says. Robb was prepared to explain why it would be great to build an accelerator in Virginia, not to discuss the machine on its merits. Similarly, Senator Warner was invited to speak before the appropriations subcommittee, which he did, stressing the importance of siting the project in Newport News. Johnston spoke about the structure of the atom. It was no surprise to those present that the vote went heavily in Johnston's favor, deleting SURA's construction funds from the 1985 budget.

Johnston's interest was aroused early this year when DOE tried to get the accelerator launched as a line item in the budget through a "reprogramming" request. DOE submitted a letter in February asking that $2 million be shifted from one area in last year's budget to a new account for construction of the SURA project. Such requests do not go before the full committee, and it is very unusual for a major construction project to be started this way. At the same time, the President's 1985 budget officially sought another $7 million, and "SURA people came in here to tell us the budget request was woefully inadequate," says subcommittee staffer Proctor Jones. They wanted $20 million. "They did come on a little strong at first."

Normally projects like this have some congressional history, but, in this case, the proposal had not even appeared in DOE briefings on future construction. "This one is going to cost $250 million at least, with annual operating costs of $20 to $25 million. . . . The more questions we asked, the more funny answers we got," Jones says. "It had a lot of rough edges." So Johnston and appropriations committee chairman Mark Hatfield (R–Ore.) cut the reprogramming request in half to $1 million and insisted that it be used for planning, not construction. DOE and SURA signed the contract on 3 August. In the 1985 budget passed in June, Congress allowed no money for SURA construction work but gave another $3.5 million for further R&D to define the project's scope and cost. And, at Johnston's request, DOE will come up with a new long-range plan showing how the project will fit into the 1986 budget and research agenda.

Two weaknesses have hindered SURA: its lack of institutional clout and the apparent lack of unanimity in the physics community that its project would be the most exciting new machine to construct. Because SURA has no full-time technical staff of the kind a national laboratory can deploy, it has not been able to push the design work on the accelerator as far along as older institutions might have. This is a sensitive point, for SURA has been criticized from the outset for its inexperience.

The group has been trying to recruit a director with experience in building accelerators and was angling earlier this year to hire Paul Reardon of the Brookhaven National Laboratory. Reardon participated in or directed construction of the Bates accelerator at Massachusetts Institute of Technology, Fermilab, and the Princeton tokamak fusion device known as TFTR. His most recent assignment was to bring order out of chaos in the construction of the colliding beam machine at Brookhaven, formerly known as Isabelle ("Wasabelle," some call it). He succeeded, but then the $100 million project was canceled in 1983, essentially because it had become outdated. (Senator Johnston had Isabelle in mind when he asked questions about SURA.) Reardon reportedly declined SURA's offer of a directorship after construction funds failed to materialize. He was not available for comment. In any case, SURA must still find a director and a staff that will make Congress feel the millions of dollars to be spent will be spent carefully.

SURA's more fundamental challenge will be to win an enthusiastic endorsement from the nuclear physics community. Senate staffers did not fail to notice that the Nuclear Science Advisory Committee's "Long Range Plan for Nuclear Science" (December 1983) gave much more attention to the ion collider than to SURA's electron accelerator. The collider is described in bold italic as "the highest priority new scientific opportunity within the purview of our science." The same chapter notes in less excited type that the SURA accelerator "will be an ideal instrument for exploring [quantum chromodynamics] and it is eagerly awaited by the nuclear physics community." The reason the accelerator was not praised more, according to one member of the drafting group, was that when the long range planning began in 1982, "we were told to regard the accelerator as given and proceed from there." This approach left the group's commitment to the machine untested and thus slightly cloudy.

The queries from the Senate and the new charge from the White House now make it necessary for the fundamental issues as well as the budget to be reconsidered. The objective, as Senator Johnston has indicated, is to get unequivocal answers to the questions: What is the best machine to build next? and How much does the community want it?

—ELIOT MARSHALL

Looking at the Debits on R&D Tax Credits

A House Ways and Means subcommittee pondering the future of legislation providing tax credits to industry for R&D expenditures got a less than clear lead from government experts appearing at hearings on the subject.

While industry investment in R&D appears to have risen since the tax credit provision was enacted in 1981, the witnesses were dubious that the tax credit provided the impetus for such investment. The most skeptical comment came from representatives of two of Congress's support agencies, Rudolph G. Penner, director of the Congressional Budget Office (CBO) and Jimmy C. Finch of the General Accounting Office (GAO).

According to Finch, factors other than the tax credit could account for the increase in R&D spending. Economic conditions have improved substantially since the legislation was passed in 1981, presumably giving managers greater incentives to invest in R&D. Finch said that recent studies also suggest that the tax credit may not be large enough to persuade a manager to invest in R&D rather than use the funds for other purposes.

As for the size of the increase, inflation distorts the picture, because more dollars are required now to finance R&D work at the same level as in the past. And some companies may have stretched classifications to qualify for the credits.

CBO director Penner observed that the R&D tax credit now applies to both development work on current products and for research on future products. One option would be to refocus credit toward basic and applied research. "This would help those projects now least likely to receive adequate private support. Such a refocusing would also reduce the cost of credit while encouraging firms to do the research likeliest to yield the greatest reward to society."

