

## RESEARCH REPORTS

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*Reviews of new research by public agencies and private institutions*

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### **"Nuclear Power Issues and Choices"**

Report of the Nuclear Energy Policy Study Group (sponsored by the Ford Foundation, administered by the MITRE Corporation), Ballinger Publishing Co., 17 Dunster St., Cambridge, Mass. 02138.

Although the nation's oil and natural gas supplies will be seriously depleted before the year 2000, a "mix" of coal-burning generators and uranium-powered nuclear plants (light-water reactors) could easily provide sufficient amounts of electricity for the United States.

Consequently—the Nuclear Energy Policy Study Group writes—the United States should place only a low priority on development of the controversial "breeder" reactor and suspend plans for commercial reprocessing and recycling of plutonium produced by light-water reactors. Work on solar, fusion, and geothermal energy should continue, although none of these may be an economic alternative to coal or conventional nuclear power "until well into the next century." (The report's analysis has been reflected in President Carter's energy proposals to Congress.)

Proponents of the breeder reactor, which produces more plutonium fuel

than it consumes, argue that the nation's supply of uranium fuel for the light-water reactor is in short supply. But the present report's authors contend that such estimates are unduly pessimistic. The need for a plutonium-based energy policy, they add, will be further diminished by increased use of coal. (U.S. coal reserves: 400 billion tons; annual consumption: 600 million tons.)

Furthermore, reliance on plutonium, a weapons-grade fuel, exacerbates the threat of nuclear proliferation, which the authors label "the most serious risk associated with nuclear power."

To minimize the dangers of proliferation, they urge the United States to (1) demonstrate that plutonium waste disposal is a safe alternative to recycling; (2) pressure foreign nuclear suppliers to curb exports of "sensitive" nuclear technology; and (3) guarantee supplies of uranium fuel for foreign reactors to deter breeder commercialization programs.

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### **"Achieving America's Goals: National Service or the All-Volunteer Armed Force?"**

A Study for the Senate Armed Services Committee, Government Printing Office, Washington, D.C. 20402. Author: William R. King.

After more than three decades of reliance on the military draft, taking the advice of a study commission headed by former Defense Secretary Thomas S. Gates, Jr., the Pentagon

returned to an all-volunteer armed force (AVF) in early 1973.

The transition worked smoothly. The active Army, Navy, Marine Corps, and Air Force are now being

manned at close to desired strength (2.1 million), and personnel quality has generally been satisfactory.

This successful start-up, however, came during a time of growing population in the prime military-age group (17-21), high unemployment in that same group, and pay increases for enlisted men greatly exceeding those in the private sector. The Army, in particular, doubts that the AVF concept can be sustained.

In analyzing AVF for the Senate committee, King, a professor of business at the University of Pittsburgh, finds that many of the Gates Commission's assumptions were optimistic or simply erroneous.

Enlisted personnel turnover is now running 50 percent higher than expected, at an added annual cost of \$1 billion. Military manpower needs have not been reduced, as anticipated, by increased efficiency; in fact, the military payroll now accounts for 54 percent of the defense budget

vs. 43 percent in 1964. The educational level of enlistees is down; attrition in the Army alone is up to 20 percent for first-year recruits. Minority representation is disproportionately large and getting more so. (The Army is 24 percent black, although blacks make up only 11 percent of the U.S. population.) Without draft-spurred enlistments, the reserve forces suffer in both quantity and quality of manpower.

One remedy, King concludes, would be a program of National Service. Such a system could encourage, and possibly require, all American men and women at a certain age either to work for civilian service agencies or enter the armed forces, perhaps with a pay incentive for military service. National Service could reduce annual increases in the cost per recruit (now running from \$5,500 to \$12,000), ensure sufficient manpower, and create a more equitable mix in the barracks.

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### **"Perspectives on Technical Information for Environmental Protection"**

A Report to the U.S. Environmental Protection Agency from the Commission on Natural Resources and the Steering Committee for Analytical Studies, National Research Council, National Academy of Sciences, Washington, D.C. 20418.

The U.S. Environmental Protection Agency (EPA) was established in 1970 to coordinate fragmented pollution control programs involving air, water, solid waste, pesticides, and radiation. Congress gave the agency no new authority; EPA was simply required to carry out existing laws. Anti-pollution laws enacted by Congress since 1970 continue to be narrowly focused, are not always "internally consistent," and often conflict with earlier legislation. The result, contends the National Research Council, has been "inefficient,

confusing, and sometimes counter-productive" EPA regulatory practice.

A study of sewage treatment illustrates the complexities that can arise. The 1971 Water Quality Standards Act requires treatment of wastewater; the treatment produces a noxious substance called sludge. The 1972 Marine Protection, Research, and Sanctuaries Act prohibits ocean-dumping of this sludge; and the 1970 Clean Air Act restricts the use of sludge incinerators. The result: Sludge is dumped on land, which has yet to be accorded protection.

The National Research Council recommends that EPA propose new legislation to Congress to restore "coherence" to the regulatory process. It further suggests that the agency no longer rely entirely on regulatory standards and timetables: It should instead ask Congress for the additional power to use "economic incentives" when the goal is abatement of aggregate amounts of

pollution and when specific levels of toxicity are not involved.

In principle, EPA could simply set a regulatory charge and leave the choice of responses to industries, townships, and families. "Those with low abatement costs will find it cheaper to abate than to pay," the study concludes; "those with high abatement costs will find it cheaper to pay than abate."

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### **"U.S. Foreign Economic Policy Issues: The United Kingdom, France, and West Germany"**

Subcommittee on Foreign Economic Policy of the Senate Foreign Relations Committee, Government Printing Office, Washington, D.C. 20402.

Britain's chronic trade deficit, aggravated by the fourfold increase in OPEC oil prices since 1972, could be largely relieved by development of oil and gas deposits in the North Sea.

According to London's figures, the United Kingdom, which now imports 1.7 million barrels of oil daily, could be self-sufficient in energy by the end of the decade. North Sea oil is flowing in greater volume than expected; estimates of reserves have been raised. By 1980, Britain could be exporting a projected *surplus* of 1.3 barrels per day.

Even so, observe the authors of this Senate staff report, the long-term policy implications of successful North Sea exploitation remain hard to predict. Critics have charged that Britain may already have "mortgaged" its future revenues by borrowing against them now. Moreover, other members of the Common Market, seeking alternatives to Middle East oil, are wondering how Britain will distribute its anticipated oil

surplus, expected to enrich the British Treasury with annual revenues of up to \$4 billion (roughly equivalent to its current oil deficit). France, which imports all of its oil, has complained bitterly about Britain's failure to devise an oil export policy vis-à-vis its European partners. Like West Germany, France fears Britain may eventually adopt the Norwegian position—a policy of slow, controlled production—which many Europeans would regard as a breach of faith.

There is concern as well among Western industrialized nations over the impact of North Sea oil on OPEC prices. While some believe the availability of British oil could be used to force down OPEC prices, others predict that, instead, OPEC will find a new ally in London. Development cost of North Sea oil is \$4 to \$5 per barrel, compared to 16 cents for Saudi Arabian oil. Thus, only the inflated OPEC oil price—\$13 per barrel—makes North Sea development economically rational.