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DRAWING DISTINCTIONS: THE CASE OF GALILEO

With the launch of the plutonium-powered Galileo mission to Jupiter aboard the Space Shuttle Atlantis, public concern and controversy over the use of nuclear power in space escalated significantly. Because of its use of nuclear power, the Galileo launch was the first to be challenged in the courts, and the first civilian space mission to encounter civil disobedience seeking to block it.

Opposition to Galileo was not limited to anti-nuclear power organizations and activist groups. At FAS, we received many dozens of phone calls and letters from unaffiliated individuals, and some FAS members, who were genuinely afraid of Galileo or angry that it was permitted to go forward.

Based on our persistent efforts in favor of a ban on nuclear power in Earth orbit, many expected us to likewise oppose Galileo. We did not.

Real Safety Issues

This decision was not an obvious one. Everyone agrees that the plutonium used in Galileo's power supplies is an extremely radioactive and toxic material. It is also clear that the Space Shuttle is not absolutely reliable. In fact, the launch vehicle is so complex, the historical database on shuttle system performance so limited, and the potential accident scenarios so diverse, that the nuclear safety risks involved in Galileo can not even be defined with precision. (NASA's attempts to do so became the focus of much fruitless dispute.) In addition, many people are categorically opposed to the use of plutonium for any purpose whatsoever. Others do not believe the space program is valuable enough to warrant any significant risk.

As a general rule, to insist on the complete absence of risk is not only unrealistic, but also destructive. The consequences of such a stance would include an immediate halt to any sort of personal, societal, or technical development.

Instead, one ought to ask about a project such as Galileo; Have the risks involved been responsibly addressed and minimized? Do the risks serve a worthy objective? Acknowledging that there is room for disagreement, we came to the conclusion that in the case of Galileo the answer to these questions is, Yes.

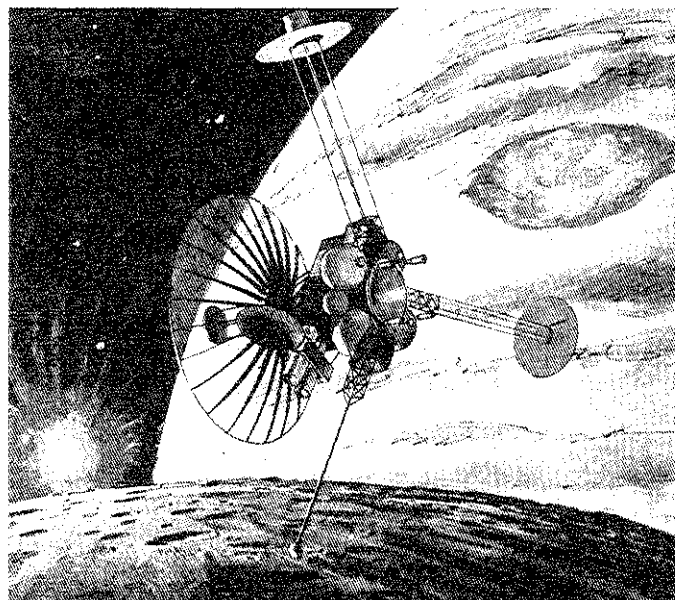
Regardless of the actual probability of a given accident, the plutonium power supplies used aboard Galileo were designed on the assumption that an accident *would* occur, and that as far as possible they must be able to withstand such an accident intact. In the process of verifying the design, the power supplies were exposed to a variety of accident environments. They were subjected to explosion

pressures about 100 times more intense than those generated in the Challenger accident (as determined from recovered debris and photograph analysis), without any release of fuel. They were immersed in a fireball to simulate a launch pad fire. Aluminum and titanium bullets were fired into them to simulate high velocity shrapnel from an explosion.

These tests established that the threshold for release of plutonium fuel into the environment is very high. Still, the risks could not be absolutely eliminated and it remained conceivable that a release could occur. A shuttle solid rocket booster casing, striking the power supply at sufficient velocity and within a very small range of angles, could shear open some of the individually contained fuel modules. A worst case launch pad accident might produce several tens of cancers.

High-speed reentry into the Earth's atmosphere during Earth flyby in 1992, a theoretical possibility, could release some or perhaps all the fuel into the environment, but the trajectory of the flyby is designed to render such reentry extremely unlikely. The spacecraft will never be placed on an Earth-impacting trajectory, so that even allowing for statistical errors, a loss of communications or spacecraft control would not result in accidental reentry. Nevertheless, were reentry to occur, natural background radiation would be increased by a small fraction of a percent, and

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Galileo mission to Jupiter will perform a thorough study.

