

Bering Sea ranked third in oil and gas potential

By Bruce Clardy
Exploration Supervisor

Together, the sedimentary basins of the Bering Sea are ranked third in terms of oil and gas potential by the U.S. Geological Survey. Only the Beaufort Sea and the Gulf of Mexico are believed to have greater petroleum potential by the U.S. Department of the Interior and the Gulf is expected to decline in actual production over the next few years.

Because of this potential, Interior has scheduled 15 offshore lease sales in Alaska waters over the next five years. A dozen of those sales are scheduled for the Western Alaska Outer Continental Shelf region, which includes the North Aleutian Basin, the St. George Basin, the Navarin Basin, and the Norton Basin.

Additional Federal OCS lease sales are slated for the Diapir Field and the Barrow Arch regions of the Beaufort Sea, the Gulf of Alaska and Cook Inlet, the Kodiak region and the Shumagin Island district.

Seven of these lease sales have been scheduled for the next three years:

Sale 57	Norton Basin	March, 1983
Sale 70	St. George Basin	May, 1983
Sale 83	Navarin Basin	March, 1984
Sale 89	St. George Basin	December, 1984

Sale 85

Barrow Arch

February, 1985

Sale 92

North Aleutian Basin

April, 1985

Sale 100

Norton Basin

October, 1985

The sales are part of a continuing effort by the federal government to assess the nation's energy reserves and to cut back on America's dependence on foreign oil imports which now make up nearly 35-40% of our daily supplies.

Exploring and developing these areas — if commercial quantities of oil are found — will certainly be a major technological and logistical challenge. But the task appears to be well within the range of the oil industry's available technology.

Generally speaking, the areas to be explored have more gentle environments than Cook Inlet, the Gulf of Alaska or Britain's North Sea.

Cook Inlet has the greatest tidal range and current strength as well as more sea ice than any region except Norton Sound, but oil companies have been exploring, drilling and producing safely from its oil and gas fields for 20 years.

The Gulf of Alaska has a reputation for brewing some of the world's worst storms and building some of the tallest waves ever measured, but 15 offshore wells have been drilled successfully and safely in exploration.

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tion efforts that to date have not resulted in commercially viable prospects.

The North Sea fields, which have changed Great Britain from an importer of energy to an exporter, likewise have a reputation for wicked weather. But the combination of high-technology drilling and production platforms and the largest undersea pipelines have proven for more than a decade that energy production can proceed without damage to one of the world's most important fisheries.

Exploration

Searching for oil and gas beneath the sea is more difficult and more costly than dry-land exploration, but many of the techniques that have been applied to continual surveys have successfully been adapted to marine use.

Geologic mapping on land has shown that the Bering Sea region has the types of rocks that can produce and contain hydrocarbons. Precise measurements of the earth's gravity from ships and specially equipped aircraft can be used to determine the extent of sedimentary rock formations even though they may be covered by hundreds of feet of sea water.

Detailed examination of gravity and magnetic surveys has enabled geologists to target areas of special interest which have the proper shape and rock types needed for the creation and entrapment of oil and gas.

Specially equipped survey ships have been exploring the Bering Sea for several years towing long lines of sensitive instruments. These ships have been conducting detailed seismic surveys that reveal the exact shape and thickness of rock layers for thousands of feet beneath the sea floor.

Years ago, it was common for seismic exploration crews to use explosives to generate the pulse of energy needed to look into the rock layers. In recent years, however, bubbles of compressed air triggered by the survey vessel have been used instead. This method is not only more economical for the industry, but it has also been shown to have no adverse impact on marine life compared to the hazards posed by the undersea detonation of explosives. During winter exploration from the frozen surface of the Beaufort Sea, mechanical thumpers are used to generate the minute shock waves needed for seismic exploration.

