

62 p.c. of drilling in Western Canada, increased moderately but exploratory drilling increased sharply. Discovery of a large oil field just southeast of Lesser Slave Lake early in 1964 was a major factor in the expanded exploratory activity as was the defining of large new gas reserves in north-central and west-central Alberta.

The gradual year-by-year decline in geophysical activity that has been evident during the past decade continued in 1964, although the decline was slight. While less field work is now being done than in earlier years, more time and money is being devoted to interpretation of field data. Geophysics is considered of limited value only in the search for certain types of oil reservoirs such as the stratigraphic traps of the Gilwood sand of the Lesser Slave Lake region. However, one area of recent activity where geophysics was indispensable was the Cutbank River region south of Grande Prairie, Alta., where deep Devonian gas-bearing reefs were delineated by seismic methods. In terms of crew-months, seismic survey work in Western Canada was as follows: Alberta, 394; Saskatchewan, 57; British Columbia, 85; Manitoba, 2; and Yukon and Northwest Territories, 57. Gravity surveys are used to only a small degree in Western Canada but the use of this type of survey has increased in the past two years. The gravity method still remains the chief geophysical tool in the southwestern Ontario petroleum region.

The increase in Canada's crude oil reserves was the largest in many years. Reserves of crude oil and natural gas liquids at the end of 1964 were 7,065,000,000 bbl., or 26 p.c. more than in the preceding year. A major portion of this addition was due to extensions and revisions of known oil occurrences, particularly because of widespread implementation of waterflood recovery programs. Net additions to reserves of natural gas in 1964 were the largest ever. A 17.4-p.c. increase raised total Canadian gas reserves to 43,400,000,000 Mcf. at the end of 1964.

Alberta.—Drilling in Alberta totalled 10,300,000 feet in 1964, 5.4 p.c. more than in 1963. Exploratory drilling, comprising 38 p.c. of the total footage, increased significantly but development drilling declined slightly. The main areas of oil-field development were in the House Mountain, Deer Mountain and Goose River fields in north-central Alberta, and in the Bantry-Taber heavy-oil region in southeastern Alberta. Expansion continued at established gas fields, such as Medicine Hat, in southeastern Alberta. Waterflood pressure maintenance projects were brought into effect in several oil fields, including fields in the Swan Hills regions where waterflooding is expected to increase eventual recovery of the original oil in place from the 17 p.c. possible by primary depletion to 40 p.c. Reserves of recoverable crude oil and natural gas liquids were increased from 4,847,000,000 bbl. in 1963 to 6,114,000,000 bbl. at the end of 1964. Much of this increase was due to recalculation of reserves taking into account new waterflood projects. New discoveries accounted for only a small proportion of the increase although eventual delineation of these new oil pools with further drilling will substantially increase reserves, particularly in the Mitsue area near Lesser Slave Lake. This area was the centre of exploratory activity in 1964. The productive horizon, the Devonian Gilwood sandstone, had not hitherto been known to be oil-productive. As a result of intensified exploration, several more Gilwood sand oil pools have been found near Lesser Slave Lake. Large reserves of natural gas were outlined in the Edson region, 130 miles west of Edmonton, and in the Marten Hills, 140 miles north of Edmonton. Important new discoveries of wet natural gas were made south of Grande Prairie.

The first commercial production of oil from the Athabasca bituminous sands is scheduled to begin by October 1967. Construction began on the first full-scale plant for the extraction of oil from the sands following the approval of the application of Great Canadian Oil Sands Limited for a \$190,000,000 project to extract 45,000 bbl. a day of synthetic crude oil from the sands.

Saskatchewan.—For the second successive year, drilling increased sharply in Saskatchewan—by 31 p.c. to a total of 4,200,000 feet. The increase was mainly in the