Treasury estimates put the cost in tax revenues of the R&D tax credit at more than $7 billion between 1981 and 1989. A Treasury Department sample of 1981 tax returns showed that of 2678 companies that claimed R&D tax credits, half of the benefits went to 53 companies which were

categorized as very large corporations in terms of both total assets and spending on R&D.

Treasury acting assistant secretary for tax policy Ronald A. Pearlman, who testified at the Ways and Means oversight subcommittee hearing on 2 August, said that the Administration favors extending the tax credit for an additional 3 years, but wants the credit tied more closely to those activities "that are likely to result in technological innovations."

The R&D tax credit will expire next year at a time when congressional efforts to beard the huge federal deficit will likely sharpen the debate over whether the R&D credit costs in revenue are worth the still-ambiguous benefits they bring to innovation.

—JOHN WALSH

Congressmen Seek Halt to Plutonium Shipment

Fifteen members of Congress have signed a joint letter to President Reagan asking him to hold up a shipment of 189 kilograms of plutonium—enough to make 30 nuclear explosives—from France to Japan. They are concerned that the shipment will set a poor precedent, and argue that it should be delayed at least until a safe means of transporting the material by air—rather than by sea, as currently proposed—has been developed.

Formal U.S. approval is required because the plutonium was separated from reactor fuel that was enriched in the United States, and the U.S. government has ultimate authority over its final use.

Some 2 years ago, Japan proposed to ship the material in a container on a cargo vessel, but the United States objected. The current plan is to transport it on a dedicated vessel with an escort force including U.S. military units in some areas, "to minimize response times in the event of an incident," according to a statement by the Department of Energy. In addition, the ship will be equipped with sophisticated communications systems, including satellite tracking systems.

The Administration is now satisfied with the security, which was worked out in part by the U.S. Joint Chiefs of Staff, and on 20 July Energy Secretary Donald Hodel notified Congress that the United States would give its approval to the shipment.

The congressional letter commends the Administration for insisting on these extraordinary security measures, but questions whether they are adequate. "Shipments of nuclear explosive materials would provide tempting targets for attack by terrorists or even certain countries seeking to quickly acquire significant quantities of nuclear weapons materials."

In particular, the letter points out that shipment by air would be potentially more secure because it "would reduce from weeks to hours the time shipments would be at risk." Containers suitable for air shipment are under development and are expected to be ready for use "within a few years or less," the letter states.

The congressional critics are also concerned about the precedent set by the shipment, which will be by far the largest consignment of plutonium ever transported in international commerce.

The material is intended for use in the Joyo experimental fast breeder reactor, but according to a study done for Representative Richard Ottinger (D–N.Y.)—the prime mover behind the letter—by the Federation of American Scientists, Japan already has some 4 years' supply of plutonium available for its breeder program. The letter therefore criticizes the Administration for setting "an unfortunate precedent that physical need will not be a consideration in any decision to transport nuclear explosive materials." Approval "without a clear need could lead to future requests from other countries that could result in the accumulation of significant amounts of unneeded nuclear explosive materials in non-nuclear weapons countries," it states.

The Administration is required to notify Congress 15 days before the approval is due to take effect. It would require a special act of Congress to block the approval, however, and that is extremely unlikely.

In addition to Ottinger, the signatories included five senators—William Proxmire (D–Wis.), Gary Hart (D–Colo.), Edward Kennedy (D–Mass.), Carl Levin (D–Mich.), and Alan Cranston (D–Calif.)—and seven members of the House Committee on Foreign Affairs.—COLIN NORMAN

U.S. Says Free Market Is Key to Population Policy

The American delegation to this month's population conference in Mexico City will be focusing most of its energies on promoting the free market as the route to improving life for the world's peoples. That was the message at a press conference held at the State Department by delegation chairman James Buckley, who currently heads Radio Free Europe in Germany.

The delegation of nine, including three advisers from the government, for the most part reflects the Administration's economic philosophy and anti-abortion stance. It contains no population experts and only one woman—Jacqueline E. Schafer of the Council on Environmental Quality, a former Buckley aide.

At the press briefing, Buckley stated that the American position does not constitute a radical departure from the past 20 years, as charged by population groups, but rather a "significant sharpening of focus." This sharpening includes a rejection of the "Malthusian pessimism" of Global 2000 (the controversial report authored by the Carter Administration), as well as "the assumption that world resources are finite." It also makes "encouragement of free economic development" a centerpiece of population policy.

Buckley declined to be more specific about any aspect of the United States position. Asked, for example, about the prohibition against giving money to any private organization "actively promoting" abortion, he said he could not define that phrase.

Buckley was specific about one matter, however. He indicated that there was no need for an increased commitment of money from the United States, which already supplies 44 percent of the international family planning effort.

Population groups have claimed that the American delegation is going to be an embarrassment to the nation with its preaching to other countries about their economies, and its emphasis on abortion, which most consider a peripheral issue. Said Buckley: "I can't think of anyone in my delegation who's going to be embarrassed."—CONSTANCE HOLDEN