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between zero and several thousand fatal cancers worldwide could result over a fifty year period.

Important Benefits

The question remains, who needs it? What purpose does the risk, even if small, serve? Clearly the immediate benefits of Galileo and other planetary missions will accrue to the space scientists who will have a wealth of new data to sift through and interpret. The voyage to Jupiter will provide new insights into the formation of the solar system and, by implication, the universe itself.

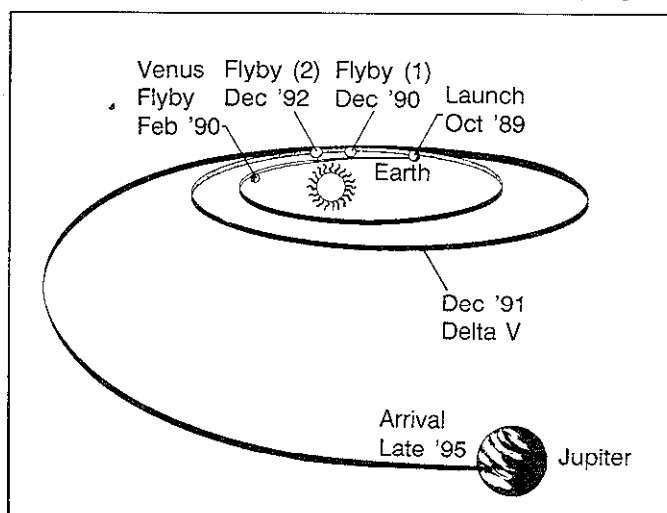
Knowledge for its own sake, however, is ultimately a sterile ideal. Towards more practical ends, Galileo will expand the scope of our understanding of meteorological processes that may aid in the preservation of our own precarious environment.

Beyond that, the space program at its best has the potential to become what William James called "the moral equivalent of war." In other words, it can provide a way of channeling the energies of society, and of the aerospace industry in particular, to goals that are fundamentally positive and constructive. It seems far better for firms such as Hughes Aircraft, which built the Galileo probe, to work on civilian scientific projects than on yet more weapons systems. It ought to be made easier for them to do so, not more difficult.

At FAS, we continue to actively oppose the use of nuclear power in Earth orbit [see November 1988 PIR] and to advocate a moratorium on space-based testing of nuclear reactors. Aside from nuclear safety concerns, orbiting reactors create new environmental problems, such as gamma-ray interference with some scientific satellites. And the "benefits" of nuclear power in orbit may be even worse than the risks. Thus, according to a recent aerospace industry report, orbiting nuclear reactors will be required for and "may be the most important aspect" of many future space weapons systems.

We also recognize, though, that nuclear power has played a constructive role in planetary exploration and can, in fact, serve the public interest. □

— Steven Aftergood



Galileo's route to Jupiter includes two Earth flybys.

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THE BUSH REVERSAL ON A CHEMICAL WEAPONS BAN

For five years George Bush has professed a personal commitment to a global abolition of chemical agents and munitions. The world expected to see the fruits of his convictions in September at the US-Soviet meeting in Wyoming and in his speech to the United Nations. Instead, it has seen President Bush succumb to pressure from the Pentagon to retain a chemical stockpile indefinitely, and further, to abandon the long-standing US position seeking a negotiated production ban, in favor of replacing the existing US chemical stockpile with new munitions.

Evidently, narrow Pentagon interests clouded the Administration's sight of what is most important, namely:

- Negotiated elimination of the large chemical stockpiles in Europe, with strong verification measures to ensure that these sinister weapons never return, and
- Rapid conclusion of a global treaty, without restrictive conditions, that will attract the support of most other countries and increase the security of all countries.

This is within our grasp. By the end of this summer the Conference on Disarmament in Geneva had advanced far toward the elimination of chemical weapons. Its 64 member and observer states had developed a bulky draft treaty based on the text presented by Bush himself in 1984.

This draft has two core elements that distinguish it from concurrent nuclear and conventional negotiations. It provides for the total elimination of all existing stockpiles and for an immediate and permanent end to all production of chemical weapons. At the UN, the President endorsed the draft verification procedures, saying he believes "we can achieve the level of verification that gives us confidence to go forward with the ban."

But the Pentagon led the President to undermine all this with two new positions based on misguided planning.

