
 - The contact between unit sC1A and unit sPC is chosen where there is a dramatic increase in unit thickness, and parallel increase in regional dip of the underlying unconformity (CDP 452, P1762).
 - The contact between unit sPC and sC1 (CDP 224 to 452, P1762) could be either an angular unconformity or a flooding surface above toplapping clinoforms.

- Structural features
- Divergence and local thickening of the Cape De Bray Formation (Dca) north of CDP 500, profile P1762, is attributed to tectonic wedging of a thrust sheet into a medial Cape De Bray detachment level.
 - The contact between units sPC and sP2 below CDP 265 to 492, profile P1762, is alternatively interpreted as an angular unconformity that cuts out all three members of unit sP2.
 - A salt well in the lower Bay Fiord (OeF1) beneath CDP 220 to 245 on P1762 is apparently not associated with faults in the overlying strata.
 - Three south-vergent minor thrusts (two obvious) and associated minor folds are interpreted as existing in the medial Weatherall Formation (Dw) interval in the axial area of the Sabine Bay Anticline (CDP 148 to 210, P1192).
 - There are two listric extensional faults (below CDP 240 and 288, P1762) that appear to have been active during deposition of basal unit sC3. The base of unit sC2 is a local detachment surface for these faults.
 - The listric extensional fault beneath CDP 310, profile P1762, appears to have been active during deposition of the basal part of unit sC0.
 - The steep-dipping fault below CDP 375, profile P1762, displaces seismic units as high as the Bay Fiord Formation (OeF1). The fault was active after deposition of the Hecla Bay Formation (DhB) interval since a monoclinial flexure related to slip on the deep-seated fault affects all units above the Bay Fiord.
 - There are two, long, sinusoidal undulations of reflectors above sPC (the apices of which are centred on CDP 250, P1762, and CDP 175, P1192) that each have an amplitude of 450 ms and wavelength of 35 km. These are interpreted as folds that affect the entire Cambrian(?) to Devonian succession. The extent of this deformation is uncertain below the base of sC1.

- Depth conversion
- Dp1, Dd1: 3.6 km s⁻¹
 - DhB: 3.8 km s⁻¹
 - Dw: 4.0 km s⁻¹
 - Dca: 3.7 km s⁻¹ (south)-3.6 km s⁻¹ (north)
 - OSDCP: 5.0 km s⁻¹ (south)-4.4 km s⁻¹ (north)
 - OTM, OeF2: 6.4 km s⁻¹
 - OeF1: 5.3 km s⁻¹
 - sC1-OeF1: 5.7 km s⁻¹
 - below sC1: 6.2 km s⁻¹

Method of cross-section construction and restoration

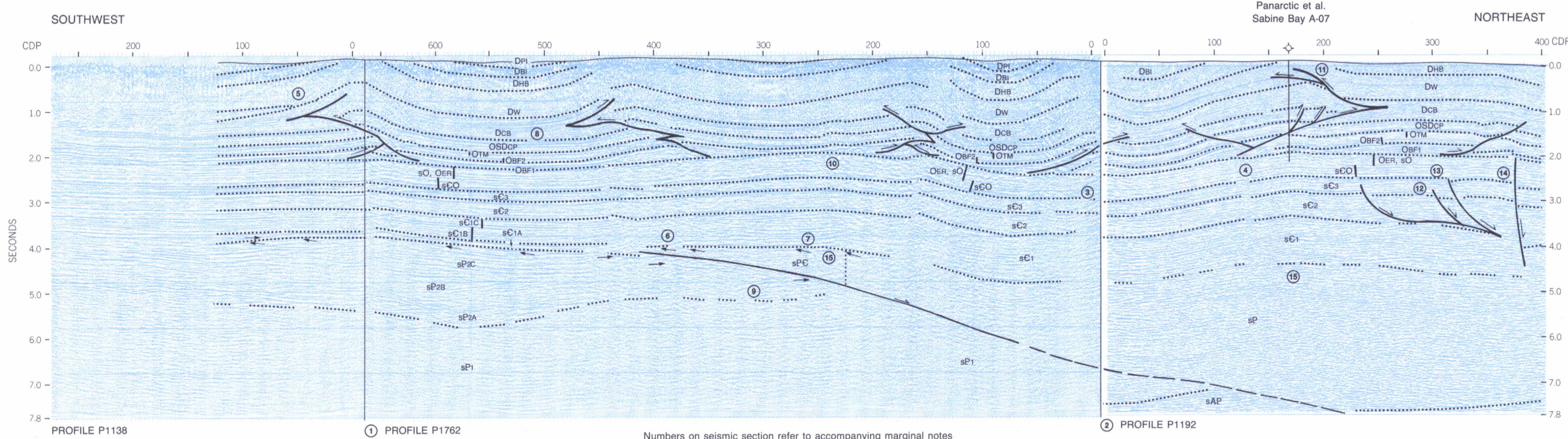
Bed length measurement and balancing of the contacts above OeF1, OeF2, OeF3, and OSDCP between pairs of adjacent pin lines.