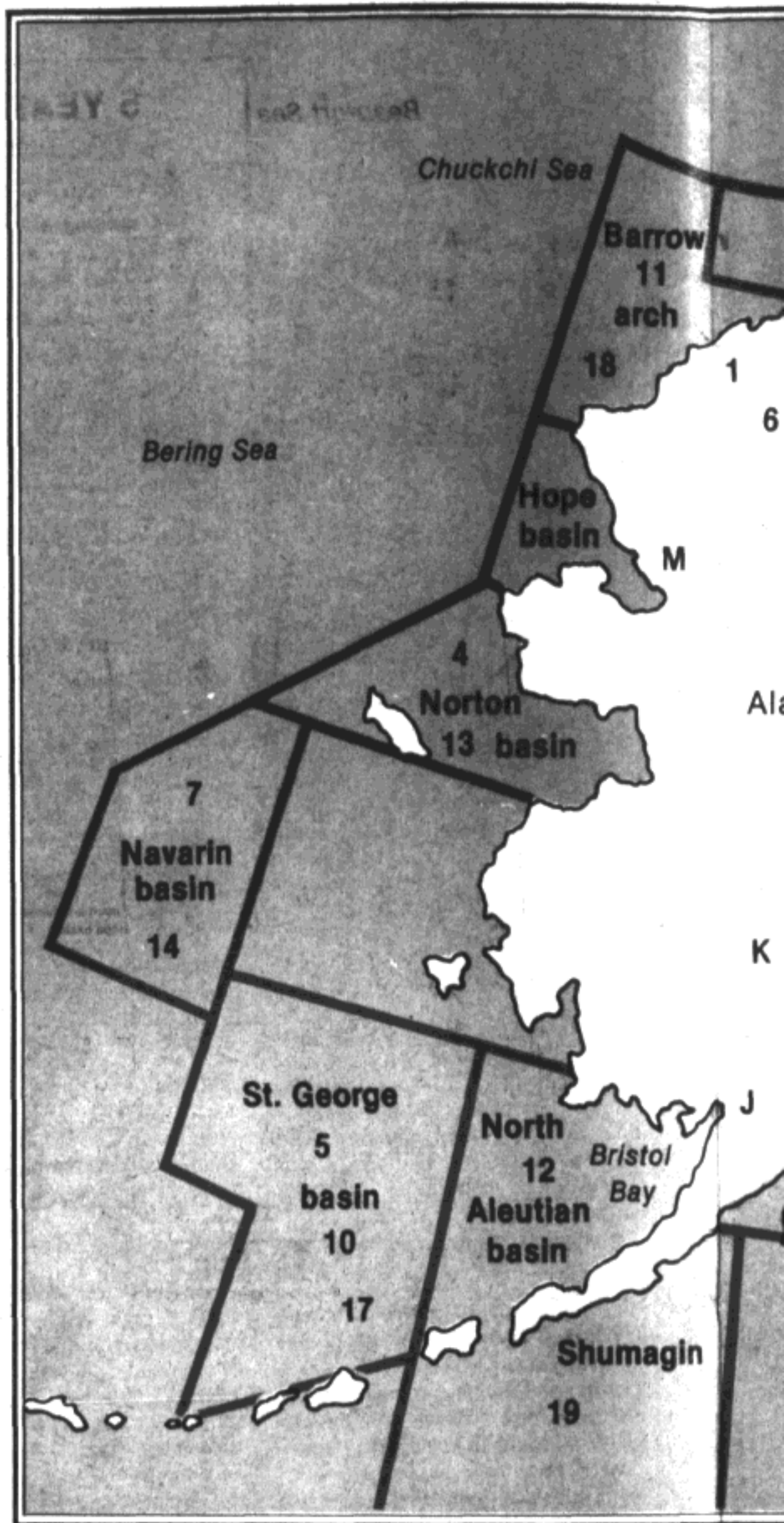
The sonic shockwave from the so-called airgun used at sea penetrates the rock layers. Since research has proven that the speed of sound changes depending on the thickness and type of the underlying rock layers being penetrated by the shock's energy pulse, an examination of the returning echoes — and a great deal of computer assistance — can chart a cross-section of the hidden geological formations.

As good as the instruments and computer programs are, they still are not good enough to tell whether oil is present or how much is trapped within layers of sedimentary rock.

Only drilling can do that.

But with the cost of Bering Sea exploration wells being in the \$20 to \$30 million range — roughly 10 times the cost of a development well at Prudhoe Bay — the industry needs all the geological justification it can get before making expensive holes in the ground.

To date, four Continental Offshore Stratigraphic Test wells, called COST wells by the industry, have been drilled in the Bering Sea basins, two in Norton Sound and other two in the St. George Basin. Deliberately drilling into rock layers unlikely to hold hydrocarbons, the wells yielded valuable rock samples and detailed drilling information needed by the industry in order to prepare bids for leases and to determine accurate projections of exploration costs. COST wells, because of their time-consuming sampling and data recording requirements



are much more expensive than ordinary exploratory wells. The three-well COST drilling program now underway in Western Alaska carries a price tag of about \$200 million. That cost is being shared by 16 oil companies interested in Bering Sea prospects.

Another single well project is expected to cost about \$35 million and 18 companies have agreed to share the expense and the information learned.

Even though the Norton and St. George Basins will be offered for lease early next year, it is unlikely that any exploratory drilling will get underway until the summer of 1984 because of the time required