At the UN, Bush proposed to *stop* our destruction of chemical munitions after 8 years, when we would still possess part of our new stockpile, if any country deemed "capable" of producing chemical munitions remained outside the treaty. Yet the Administration has never proposed criteria for such a "capability."

Two weeks later, the press uncovered a US plan to change the text agreed to in Geneva so that the US and any country with a declared chemical weapons production program may continue to produce chemical weapons after the

treaty enters force.

The Pentagon has long argued for a new and diverse chemical stockpile to counter Soviet capabilities until a ban could be achieved. Now, however, the Administration claims it must pursue this stock designed for a European war, rather than a negotiated global ban on production, because of possible chemical threats from third countries. Yet the US needs only its immense conventional power to deal with such countries. This treaty, and additional US-Soviet agreements, remains the best and only way to eliminate the threat of chemical war.

Bush Threatens His Own Goal

These new policies would have serious negative consequences for the goal the President claims to share.

Both are open invitations to accelerated chemical proliferation. They create an incentive for countries to begin production programs, even if no significant production is achieved, so that they could complete their plans after joining the treaty. But, once they've gotten started, such countries may see less advantage in joining a ban that will eliminate their fledgling chemical stocks.

And in the wake of Bush's reversal, there may be no treaty to join. Negotiating states with serious chemical warfare potentials—e.g. Egypt, Iran, India and China—may lose interest in reaching consensus on any treaty restricting their own future plans.

Encouragement from bilateral achievements may also be lost. The Soviet Union was not informed of these policy shifts when Shevardnadze signed the Wyoming agreement and may now be unenthusiastic about its timely implementation. This agreement provides for a bilateral exchange of data on the US and Soviet chemical stockpiles, followed by inspections. The negotiations would benefit from such early testing of verification procedures and from some hard data on the costs that would fall on a future treaty regime.

Also, the USSR may now reject Bush's UN proposal to begin reducing both sides' stockpiles to 20% of the present US inventory. In addition to restricting new US production significantly below the planned targets, this proposal would publicize the reductions and permit training of international inspectors and third country technicians.

Now is the time for leadership, not backpedaling. Under sharp domestic and foreign criticism, the Administration has already begun to reconsider this negative course.

The President should quickly agree with the Soviet Union to destroy both stockpiles and to join with them in leading the Geneva negotiations. Congress should encourage the Administration's current reevaluation of the need for new chemical munitions and hold the President to his UN promise to request more money to develop verification instruments and procedures. Our NATO allies and key states in the negotiations should continue to explain to the Administration the international repercussions of such unilateral and retrograde policies.

The President has three months to reverse his reversal before the US negotiator next takes the floor in Geneva.

□

— Gordon M. Burck

CWC BULLETIN PUBLISHES 6TH ISSUE

The Chemical and Biological Weapons Project of the FAS Fund is publishing the sixth issue of its quarterly *Chemical Weapons Convention Bulletin* this month. We welcome requests for subscriptions.

Additionally, we are hoping to make the *Bulletin* more accessible by encouraging library subscriptions. Please ask your institution's library (especially chemistry, science, and political science libraries) to contact us. ■

THE FIRST ANNUAL SUMMER SCHOOL ON SCIENCE AND WORLD AFFAIRS

Judging by its title alone, the Committee of Soviet Scientists for Peace and Against the Nuclear Threat should have no trouble finding suitable members. But to restrain the military juggernaut and to address the Soviet Union's serious environmental problems, what are needed are scientists who actually know something about these issues. Glasnost has opened a tremendous backlog of problems to public scrutiny, and the need for public-interest scientists is acute. Ironically, now that the scientific community can speak freely, there are only a handful of Soviet scientists with the knowledge and wherewithal to do so.

Perhaps recognizing that you can't teach old dogs new tricks, the Committee of Soviet Scientists is encouraging young scientists to make room in their careers for public-interest science. Last month they organized a school for 25 graduate students and undergraduates from the Moscow Physico-Technical Institute. The school was organized in cooperation with London's Imperial College of Science and Technology, which sent three lecturers and five students, and the Federation of American Scientists, represented by Jeremy Stone and Frank von Hippel. The Chinese Institute of Applied Physics and Engineering Mathematics sent a delegation of four. From the United States there were ten young scientists, from several universities, the Union of Concerned Scientists, the American Association for the Advancement of Science, and one from a Senate committee staff. Travel was paid from several institutional sources and the Ploughshares Fund.

