

Diver prepares to service well-head valves 32 metres deep.

are measured with instruments sent down a pipe (called a conductor barrel) cemented into the drill hole. If the reservoir is large enough to profitably drain, a high-voltage probe is sent down that makes dozens of small perforations around the circumference of the drill hole.

The drilling barge then moves off the pipe, and the frac barge moves onto it, pumping high-pressure nitrogen and sand into the perforations, cracking the rock and propping it open to the width of the sand grains, allowing the gas to escape more freely than it otherwise would.

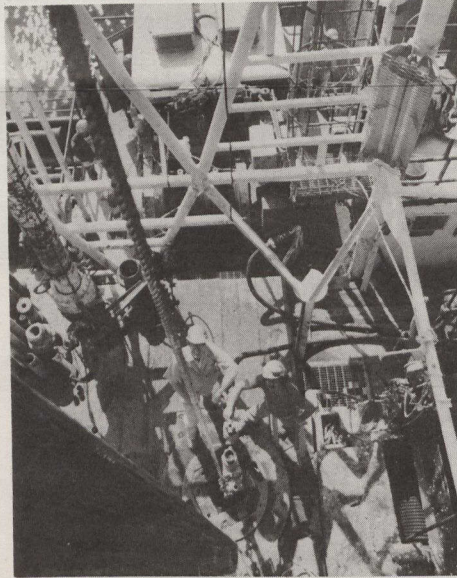
Finally the well-head is closed, pipe is

laid, divers hook up the well-head to the pipe, and the gas starts flowing.

Safety important

According to Louis Goulet, safety is the first concern on the drilling rig. The company has never had a fatality on their Lake Erie operations. Most injuries are "weasel bites" minor nips of fingers or hands caught by a whipping chain or squeezed between a pipe and a shaft.

Louis Goulet said that the greatest danger was the drill bit hitting a small pocket of high-pressure gas during preliminary surface drilling. Because there is no conductor barrel around the drill at this early stage, the gas



Manager Louis Goulet (left) watches Pat Hockings operate the drill.

bubbles uncontrolled through open water up to the rig. One spark could ignite it, enveloping the barge in flames.

If such a pocket is encountered, all deck motors are immediately shut down, the rig hydraulically "pops off" the drill shaft, leaving it in place, the barge hoists its four anchors and it moves away from the site. Once the gas is exhausted, the barge moves back, sets its anchors again, and divers are taken by helicopter to hook up the drill shaft to the rig.

There are two 12-hour shifts of seven men on board the rig at all times. One sleeps while the other works, and a third shift vacations on shore. Crews work eight days, take four days off, work another eight days, take five days off, and the rotation begins again — except for tool pushers, who work four days, and get four days off.

The tool pusher probably works the hardest of all crew members as he is ultimately accountable for everything. Next in the rig hierarchy are two roughnecks, who manhandle the pipes, chains and tongs into position at the drilling platform. The motorman ensures that all motors, pumps, winches and compressors are doing their jobs, and the derrickman sees to above-deck equipment. The driller supervises, and a cook serves up free, high-quality, all-you-can-eat fare.

(Condensed from an article by Colin Languedoc in *The Citizen, Ottawa*, August 21, 1984).

SL-1 network in Algeria

Northern Telecom International Limited of Mississauga, Ontario, recently won a contract against international competition to supply 17 of its fully digital SL-1 private automatic branch exchanges (PBXs) to Sonatrach, the Algerian national oil company.

The SL-1 digital business communications system is the largest selling digital PBX in the world, with over three million lines installed in 42 countries.

The contract with Algeria, valued at \$2.5 million, covers the installation of a network of SL-1s at Sonatrach installations along a 1 000-kilometer pipeline running from the Haoud El Hamra oil field in the Sahara Desert to the Mediterranean port of Arzew. The SL-1 network will service some 4 400 lines at the 17 facilities.

"We are scheduled to have the systems in service within the first half of 1985," said Brian Baynes, managing director of Northern Telecom for the Near East and Africa. "They are the first fully digital PBXs to be installed in Algeria," he added.



Geologist Myron Korpan shows bit used to drill for natural gas on the floor of Lake Erie.

Lynn Ball, The Citizen Photos