of his reasoning was that the money realized on the sale would make it possible to pay off the institute's debts and enable it to build expanded facilities. The move would also enable the Pasteur to avoid the expense and difficulty of reconstruction of several decrepit buildings on the cramped Paris campus. After all debts were settled and new construction paid for, Monod expected that a substantial sum would remain to help with operating costs in the future.

The backlash from the unions sharpened. In December, the unions announced that a referendum answered by 79 percent of their members had shown 95 percent favored permanent funding by the government and 92 percent opposed the move to Garches. Equally adamant were some of Monod's close colleagues and old friends. Jacob is reported to have been saying, "I will not go to Garches. I will not go any-

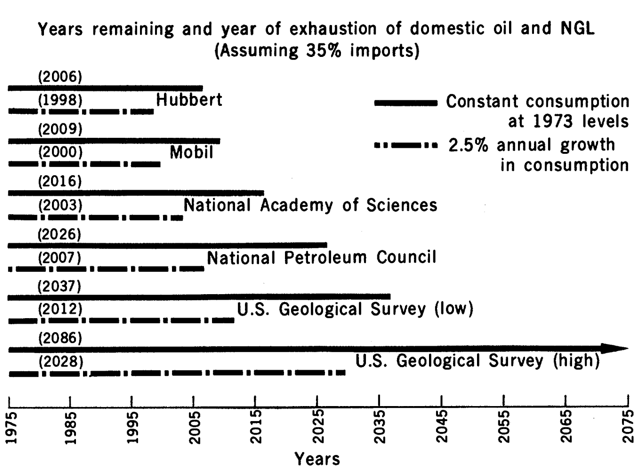
Senate Study Predicts U.S. Oil "Exhaustion"

The United States could become more, rather than less, dependent on imported oil by the end of the century if the government continues its policy of maximum offshore oil development, according to a report of the National Ocean Policy Study (NOPS), a special staff group of the Senate Committee on Commerce. Accelerated offshore oil development, it concludes, could mean accelerated oil exhaustion.

The recently released draft report, prepared by staff at the Office of Technology Assessment for the NOPS, reaches these conclusions through a survey of the technical literature on U.S. energy resources, including the most recent report of the National Academy of Sciences (NAS) on the subject (*Science*, 28 February).

Stepping into the current controversy over how much oil and natural gas the country actually has left, the NOPS report argues that if the more pessimistic estimates of the total U.S. resources are correct, the country could "exhaust" these resources as early as 1998. Furthermore, since alternative energy sources are not likely to be ready to meet national needs before sometime in the next century, this exhaustion "may lead to a greater dependency on imports in the long run." The NOPS is a high-level study group established last year to give coherence to congressional actions regarding the many aspects of federal oceans policy (*Science*, 21 June 1974).

Most experts agree that much of the remaining undiscovered U.S. oil, perhaps two-thirds of it, lies offshore beneath the outer continental shelf (OCS) and in Alaska.



According to the chart adapted from one in the draft report, U.S. oil resources could run out in 1998 or last through 2075, depending on whose estimates of the total resource prove right.

The federal government has leased 5000-acre offshore tracts for oil drilling since 1953, but in the midst of the Arab oil embargo, former President Nixon announced a plan to lease 10 million acres in 1975 alone, an acreage equal to that leased in the entire history of the program.

The 10-million acre accelerated leasing program has been criticized on environmental grounds and by governors of the coastal states whose economies will be affected (*Science*, 15 November 1974). But the NOPS report objects to it as bad energy policy.

"The purpose of the accelerated OCS leasing program is to provide the new production that is needed to replace declines from old wells and to reduce or eliminate the need for imports. However, the complete replacement of imports by new domestic production could create a need for greater imports by the end of the century," if the low estimates of OCS resources are true.

The NOPS report bases its statements about "exhaustion" on a series of calculations of U.S. oil consumption over time (see chart). The calculations give new relevance to the various low estimates of U.S. oil resources made most recently in the NAS report, and previously by M. King Hubbert of the U.S. Geological Survey (USGS) and by Mobil Oil Corporation. These estimates are dramatically lower than those that the USGS has used for many years.

What does all this have to do with OCS policy? "The fact which has not been clearly recognized in discussions of an accelerated OCS leasing program is that the appropriate rate for the development of domestic resources is dependent upon which estimates [of total U.S. oil] are correct," says the report. If the optimistic, or high estimates are valid, then "we have plenty of time to develop alternatives" and can proceed with OCS development, it says. But if the pessimistic, low estimates are right, the government needs to place curbs on energy demand, to speed development of alternative energy sources, and to limit domestic oil production, including OCS oil "below the maximum efficient rate."

The report calls for more exploration prior to a stepped-up program of production—a conclusion that is at the crux of some NOPS-drafted legislation now before the Senate. Under the bill principally sponsored by Senator Ernest F. Hollings (D–S.C.), the federal government would declare a moratorium on all OCS leasing until after it had conducted its own exploratory drilling program and had arrived at a more definitive estimate of the true extent of the nation's treasury of offshore oils.

—Deborah Shapley