Students Take Charge

The primary topic was arms control and nuclear weapons, but the context, created as much by the students as the lecturers, was global. Professor Sergei Kapitsa, speaking on the role of scientists, characterized western science as overly reductionist and compartmentalized. Scientists should learn not only to follow established research specializations, but also to see and respond to what is going on in the world around them. Jeremy Leggett, from Greenpeace, pointed out that with 30% of the world's population living within 60 kilometers of a coast, the effects of a greenhouse-effect sea-level rise could be devastating. Yet few scientists have expertise in the greenhouse effect, precisely because the scope of the problem is so broad.

One of the more revealing aspects of the school was the interaction of the students with what they called "the bureaucracy." The bureaucracy in this case was the Committee of Soviet Scientists, one of the most active of the glasnost organizations—a bureaucracy perhaps, but a pansy as Soviet bureaucracies go. The school was actually run almost entirely by the students, who showed an uneasy delight in their responsibilities—at first not sure they were up to, say, moderating the question and answer periods, yet soon resenting any interference from higher-ups. But the students never developed the confidence to contradict directly any of the old-style bureaucrats, who seemed to be at the root of most snafus. In the end, there was no clarification of who was in charge of what. Perhaps, at this time, a breakdown in lines of authority is the best the Soviets can

manage. Maybe this is perestroika.

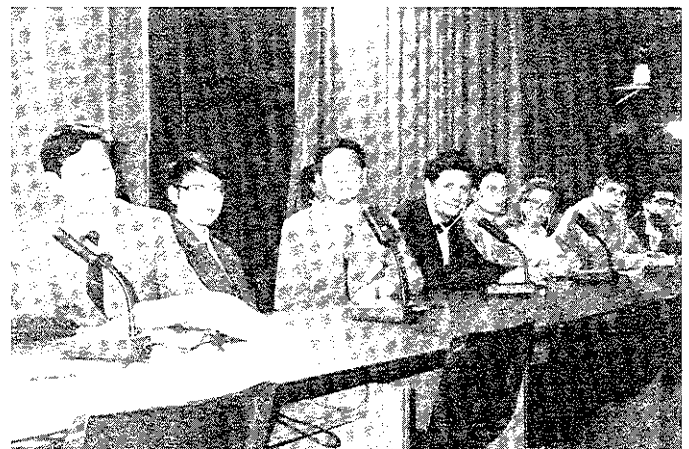
Overshadowing the local chaos, some of the Soviet students had a larger worry—the possibility of revolution. Others scoffed at this idea, but uncertainty about the future created a special sense of urgency. The Soviets felt that this was a once in a lifetime opportunity, and they didn't want to waste any time. They were insistent in asking how they could continue to study these issues and how they could start work of their own. They wanted to begin with some "small" problems, like environmental damage around Moscow.

We Can Help

The immediate impediment to development of Soviet public-interest science is lack of information, and lack of previous work and experience to draw on. For public-interest science to develop quickly, the Soviets will need to draw on the experience of scientists from the United States and elsewhere. They don't have time to reinvent the wheel. We brought several feet of books and reprints, and these have become the basis of a journal club. The students have drawn inspiration from learning how much more we know about them than they know about themselves. NRDC's Nuclear Weapons Databook, especially the volume on Soviet nuclear weapons, is a case in point; they want to get to work immediately translating it into Russian.

Perhaps most important, the Soviet students developed a sense of solidarity, and now constitute a voluntary organization, meeting regularly. We will try to bring many of them to the U.S. for another summer school next year. Some will be applying to study in the United States. But communication is very difficult—letters take forever and electronic communications are almost non-existent.

Though we worked together for only a week, strong links developed, and we even found our own slogan. Alexei, one of the student leaders and an all-around comic, for some reason kept using the expression "it's high time . . . as in, "it's high time to get the bus," and "it's high time to get started." Pretty soon we were all imitating him and his deadpan delivery. It wasn't until the school was over that we realized Alexei had gotten it just right. For public-interest science, it is high time. □ — Valerie Thomas



Valerie Thomas, with Chinese guests and other students.

