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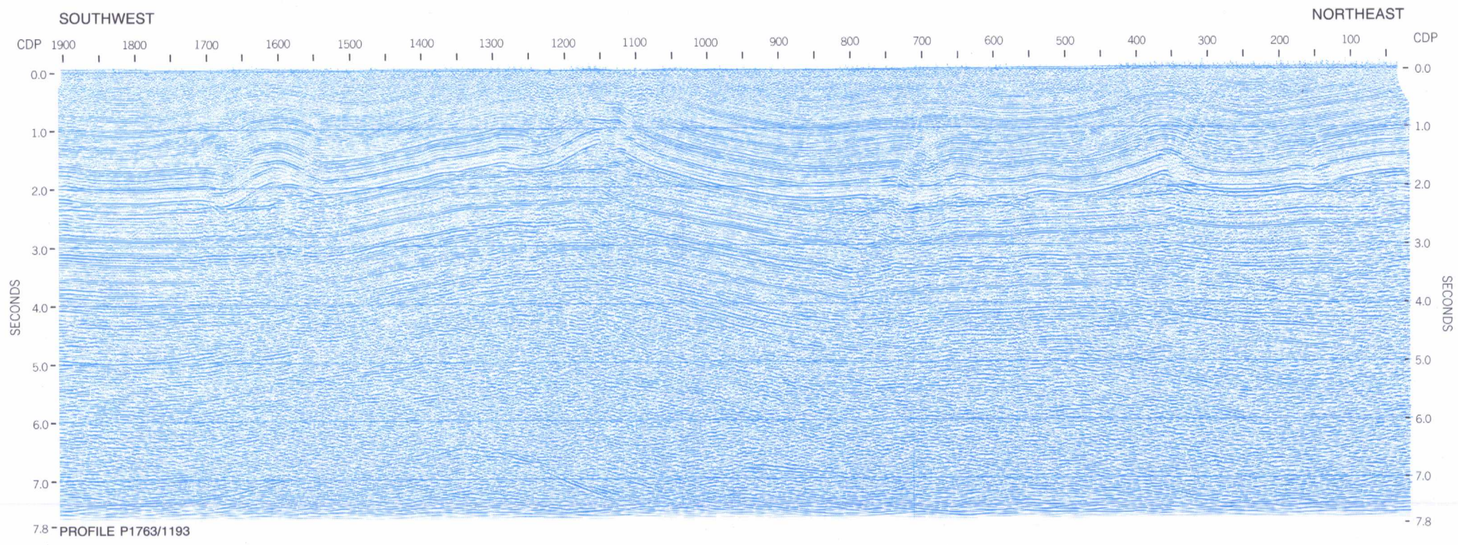
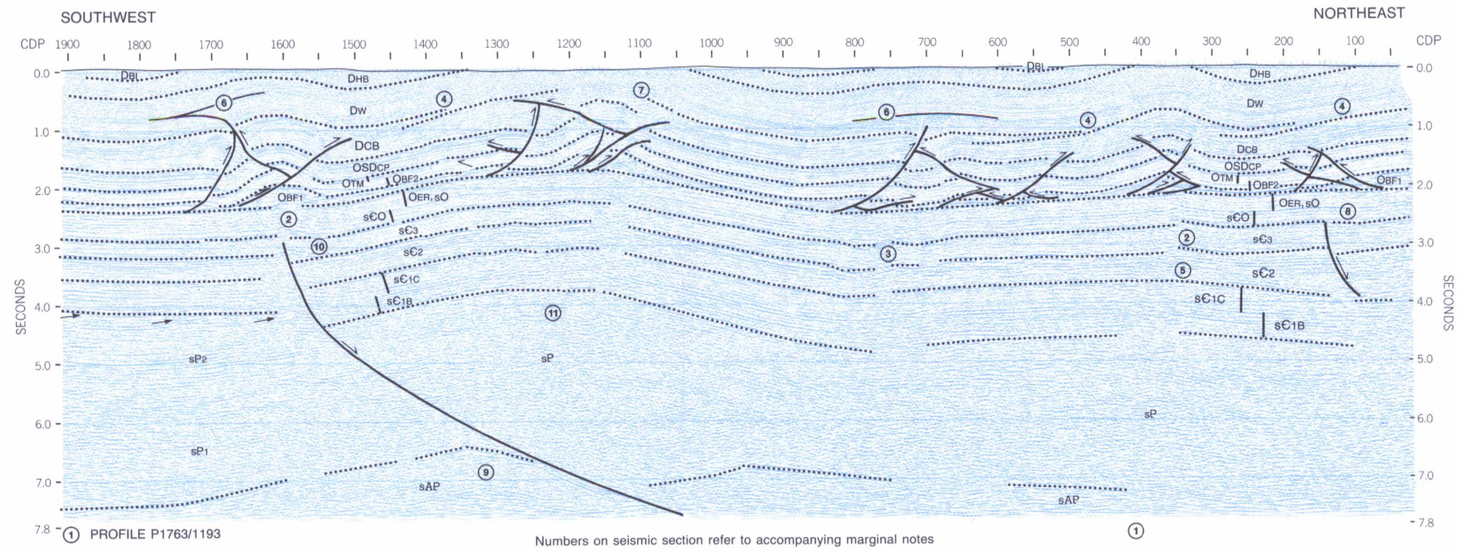
GEOLOGICAL SURVEY OF CANADA | COMMISSION GÉOLOGIQUE DU CANADA

