Oil Exploration Brings Lots Of Noise To Whales' Domain

BY RENEE SCHOOF McClatchy Newspapers

WASHINGTON — As the Arctic Ocean's ice cover declines in summer and oil companies move in with ships, drilling equipment and seismic surveys, what used to be a mostly very quiet home for whales and other marine animals is getting a lot louder.

Next month will mark a new stage in oil and gas development in the Beaufort and Chukchi seas north of Alaska, when Shell returns to the Alaskan Arctic to drill exploratory wells. If it's successful, this could be beginning of a new boom.

Scientists are asking how whales and other marine animals will react to the sound. The overall level of man-made underwater noise in the Arctic is increasing, not only from oil and gas development but also from shipping and soon from commercial fishing and tourism vessels. Whales, dolphins, walruses and seals all rely on sound in the water. Bowhead whales, for example, are adept at using their voices to navigate in complete darkness through ice.

"They can live to 200, and they're adapted to a world of extreme quiet under the frozen ocean, broken at times by extremely loud tectonic crashes of giant blocks of ice," said Christopher Clark, the director of the Bioacoustics Research Program at Cornell University.

"An oil spill may be more dramatic in terms of actually exposing animals to toxic substances,' added John Hildebrand, a professor at the Scripps Institution of Oceanography at the University of California at San Diego, "but the stress that may come from the increased noise is something that we should be concerned

The oil company is keenly aware of the potential disturbance below the surface.

"The sound we're putting in the water is something we're watching very closely," because it could directly impact marine mammals and communities that rely on subsistence hunts, said Shell spokesman Curtis Smith in Anchorage. The sound from seismic surveys "is something that's at the top of our list for mitigating our impact," he said.

The company has had acoustic recorders in the Beaufort and Chukchi seas for several

FLOORING

months at a time since 2006 to understand marine mammals' behavior, how they respond to the sound Shell puts into the water and also how they respond to climate change and ship traffic

Oil and gas exploration is loud, often for many hours at a

Shell has spent billions of dollars on Alaskan Arctic exploration already, and the company says it's working to reduce its sound impact on marine mammals. Shell plans to expand its operations if the next two summers of exploration are successful. Other companies also are getting in. Interior Secretary Ken Salazar on Tuesday announced plans to offer new lease sales in the Chukchi in 2016 and in the Beaufort in 2017. Estimates show 25 billion barrels of oil in the seas — more than the 17 billion barrels of oil that's been produced in the last 30 years on the North Slope.

Shell drilled most of the wells in the Beaufort in the 1980s and '90s and four of the five wells ever drilled in the Chukchi. But there hasn't been any exploratory drilling in the offshore waters of the Alaskan Arctic over the past decade. Shell now is waiting for one final federal permit and favorable ice conditions to set up in the Beaufort and Chukchi with drilling equipment, support vessels and aircraft.

In addition, the company will conduct seismic testing in its new wells for periods of up to 14 hours at each well.

Shell conducted major seismic surveys in the Beaufort and Chukchi seas in 2007 to 2009.

Seismic survey air guns shoot explosions of compressed air that send acoustic energy through the water and into the Earth's crust. The sound is repeated about every 10 seconds, some 360 per hour, sometimes for hours at a time. Measuring how long it takes to reflect the sound waves back provides information about subsurface rocks. Oil companies use the information to figure out where to

"It essentially creates a large hammer. The ocean surface lifts up and slams down. Most people have no concept how heavy this hammer is," Clark said.

Meanwhile, the federal government is considering opening parts of the Atlantic from Delaware to Florida to oil and gas



The Kulluk is nearly ready for Arctic oil exploration off Alaska's north coast. The orange life rafts carried on the rig are sealed to protect against fire and oil. Each unit carries up to 60 people and can motor away from the rig to safety. Shell now is waiting for one final federal permit and favorable ice conditions to set up in the Beaufort and Chukchi with drilling equipment, support vessels and aircraft.

GOT NEWS?