FISSILE MATERIALS CUTOFF ENJOYS A REVIVAL

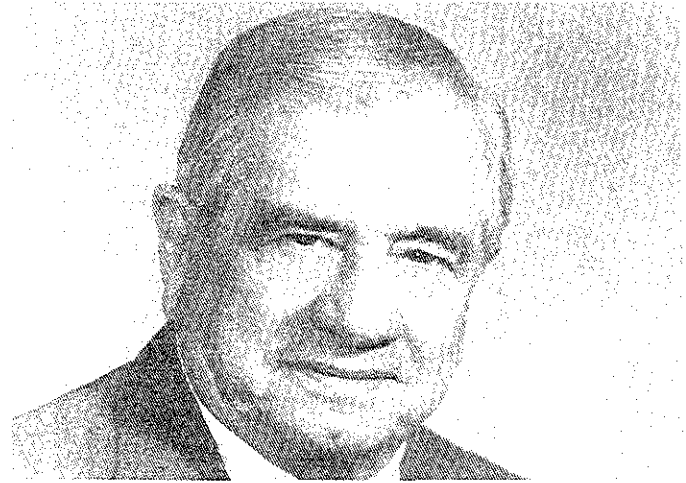
Due in large part to the efforts of FAS and other arms control and environmental groups, a mutual US-USSR halt to the production of plutonium and highly enriched uranium ("fissile material") for nuclear weapons is now more likely than ever before. On July 27, 1989, the US House of Representatives passed a resolution calling for "the President to seek negotiations with the Soviet Union on a verifiable agreement for an end by both countries to the production of plutonium and highly enriched uranium for weapons purposes." In his September 26 statement before the United Nations, Soviet Foreign Minister Eduard Shevardnadze said that "the Soviet Union is proposing that all nuclear powers, above all the United States, should begin preparing to conclude an agreement on the cessation and prohibition of the production of [fissile] material." Although the Bush Administration remains opposed to the idea, pressure is building at home and abroad for the US to begin negotiating a fissile materials production ban with the Soviet Union.

Never before has there been such an opportunity to halt the production of fissile materials and shut down permanently the decrepit plutonium production facilities in both the US and USSR. Because of enormous safety and environmental problems in the nuclear weapons complex, the US has not produced any weapons-grade fissile materials for over a year. The condition of Soviet production facilities is thought to be equally as dismal as those in the US, although the Soviet Union continues to produce several thousand kilograms of weapons-grade plutonium a year. According to Representative Ron Wyden, "the US now has an historic opportunity to shut down Soviet plutonium production by challenging the Soviets to negotiate a bilateral agreement."

A fissile materials ban is an old idea. Between 1956 and 1969, the US government repeatedly proposed to the USSR that they negotiate a bilateral halt to the production of fissile materials for nuclear weapons. The Soviets refused the offers, presumably because their stockpile of fissile materials was considerably less than that of the US. By 1982, however, the fissile stocks of the two superpowers had reached approximately equal levels, allowing the Soviet Union to make its own overture in support of a production cutoff. Unfortunately, the US rejected the offer, and since then the issue has been dormant in international diplomacy. That is, until 1989.

The International Plutonium Control Act

For several years, FAS has been seeking Congressional support for legislation that would cut off fissile materials production. In 1987, FAS along with a coalition of national and regional arms control and environmental groups known as the "Plutonium Challenge," called on the President and the Congress to temporarily stop plutonium production for weapons, and to challenge the USSR to negotiate a bilateral, verifiable agreement to halt permanently the production of fissile materials for nuclear weapons. This coalition became the political force for the 1989 International Plutonium Control Act, which was by far the most



Rep. Dante Fascell supports the International Plutonium Control Act in order to "rectify the current superpower imbalance in nuclear materials production for nuclear weapons which favors the Soviet Union."

politically catalyzing arms control bill to appear on the Hill this year, attracting broad bipartisan support in Congress.

The International Plutonium Control Act was introduced on May 18 in the House of Representatives by Congressmen Ron Wyden, Dante Fascell, Tom Tauke, Bill Green and about 90 others, and in the Senate by Senators Edward Kennedy, Timothy Wirth, Mark Hatfield, and four others. The central feature of the Act is that it would end funding for US plutonium production for weapons if the USSR verifiably halts its own plutonium production for weapons and begins negotiating a bilateral fissile materials cutoff.

By the end of July, less than 10 weeks after the bill's introduction, the International Plutonium Control Act had over 180 congressional cosponsors in the House and had received hearings before the Defense Nuclear Facilities Panel of the House Armed Services Committee, chaired by John Spratt, and the Arms Control, International Security and Science Subcommittee of the House Foreign Affairs Committee, chaired by Dante Fascell. FAS members were leading witnesses in favor of the bill at both hearings.