SEISMIC REFLECTION DATA

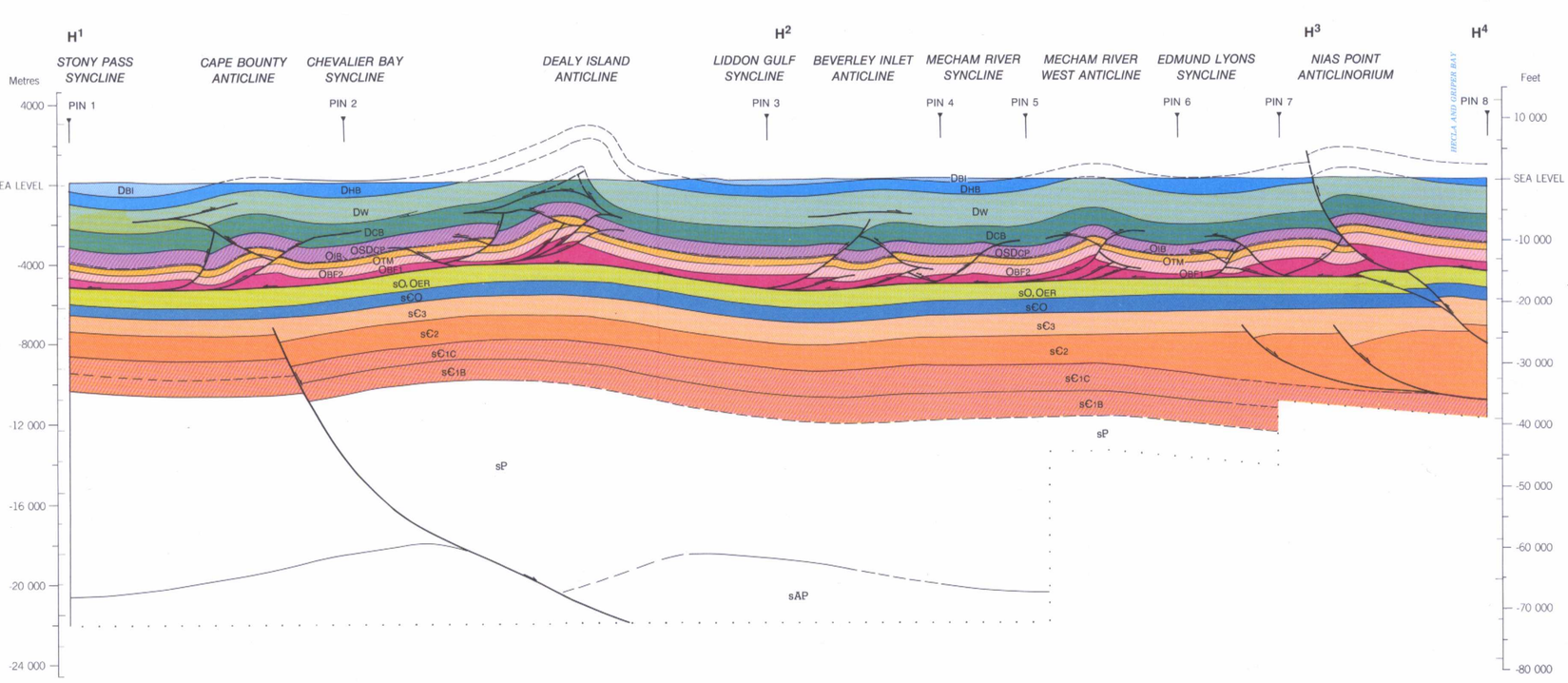


INTERPRETED SEISMIC DATA

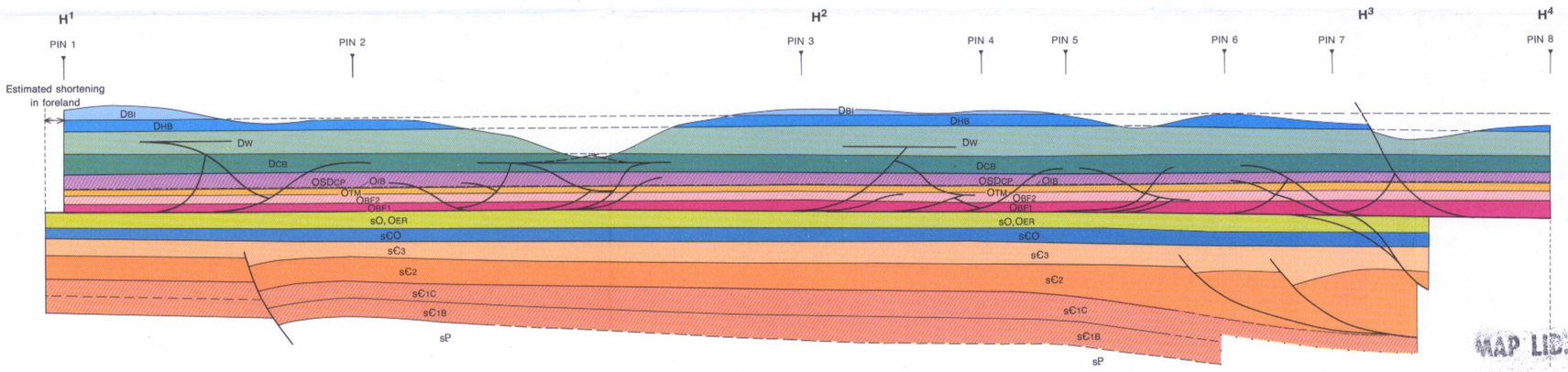


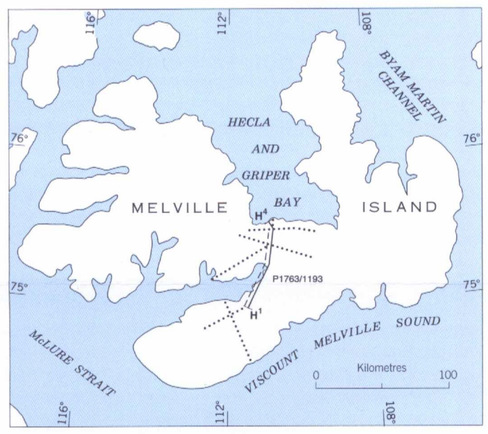
Numbers on seismic section refer to accompanying marginal notes

DEFORMED-STATE CROSS-SECTION



RESTORED-STATE CROSS-SECTION





Location of structure sections and seismic profiles

Line of structure section (with offset) ..... H1 — H4

Seismic reflection profile (displayed) .....

Seismic reflection profile (consulted only) .....

NOTES TO ACCOMPANY SECTION H
(Seismic profile P1763/1193)

Acquisition and processing

1. Profiles P1763 and P1193 have been blended after stacking and before migration. Renumbering of CDP traces was executed after blending. The blend intersection is at CDP 425.
2. Over-migration hyperbolae have obscured the primary reflectors below CDP 350 and 1600.
3. Minor reflection irregularities readily observed above the sЄ3 and sЄ2 intervals (between CDP 575 and 810) are attributed to velocity anisotropy above the Eleanor River Formation (OER) interval.