Call The Press & Dakotan At 665-7811

ONLY

drilling. The area is home to the North Atlantic right whale, whose numbers are down to about 350. A proposed environmental impact statement about the effects of surveying in the Atlantic noted that the government's preferred plan would not allow air-gun surveys in some areas regarded as critical right whale habitat.

Overall, the biggest source of noise in the world's oceans is from shipping. In the last 50 years, the oceans have become 10 times louder from shipping, said Michael Stocker, the director of Ocean Conservation Research, a group that studies ocean sounds. But seismic airgun surveys are "increasing at a huge clip," he said.

Some studies have looked at the results of high stress levels from sound, or changes in the amount of food whales consume when they have to swim away from seismic surveys in other

Loud sounds in a certain frequency also can reduce the ability of some marine mammals to hear natural sounds.

Some of the largest whales, including bowheads, hear at very low frequencies, said Darlene Ketten, a senior scientist at the Woods Hole Oceanographic Institution in Massachusetts and an assistant clinical professor at Harvard Medical School. Most seismic tests, including those used by Shell, are also low frequency, or infrasound.

"The primary concern will be those animals that may be sensitive to really low infrasonic sounds," she said.

Beluga whales and dolphins, by contrast, don't hear well at low frequency, and so aren't likely to be bothered by seismic activity unless they are very close to it, Ketten said.

The Alaska Eskimo Whaling Commission, which promotes Alaska's cultural and subsistence whaling, said in comments to the National Marine Fisheries Service that oil and gas vessels and underwater noise would have a direct impact on bowhead whales and might send them farther out

During its seismic work, Shell was required to hire people to spot marine mammals. When the animals entered a specified zone, Shell would "ramp down" the airgun work and then slowly increase it again after the mammals moved on.

Candace Nachman of the National Oceanic and Atmospheric Administration's Office of Protected Resources said the zone that was watched was based on where scientists think there might be potential auditory in-

jury or hearing impairment. In May, NOAA granted Shell permits that allow non-lethal harassment due to sound after it reviewed studies and collected public comments. The agency determined that the drilling this summer wouldn't kill or injure the animals or damage subsistence hunting. The permit requires Shell to take certain precautions, including slowing ship speeds when marine mammals are nearby and flying helicopters higher to minimize noise.

There's always more to learn.

But because of statutes and regulations, we're required to make a decision based on the best science we have," Nachman said.

Shell also reached an agreement with the Alaska Eskimo Whaling Commission to halt its operations in the Beaufort Sea on Aug. 25 and move its operations out of the area during the Alaskan natives' bowhead whale hunting season.

"There are unanswered science questions," said Clark, the Bioacoustics Research Program director at Cornell. "It's not clear what happens if a whale hears 1,000 of the explosions from air guns, or where it will go if an area is saturated with the sound. In addition, scientists are only beginning to study the effects of the sound on fish and other animals that make up the whole ecosystem.'

"We have amazingly strong evidence showing massive avoidance of bowhead whales of seismic survey areas. They won't go in there. Their calling rates change. Their whole communication is totally distorted," he said.

What does that mean for the whales? "It's not really known," Clark said. Can they get away? "We don't know," he said. "We have not any really satisfactory data where we went out and put a bunch of (satellite) tags on the animals and said, 'OK, we're going to watch you and listen to you and see exactly what you







TUESDAY NIGHT 2-PIECE CHICKEN DINNER \$ 100



WEDNESDAY NIGHT **HOT TURKEY SANDWICH \$2**00

2 ENTREE MEAL **\$5**00





FRIDAY NIGHT **BIG BOB'S COD DINNER** \$ **5**00

SATURDAY NIGHT 6-INCH SUB & CUP OF SOUP \$500





SUNDAY NIGH 1/2 LB. BURGER WITH FRIES **\$3**00



2100 Broadway Yankton, SD 665-3412



M-F 10-6, Sat. 10-5 Closed Sundays, Evenings by appt.

Hatch Furniture Outlet

413 Pierce St., Sioux City, IA · 712-252-7750