Soviet Support For A Cutoff

Efforts to gain support for the International Plutonium Control Act were helped considerably by public statements from the USSR. On April 7 in London, Gorbachev announced his decision to cease the production of highly enriched uranium for weapons and to shut down two plutonium production reactors in "yet another step towards the complete cessation" of the production of fissile materials for nuclear weapons. On May 12 in Moscow, Gorbachev suggested to Secretary of State James Baker that the "superpowers start drafting work on a bilateral agreement on the controlled cessation of the production of all weapons-grade fissionable materials."

In early July, the Act received another boost when a congressional and scientific delegation organized by the

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Natural Resources Defense Council and the Soviet Academy of Sciences visited the Soviet military plutonium production complex at Kyshtym, near Chelyabinsk. Representative Bob Carr, after returning from Kyshtym, said the delegation was able to "verify that . . . President Gorbachev's statement about beginning to close their nuclear weapons reactors has in fact begun. We verified and visited two nuclear weapons reactors that had in fact been closed."

Congressional Roadblocks

Although the International Plutonium Control Act succeeded in attracting national and international support, it failed to win over key parts of the political leadership in the House of Representatives. The chairman of the Armed Services Committee, Les Aspin, worried that "we are overloading the arms control agenda." John Spratt, chairman of the Defense Nuclear Facilities Panel, could not support the Act because "it would force the President's hand." Both of these men wield considerable political clout in the area of defense issues, and without their approval the principal sponsors of the Act decided that the International Plutonium Control Act could not gain passage.

Therefore, before the Act came up for a vote on the House floor on July 27 the legislation's original House sponsors, Fascell and Wyden, weakened the International Plutonium Control Act by removing the bill's binding section relating to the funding cutoff. While the revised version, which passed the House as an amendment to the 1990 defense authorization act by a vote of 284 to 138, had lost its bite, it had not lost its potent political message. What remained was a sense-of-Congress resolution urging "the President to seek negotiations with the Soviet Union on a verifiable agreement for an end by both countries to the production of "fissile materials for weapons purposes" and to "seek to establish a mutual United States-Soviet work-



Rep. Ron Wyden: "We would like to see if the Soviets mean business on this nuclear weapons production issue. That is why we are urging that negotiations be pursued."

ing group to examine the technical aspects" of such an agreement. In addition to the non-binding provision, the amendment would require the Administration to prepare a report by April 30, 1990 on "the verification and technical aspects" of a fissile cutoff and to "establish a United States technical working group to advise the President on the verification and technical aspects of such a halt" by December 31, 1989.

On the other side of the Capitol, the situation was quite different. The Senate displayed its traditional hesitancy concerning arms control legislation in general, especially binding legislation such as this. In stark contrast to the House outcome, only 14 Senate cosponsors were found, no hearings were held and, as a result, the International Plutonium Control Act was not brought to the Senate floor for a vote. However, Senators Kennedy, Wirth, and Adams did succeed in passing an amendment to the defense authorization act requiring the Administration to prepare a report on "the on-site monitoring techniques, inspection arrangements, and national technical means, that would be used to verify Soviet dismantlement of nuclear warheads" and on those measures "that would be used to verify the end use and purpose of any fissile materials" recovered from the dismantlement process or produced. "The process of becoming informed about these possibilities," said Senator Kennedy, "can be separated from the policy decisions on whether to pursue them as formal objectives at the negotiating table in Geneva."

The result of the House-Senate conference on the International Plutonium Control Act was not known at press deadline, but a recent speech before International Institute for Security Studies (IISS) in London by Senate Armed Services chairman Sam Nunn may give a hint of the outcome. Nunn discussed his vision of a "two-tier approach to arms control" in which ongoing negotiations on issues such as START, CFE, and chemical weapons would be concluded before "pushing the envelope" of arms control to include other areas. Draft conference language concerning the International Plutonium Control Act includes wording to the effect that a fissile material cutoff would be added to the "second tier" of negotiations. If this language survives the conference, Congress might be signaling that a US-USSR agreement to stop fissile material production should wait until a START agreement is completed, but that the technical basis for such an agreement should be developed immediately.

Negotiations Should Begin Now

Such caution is unnecessary and could be counterproductive. Although further study would be beneficial, the feasibility of a fissile cutoff is now widely accepted. While the US waits, the Soviet Union continues to produce large quantities of plutonium for weapons, possibly creating an asymmetry in US and Soviet inventories. Delaying a bilateral cutoff also wastes funds rebuilding US plutonium production capabilities, and continues to endanger the health and safety of the people living near the remaining US and Soviet plutonium production facilities. □

— David Albright and Tom Zamora

THE TECHNICAL BASIS FOR DEEP REDUCTIONS

Thomas Longstreth's review in the September Public Interest Report on the possibility of deep reductions in the U.S. and Soviet post-START strategic nuclear forces was a good description of the current level of the political debate. However, it does not do justice to the findings of recent technical studies—including those of the joint FAS project with the Committee of Soviet Scientists (CSS).