Bed length measurement of the contacts above OeF1 and DhB.

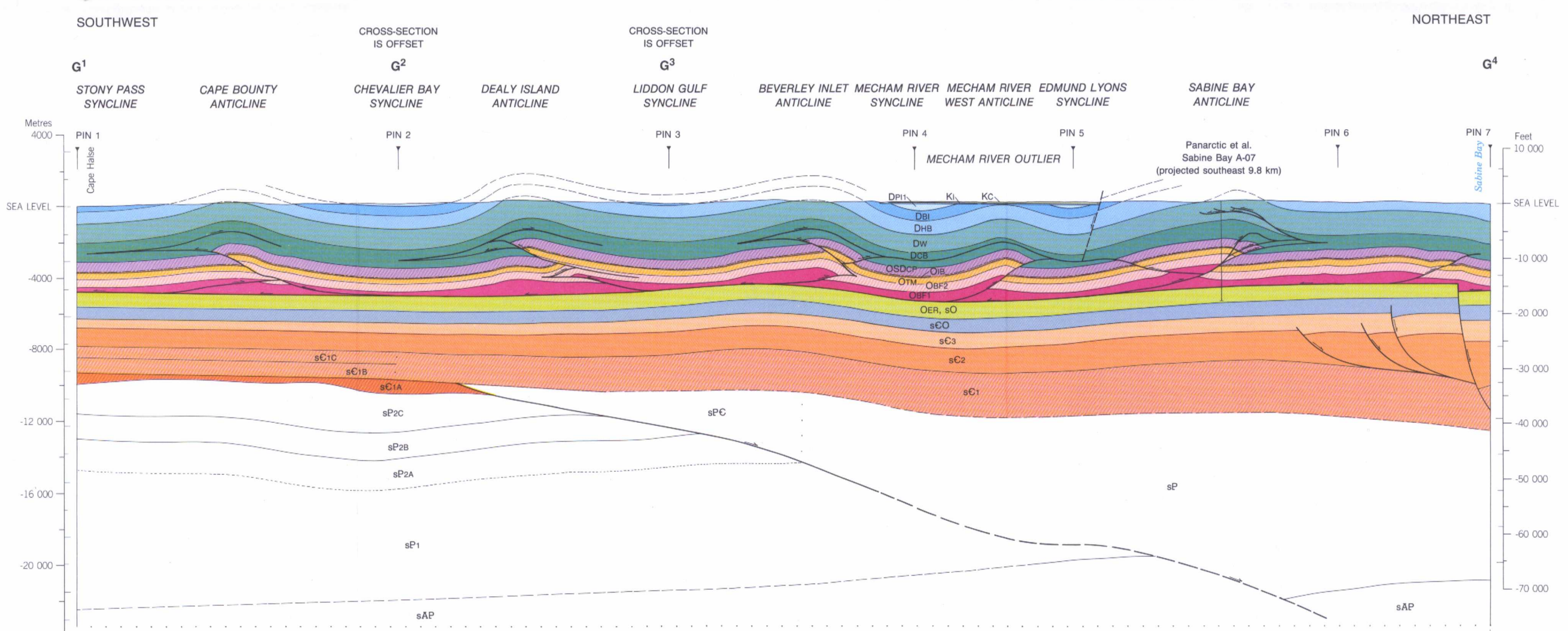
Area measurement and restoration of OeF1, Dca, Dw, DhB, and Dd1 between pairs of adjacent pin lines. This method assumes that horizontal shortening of units OeF1 and Dca-Dd1 is the same as that expressed by bed lengths of contacts above OeF1-OSDCP.

- Results
- Section length: 79.7 km
 - Bed length of OeF1 (this section): 88.0 km
 - Shortening of OeF1 (this section): 88.0 - 79.7 = 8.3 km (9.4%)
 - Estimated shortening in foreland*: 2.3 km
 - Total shortening of OeF1 from foreland: 8.3 + 2.3 = 10.6 km (6.2%)
 - Bed length of OeF2 (this section): 79.9 km
 - Shortening of OeF2 (this section): 79.9 - 79.7 = 0.2 km (0.2%)
 - Estimated shortening in foreland*: nil
 - Total shortening of OeF2 from foreland: 0.2 km
 - Deformed-state bed length of DhB: 83.2 km
 - Apparent shortening of DhB (this section): 83.2 - 79.7 = 3.5 km (4.2%)
 - Estimated apparent shortening in foreland*: 1.1 km
 - Total apparent shortening of DhB (from foreland): 3.5 + 1.1 = 4.6 km (2.8%)
 - Range of assumed tectonic thickening of Dw-Dd1 (approximate): 5-10%
- *Foreland shortening is carried over to this section along the axial trace of Stony Pass Syncline from pin line 9 on Section F.

