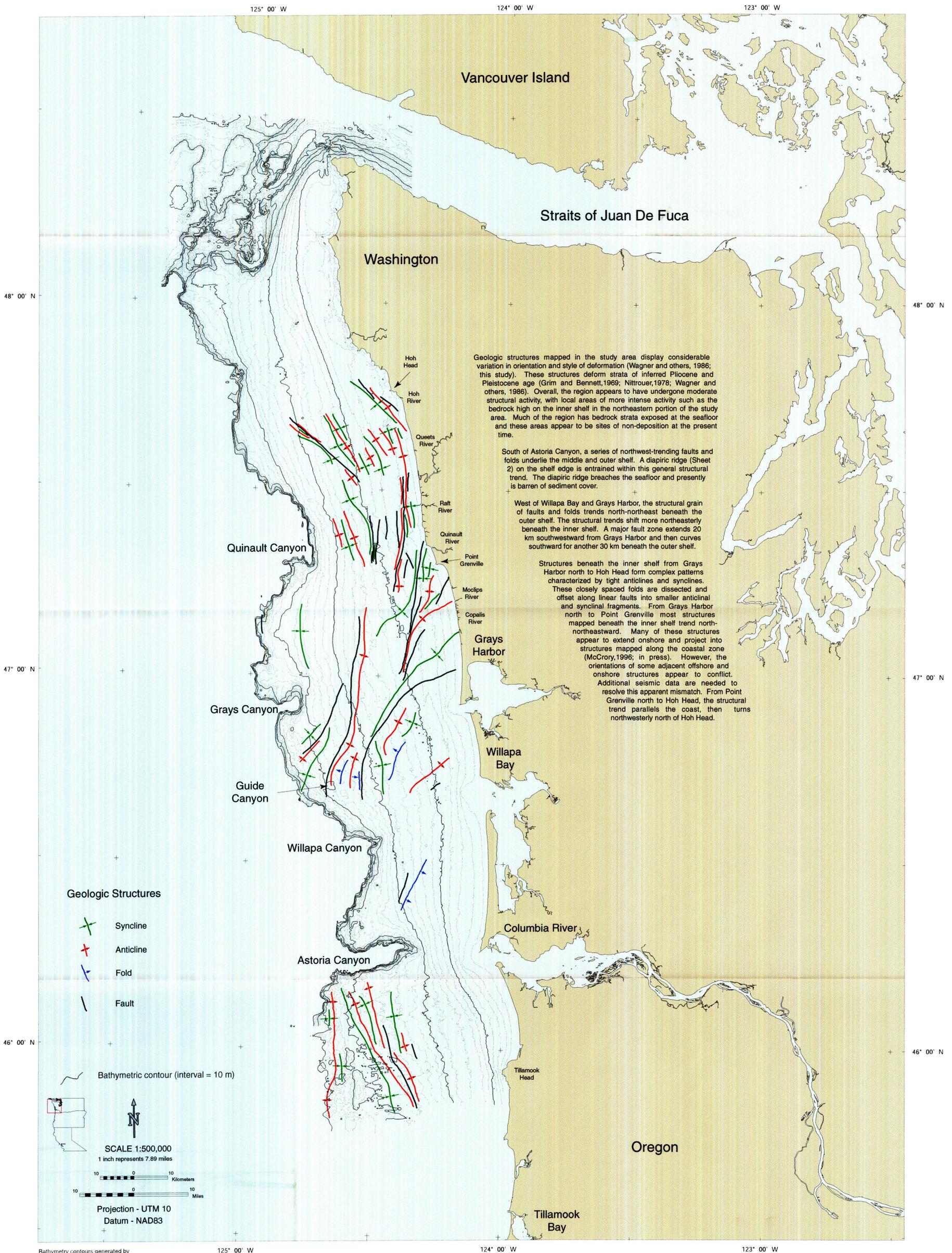


QUATERNARY GEOLOGIC INVESTIGATIONS OF
THE CONTINENTAL SHELF OFFSHORE
SOUTHERN WASHINGTON AND NORTHERN OREGON

by
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Geologic structures mapped in the study area display considerable variation in orientation and style of deformation (Wagner and others, 1986; this study). These structures deform strata of inferred Pliocene and Pleistocene age (Grim and Bennett, 1969; Nittrouer, 1978; Wagner and others, 1986). Overall, the region appears to have undergone moderate structural activity, with local areas of more intense activity such as the bedrock high on the inner shelf in the northeastern portion of the study area. Much of the region has bedrock strata exposed at the seafloor and these areas appear to be sites of non-deposition at the present time.

South of Astoria Canyon, a series of northwest-trending faults and folds underlie the middle and outer shelf. A diapiric ridge (Sheet 2) on the shelf edge is entrained within this general structural trend. The diapiric ridge breaches the seafloor and presently is barren of sediment cover.

West of Willapa Bay and Grays Harbor, the structural grain of faults and folds trends north-northeast beneath the outer shelf. The structural trends shift more northeasterly beneath the inner shelf. A major fault zone extends 20 km southwestward from Grays Harbor and then curves southward for another 30 km beneath the outer shelf.

Structures beneath the inner shelf from Grays Harbor north to Hoh Head form complex patterns characterized by tight anticlines and synclines. These closely spaced folds are dissected and offset along linear faults into smaller anticlinal and synclinal fragments. From Grays Harbor north to Point Grenville most structures mapped beneath the inner shelf trend north-northeastward. Many of these structures appear to extend onshore and project into structures mapped along the coastal zone (McCrory, 1996; in press). However, the orientations of some adjacent offshore and onshore structures appear to conflict. Additional seismic data are needed to resolve this apparent mismatch. From Point Grenville north to Hoh Head, the structural trend parallels the coast, then turns northwesterly north of Hoh Head.

Bathymetry contours generated by Michael R. Hamer from NOS hydrographic soundings obtained from NOAA.

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