Following are some concerns about points made in the FAS review.

How Low Do You Go? This review quotes an article on deep cuts by Michael May and George Bing of Livermore and John Steinbruner of Brookings which concludes that it would not be possible to reduce U.S. and Soviet strategic forces to a level below 3,000 warheads each without abandoning the mission of attacking the most important two thousand or so military, government and industrial targets on the other side. But designing strategic nuclear forces around such large "counterforce" missions is insane, since, as May, Bing and Steinbruner themselves conclude, the attacks would cause 10-100 million "prompt fatalities."

An alternative design criterion is that each side have an assured retaliatory capability of a few hundred warheads after absorbing a worst-case first strike. This criterion would allow us to reduce the strategic forces to less than one thousand warheads on each side using sea-basing, alert bombers and mobile land-based missiles.

The review also reports the concern that, if a significant part of a small strategic nuclear force were based on ballistic-missile submarines and we continued to base about 200 warheads on each submarine, we would be in a situation of putting too many of our nuclear "eggs" into a very few "baskets." But a simple solution to this problem would be to reduce launch tubes per submarine. If 18 out of the 24 launch tubes in a Trident submarine were sealed up verifiably, for example, the same number of missiles and warheads could be deployed in four times as many submarines.

How Do You Verify Deep Reductions? Brent Scowcroft, President Bush's National Security Advisor, is quoted in the review as follows: "If you have 10,000 warheads and you cheat and you add another 1,000, so what? It doesn't matter. If you have 1,000 and you cheat and add another 100 or 200, it could make a significant difference." The obvious question is: a significant difference to what? It is easy to show that the survivability of a well-designed strategic force could not be threatened even if the other side suddenly broke out several thousand extra strategic warheads and their delivery systems. It would take 70,000 one-megaton warheads, for example, to destroy the ballistic-missile submarines deployed in an area the half the size of the Arctic Ocean.

Of course, this doesn't mean that verification standards should be lax.

One subject that is treated only cursorily in the review is the extension of verification arrangements to warheads and the fissile materials that can be used to make them. This has been one of the centerpieces of the FAS-CSS project. It would be essential to the verification of the

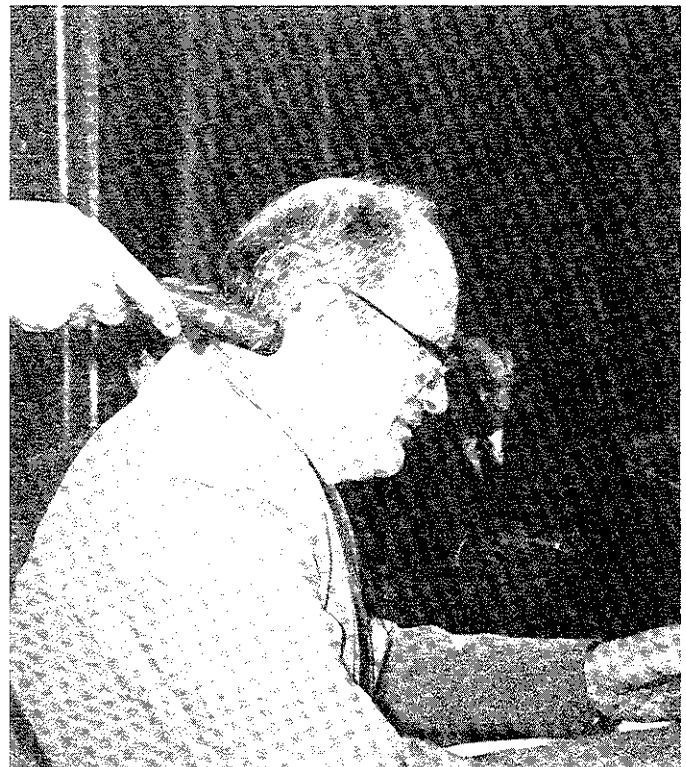
elimination of tactical nuclear weapons. An article by Ted Taylor on verifiable dismantlement of nuclear warheads can be found in the first issue of *Science and Global Security*, published just last month. (This issue also carries 5 articles produced by the FAS-CSS project on the technical basis for a ban of nuclear reactors in earth orbit and another on the verification of limits on nuclear-armed sea-launched cruise missiles.)