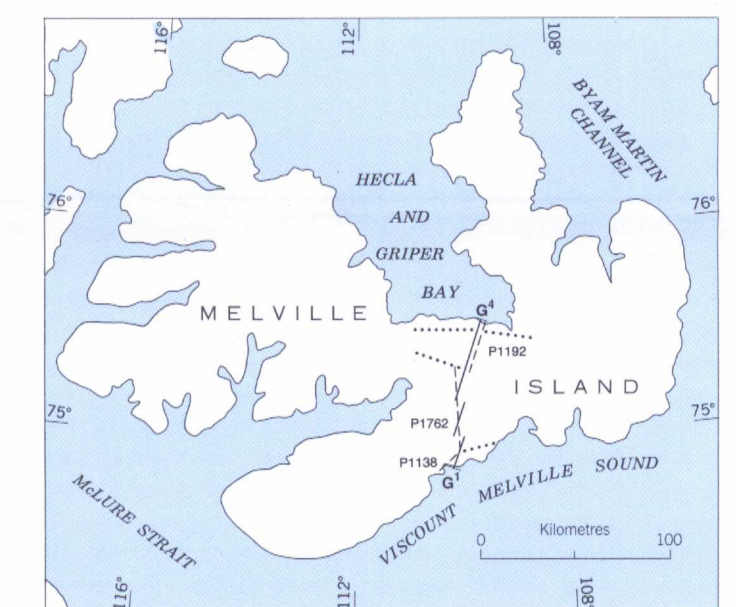
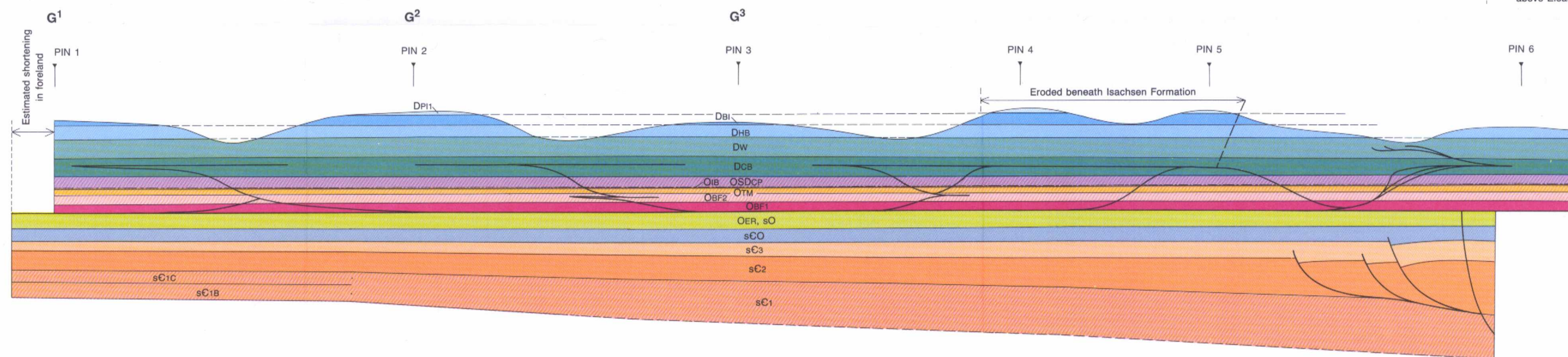
INTERPRETED SEISMIC DATA



DEFORMED-STATE CROSS-SECTION



RESTORED-STATE CROSS-SECTION



Location of structure sections and seismic profiles

- Line of structure section (with offset) a'-----a'
- Seismic reflection profile (displayed) - - - - -
- Seismic reflection profile (consulted only) - - - - -

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

Geological cartography by the Institute of Sedimentary and Petroleum Geology, Geological Survey of Canada

Any revisions or additional geological information known to the user would be welcomed by the Geological Survey of Canada

SECTION G
(MAP 1844A)
STONY PASS SYNCLINE (NEAR CAPE HALSE) TO
SABINE BAY (NEAR REID POINT), MELVILLE ISLAND

DISTRICT OF FRANKLIN
NORTHWEST TERRITORIES
Scale 1:250 000



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Section G
Sheet 9 of 12 (Map 1844A)
GSC Bulletin 472

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