Seismic stratigraphic features

4. There are three clear examples of topset strata above the Cape De Bray Formation (DCB) interval that can be traced southward into sigmoidal reflectors. These examples are found below CDP 175, 550 and 1375.
5. Dramatic thickening of unit sЄ2 occurs north of CDP 350. There appears to be some corresponding thinning from the base of the underlying unit sЄ1.

Structural features

6. Downward-pointing cuspate features in the lower Weatherall Formation (Dw) interval (below CDP 1675 and 725) testify to an upper detachment level situated approximately 250 to 300 ms above the top of the Cape De Bray Formation (DCB).
7. An excellent example of a pop-up structure occurs below CDP 1150. Two other examples of this phenomenon occur below CDP 360 and 1600.
8. A minor northerly dipping extensional fault is placed beneath the sЄO unit near CDP 125. Unit thickness variation across this fault indicates that motion may have taken place during deposition of sЄ3 and sЄO.
9. The large convex reflector at and below 6500 ms (CDP 1350) is interpreted as a rotated block of unit sAP. Asymmetry of the block may have been caused by extensional slip on an underlyng north-dipping listric fault.
10. A north-dipping extensional fault (below and north of CDP 1575), which may have moved during deposition of unit sЄ3, is interpreted to root into unit sAP.
11. Long-wavelength folding of the basal reflection assemblage of unit sЄ1 and all overlying units is clear evidence that compressive deformation in this area has affected all Proterozoic(?) to Devonian units.

Depth conversion

DBI: 3.8 km s^{-1}

DHB: 3.9 km s^{-1} (south)–3.8 km s^{-1} (north)

Dw: 4.0 km s^{-1}

DCB: 3.6 km s^{-1}

OSDCP: 4.5 km s^{-1} (south)–4.6 km s^{-1} (north)

OTM, OBF2: 6.4 km s^{-1}

OBF1: 5.3 km s^{-1}

sЄ1–OER: 5.7 km s^{-1}

below sЄ1: 6.2 km s^{-1}

Method of cross-section construction and restoration

Bed length measurement and balancing of the contacts above OBF1, OBF2, OTM and OSDCP between pairs of adjacent pin lines.

Bed length measurement and balancing of the contacts above sЄ3, sЄO and OER between pairs of adjacent pin lines.

Bed length measurement of the contact above DHB.

Area measurement and restoration of OBF1, DCB, Dw, DHB, and DBI between pairs of adjacent pin lines. This method assumes that horizontal shortening of units OBF1 and DCB–DBI is the same as that expressed by bed lengths of contacts above OBF1–OSDCP.

Results

Section length: 72.1 km

Bed length of OTM (this section): 78.6 km
Shortening of OTM (this section): 78.6 - 72.1 = 6.5 km (8.3%)
Estimated shortening in foreland*: 1.0 km
Total shortening of OTM from foreland: 6.5 + 1.0 = 7.5 km (5.8%)

Bed length of OER (this section): 73.3 km
Shortening of OER (this section): 73.3 - 72.1 = 1.2 km (1.6%)
Estimated shortening in foreland*: nil
Total shortening of OER from foreland: 1.2 km

Deformed-state bed length of DHB: 74.1 km
Apparent shortening of DHB (this section): 74.1 - 72.1 = 2.0 km (2.7%)
Estimated apparent shortening in foreland*: 0.2 km
Total apparent shortening of DHB (from foreland): 2.0 + 0.2 = 2.2 km (1.8%)

Range of assumed tectonic thickening of Dw–DBI (approximate): 3–8%

*Foreland shortening is estimated from unmigrated seismic profiles of Dundas Peninsula.

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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 H
(MAP 1844A)

STONY PASS (NEAR LIDDON GULF) TO HECLA AND GRIPER BAY (NEAR NIAS POINT), MELVILLE ISLAND

DISTRICT OF FRANKLIN
NORTHWEST TERRITORIES
Scale 1:250 000

Kilometres
5 0 5 10

Canada