the government might have been put in the position of having to buy a large part of the 1.3-billion-barrel reserve at a world price of $13 a barrel or higher, thus adding to inflationary pressures.

Now, before Congress can complete what it has begun, the Senate must pass a naval-petroleum-reserve measure comparable to the one adopted by the House, and the House must adopt a strategic reserve bill similar to the one passed by the Senate. The omnibus energy bill recently reported to the House floor by the House Commerce Committee would provide for a strategic reserve. But for the reserve provision to become law, it may have to be decoupled from the bill's other, more controversial provisions, such as the one to restrain increases in domestic oil prices. In the Senate, the Armed Services Committee is, at this writing, about to report out a bill that would open Elk Hills to limited production.

The legislation to open up the naval petroleum reserves raises several touchy issues. One is the question whether the reserves as such are indeed a useless anachronism, traceable to a time when the Navy was converting from coal to oil. It is true that as long as the oil remains in the ground, the Navy cannot count on using it in an emergency. Elk Hills oil cannot be pumped fast enough to serve in that kind of situation, and Pet 4 oil cannot now be pumped at all. Moreover, as proponents of opening up the reserves point out, the Defense Production Act of 1950 and the Emergency Petroleum Allocation Act of 1973 give the military services first priority to available oil supplies.

But, persuasive as the foregoing arguments may be, the Navy and its patrons in Congress can argue that the reserves are a hedge of sorts against future uncertainties, even though the oil would not be immediately available in quantity. Those taking this view believe that any pumping of oil from the reserves for either strategic storage or immediate civilian use should be only a temporary stopgap. Also, convinced that jurisdiction over the reserves should remain with the Navy, they resist the idea of placing the reserves under the Department of the Interior. A practical and not unreasonable argument here is that a change in management could interfere with ongoing activities, as at Pet 4 where some 3500 miles of new seismic exploration will have been completed by the end of this year.

Another issue raised by the legislation in regard to the naval reserves has to do with the need to protect Pet 4 as a prime environmental as well as petroleum resource. An onrush of oil development could easily despoil this still largely pristine wilderness.

On the resource and jurisdictional issues, the Armed Services Committees in both the House and the Senate have taken a protective attitude toward the naval reserves. In a showdown on the floor, the House committee sought to keep jurisdiction with the Navy and to limit pumping at Elk Hills to 3 years. But the committee, which has declined in prestige and authority over the past decade because of weak and erratic leadership, came out on the short end of a 305 to 102 vote. On the other hand, the Senate Armed Services Committee, which remains one of the most potent bodies in the Congress, is likely to get its way when it brings its naval petroleum reserve bill to the floor. As now drafted and approved by a subcommittee, this measure also would protect the Navy's jurisdiction and would limit pumping to 5 years.

And significantly, this bill—consistent with the one passed by the House but unlike the measures favored by the President and the House Armed Services Committee—would call for only continued exploration in Pet 4. Environmental groups recognize the need for such exploration, but they want a congressional commitment to development of Pet 4 to be deferred.

According to congressional testimony by James S. Cross of the American Petroleum Institute, oil could be shipped by pipeline from California to salt dome storage along the Gulf for about $1 per barrel. The domes are immense pillars of virtually pure salt, typically several miles deep and a half mile wide. They number in the hundreds and are found both onshore and offshore. The cost of leaching out large caverns and otherwise preparing the salt domes as oil repositories would come to something less than a dollar a barrel, Cross said.

As the result of salt mining carried on in the past by the leaching method, there are existing cavities capable of accommodating up to 100 million barrels. To create the additional storage necessary to accommodate the 1.3-billion-barrel strategic reserve that the President has called for would take about 9 years, Cross said. But presumably the construction could be speeded if given high priority.

Salt dome storage of petroleum is several times cheaper than surface storage in tanks. Moreover, there is no question of feasibility, because this means of storage is already being employed in the United States and abroad. The principal environmental impact, aside from the incidental spills associated with storage of any kind, has to do with the disposal of the brine leached from the domes in creating the storage cavities. Disposal can be either by reinjection of the brine into underground strata or by dispersal out to sea via a special pipe laid for the purpose.

Although it is not yet a foregone conclusion that Congress will finally adopt the legislation necessary to open up the naval reserves and create a strategic storage reserve, there seems to be no reason why it should not. As most members of Congress now agree, such a reserve offers perhaps the best short-term hedge against a possibly chaotic disruption of oil supplies. The existence of a strategic reserve could also offer the advantage of reducing pressures to exploit those domestic energy resources that can only be developed at high environmental risk.—LUTHER J. CARTER

APPOINTMENTS

Alan J. Chapman, professor of mechanical and aerospace engineering, Rice University, to first dean, new School of Engineering at the university. . . . **Bruce C. Murray**, professor of planetary science, California Institute of Technology, to director, Jet Propulsion Laboratory at the institute. . . . **Thomas F. Jones**, former president, University of South Carolina, to vice president for research, Massachusetts Institute of Technology. . . . **John R. Davis**, head, agricultural engineering, Oregon State University, to director, Agricultural Experiment Station at the university. . . . **Robert S. Stone**, former director, National Institutes of Health, to dean, School of Medicine, University of Oregon Health Sciences Center. . . . **Paul R. McHugh**, chairman, psychiatry department, University of Oregon Medical School, to director, psychiatry and behavioral sciences department, Johns Hopkins University School of Medicine. . . . **Robert W. Leader**, head, pathobiology department, University of Connecticut, to chairman, pathology department, Michigan State University. . . . **Stanley N. Davis**, professor of hydrology, Indiana University, to head, hydrology and water resources department, University of Arizona. . . . **William B. Schwartz**, chairman, medicine department, Tufts University School of Medicine, to university professor for all schools at the university. . . . **Struther Arnott**, professor of biological sciences, Purdue University, to head, biological sciences department at the university. . . . **Michael Zubkoff**, associate chairman, family and community health department, Meharry Medical College, to chairman, community medicine department, Dartmouth Medical School. . . . **Robert S. Daniels**, interim dean, College of Medicine, University of Cincinnati, to dean of the college.