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## **ARCO strikes oil at Prudhoe Bay**

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After the failure of the Susie well, it was essential that ARCO find oil. This was the company's last chance in Alaska. As ARCO chairman Bob Anderson told Roderick in *Crude Dreams*: "If the Prudhoe well had been dry, we were going home. It was our last shot."

Instead of moving the drill rig back to Fairbanks, the companies decided to try to drill again farther north. So the rig was moved 65 miles north to Prudhoe Bay.

Former ARCO geologist Marvin Mangus recalls, "We figured one more hole after Susie. Prudhoe Bay State No. 1 would probably have been the last hole if we hadn't found oil.

"We figured this would be a good place because it was a subsurface clay. We took it to management, and they said go ahead."

"I was asked to go up and mark the surface location of Prudhoe Bay State Well No. 1 in August 1966. We put a 10-foot iron rod, painted international red, where the well was to be drilled. It was a joint effort to pick that location."

An April 26, 1967, press release from Atlantic Richfield said the well "is being drilled on a 90,000-acre block of state acreage owned jointly by Atlantic Richfield and Humble Oil & Refining Company. Atlantic Richfield is operator of the venture. ... The location, two miles west of Prudhoe Bay, is approximately 390 miles north of Fairbanks and about 60 miles north of the Susie Unit No. 1."

On April 22, 1967, ARCO and Humble began drilling the Prudhoe Bay State No.1 well. Mull recalled the events from his perspective as an on-site geologist: "The top of the Sadlerochit formation (also known as the Ivishak) was

encountered on Dec. 14, 1967, with a large amount of gas in the drilling mud. A drill stem test (DST #2), a way of testing to see what was actually in the formation, was run on Dec. 26-27, at a depth of 8,410 to 8,493 feet, in which there was an immediate strong flow of gas to the surface, which flowed through a flow pipe into the wind with a flare that was about 35 feet long (not straight up). The roar and vibration of it was something like that of a jet airplane right overhead. The first oil in the Sadlerochit was seen at a depth of about 8,630 feet and samples with a core. Another drill stem test (DST #5) of an interval from 8.688 to 8.883 feet on Feb. 18, 1968, recovered both gas and oil and clearly

showed that oil could be produced from the well.”

Mull recalls that there was a press release and newspaper headline at the time saying, “Arctic Slope Well Finds Oil: It Looks Good Says Richfield at Prudhoe Bay.”

On March 12, Mull said, another DST (#3) from 9,505 to 9,825 feet “flowed a measured 1,150 barrels of oil per day and 1.32 million cubic feet of natural gas per day.” It was now clear that oil and gas were present.

Drilling Foreman Bill Congdon must have realized the significance of the Prudhoe Bay discovery when he wrote this note on the back of a drilling report: “I’ll never get out of this cold son of a b—— now.”

Geologist Mangus said, “When we finally hit oil there, well, we were real excited because we knew it was really big. We had to stop drilling in the spring of 1966, and we went in and drilled (again) in the spring of 1967 and fall of 1967. In December, we hit the oil, but they did not call the official discovery date until February 1968. You didn’t want everyone to know. We didn’t finish Prudhoe No. 1 until about June 1968.”

The date given for the discovery of the giant Prudhoe Bay field, depending on who you talk to or what book you read, is February or March 1968, but, as geologist John Sweet said, looking for oil is kind of like watching a tree grow. The discovery can’t be pinned to one day. It was a culmination of a lot of days, a lot of hard work, years of seismic map development, expertise and faith.

### **The discovery**

On Dec. 26, 1967, a loud, vibrating sound came from the well. About 40 men ran to it, dressed in heavy clothes to battle the day’s -30° temperatures.

The noise, the rumble of natural gas, grew louder. A natural gas plume from a pipe shot 35 feet in the 30-knot winds. The men discovered large quantities of producible hydrocarbons.

At 7,000 feet the well had encountered increasing amounts of natural gas and at 9,000 feet, more than 300 feet of oil-saturated sand. Benson, who had been looking for the Lisburne limestone (which Mull explains was the major objective of the well), had drilled into the Sadlerochit formation (a secondary objective, Mull says; he also notes that “some of us were pushing hard to continue the Susie well on down to test the Sadlerochit before that well was abandoned”) at Prudhoe Bay — the largest accumulation in North America. It was one and a half times larger than Dad Joiner’s East Texas field and estimated to become the one of the largest producing fields in the world, Prudhoe Bay slowed the growth of American dependence on foreign oil imports and helped restore global balance.

### **Sag River State No. 1 well confirms Prudhoe discovery**

Announcement of the Prudhoe discovery was made in March 1968 and again in June after a second well, Sag River State No. 1, drilled by Nabors Rig No. 9 seven miles southeast of the discovery well, struck oil, confirming the discovery of a new field and proving the presence of a very large oil field.

The Sag River No. 1 well was significant because the company needed confirmation of the find. Mangus said, “The confirmation well was drilled in June of 1968. ... When we hit that, we couldn’t believe it, it was just loaded with oil. That’s the one that was estimated at a 9 billion (barrels) well. Sag River had no gas cap. It was all oil, and oil is worth a lot more than gas.

“We were just all elated. We couldn’t believe it. When you find the biggest oil reserve in North American, you are happy. Everyone gets into the act. Finding that was like finding a \$100 gold piece in your Christmas stocking instead of a lump of coal.”

Mull agrees. “For some of us there on the ground, it was damned exciting ... to be seeing the oil-stained samples come up from the hole, listening to the roar and seeing the flare of a major gas test, or seeing the oil flowing and the flames as the oil burned in the pit.”

Mull says that an interesting aspect of the Sag River well was the reservoir quality that the geologists saw in the cores. “Normally a core that comes out of a core barrel consists of solid rock that you hope will have oil or gas in the pore spaces. But in one of the cores from the Sadlerochit in the Sag River No. 1 well, what came out was just a pile of loose sand, gravel and oil — which immediately ran down through the derrick floor into the cellar below. What we were seeing in the samples was supposed to be secret from the drilling crews, but they generally had a pretty good idea of what we were finding, and particularly so after seeing that oil running through the derrick floor.”

On June 25, 1968, Atlantic Richfield Co. said in perhaps the most understated press release in oil company history: “the Sag River State No. 1 — a joint venture with Humble Oil & Refining Company — has encountered oil in the same Triassic formation as the initial well.” Atlantic chairman Robert O. Anderson announced, “We believe this is a significant oil and gas discovery, the extent of which must await further testing and exploratory drilling.” Significant isn’t even close to describing the find that would change the company’s — and Alaska’s — history forever. Just a month later, Anderson announced that the find was potentially “one of the largest petroleum accumulations known to the world today.”

The discovery had been made — and confirmed — but the toughest challenges lay ahead because the greatest obstacle to development of the giant field was the harsh physical environment of the remote North Slope. It was unlike any other place from which oil had been produced and the technology to deal with such an environment did not yet exist.

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