DEPARTMENT OF INTERIOR
UNITED STATES GEOLOGICAL SURVEY

EXPLANATION

Natural-gas hydrates are solid, ice-like mixtures of natural gas (mainly) methane) and water that are found in continental margin sediments at depths of water greater than about 500 m. The presence of gas hydrates in continental margins is commonly inferred from marine seismic surveys. The base of the gas-hydrate zone often correlates with an anomalous acoustic reflector which approximately parallels the sea floor and is often called a bottom simulating reflector (BSR). The sediment depths at which this reflector occurs can be predicted based on considerations of the pressure-temperature stability field for gas hydrates and the geothermal gradient. The reflector probably results from the velocity contrast between the sediment cemented with gas hydrate and the underlying sediment where lower velocities occur because of the absence of gas hydrate and the possible presence of free gas.

This map shows locations on the continental margins of the United States where seismic records indicate the presence of gas hydrates. The compilation includes only information from published or known "in press" sources as of 1983.

LEGEND

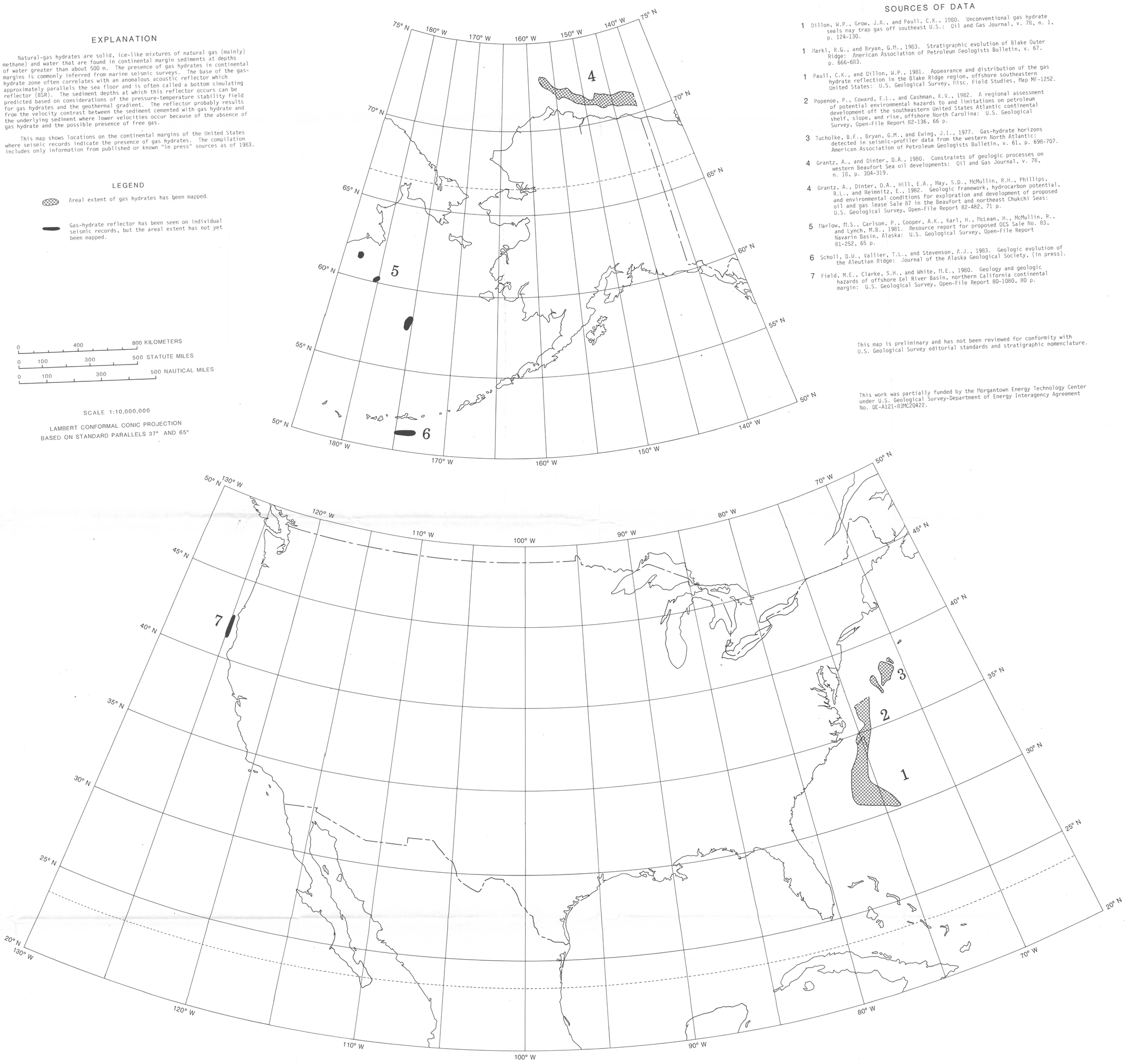
Areal extent of gas hydrates has been mapped.

Gas-hydrate reflector has been seen on individual seismic records, but the areal extent has not yet been mapped.

0 400 800 KILOMETERS
0 100 300 500 STATUTE MILES
0 100 300 500 NAUTICAL MILES

SCALE 1:10,000,000

LAMBERT CONFORMAL CONIC PROJECTION
BASED ON STANDARD PARALLELS 37° AND 65°



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OPEN-FILE MAP 83-822
SHEET 1 OF 1

This map is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards and stratigraphic nomenclature.

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GAS HYDRATES ON CONTINENTAL MARGINS OF THE UNITED STATES BASED ON OCCURRENCE OF BOTTOM SIMULATING REFLECTORS ON MARINE SEISMIC RECORDS

Compiled by Keith A. Kvenvolden

1983