The review also suggested that a ballistic-missile flight test ban, which could reinforce the stability of a deep-cut agreement, could be opposed on the grounds that it would prevent reliability testing. However, a flight test ban need not be an all or nothing affair. For example, a ban on the testing of MIRVed ICBMs and maneuverable reentry vehicles, which might be developed to attack mobile missile launchers and command posts would not interfere with the continued reliability testing of single-warhead ICBMs and of submarine-launched ballistic missiles equipped with standard reentry vehicles.

Objections To Deep Reductions. Finally, the review mentions a number of objections to deep reductions without making clear that there are convincing rebuttals.

For example, the concern is raised that it might take a shorter time for a country to deploy defenses against hundreds of ballistic-missile reentry vehicles than it would take for the other side to deploy additional offensive forces. However, so many light-weight decoys and jammers could be deployed quickly on existing ballistic missiles that the interception in space of the warheads launched by even a relatively small number of ballistic missiles would be made impractical. □

— Frank von Hippel



Frank von Hippel addresses Summer School.

CAMBODIA: FIGHTING STEPPING UP

As with the Jews during World War II, so also with the Cambodians of this era: the U.S. Government appears to be acquiescing in their destruction.

It was Secretary of the Treasury Henry Morgenthau who served President Roosevelt with a memorandum entitled "On the Acquiescence of the U.S. Government in the Murder of the Jews." And it was only after this memorandum was delivered that President Roosevelt could force the State Department to cease its opposition to the rescue of European Jews from fascism. The quiet obstacles were bureaucracy, geopolitics and anti-Semitism.

Today the ingredients are the same. Only anti-Vietnamese feeling replaces anti-Semitism. And the geopolitics of not confronting China publicly is the main obstacle to an activist policy. Only the President can save the Cambodians and, as in many other spheres, he seems insufficiently decisive.

FAS Describes Anomalies

On October 17, FAS released a letter to the Secretary of State making this analogy and listing a dozen anomalies of the Department's contorted policy. U.S. policy in Cambodia now gives new meaning to the design of a pretzel.

FAS also complained that the Congress had already passed legislation prohibiting aid that would have "... the effect of promoting . . . directly or indirectly the capacity of the Khmer Rouge to conduct military operations." Yet the US was sending military, if not lethal aid, directly to groups allied to the Khmer Rouge—thus aiding the Khmer Rouge indirectly by aiding its coalition allies who fight the same enemy.

The State Department normally shrugs this off by raising the irrelevant claim that the armies do not fight in coordination. Even this claim is regularly denied in newspaper reports and, on October 11, Prince Sihanouk said he wanted "particularly to commend the fact" that all three factions "assist one another in every circumstance and cooperate with one another on the battlefield . . ."

Hun Sen On Efforts to Agree with Sihanouk

"I dare to confess that I highly appreciated Prince Sihanouk personally in the past two years. However, his recent volte-face attitude [i.e. at Paris] has turned everything upside down." (Sept. 16, 1989)

"But it is a difficult task to predict Sihanouk's attitude. I frankly tell you that it is much easier for me to predict a rainfall by looking at the clouds than to predict Sihanouk's reaction, for his change of mood are faster than the changes in the weather during the monsoon. In other words, his moods are more capricious than the weather of London." (September 21, 1989) ■

Prince Sihanouk's statements of support to the Khmer Rouge are the purest of venom, e.g. "If we let the Heng Samrin—Hun Sen—Chea Sim regime continue to survive, this is tantamount to letting Vietnam, our natural enemy, engulf our Cambodia . . . and the name and existence of the country will disappear from the world map . . ." Read over and over on the Chinese-based Khmer Rouge Radio such statements must have an enormous impact on uneducated Cambodians—who are being told one big lie after another, e.g. that the Vietnamese are still in Cambodia, disguised in Phnom Penh uniforms, and that it was they who killed 2,000,000 Cambodians during the Pol Pot period.

Meanwhile the Thai government continues to go its two separate ways, with Bangkok reports saying that Prime Minister Chatchai "may not bear it anymore" that his foreign minister has contradicted his policy so often. And the *Bangkok Post* editorialists note that "Given a consensus among the political and military leadership Thailand possesses the diplomatic and physical means to achieve this objective [of limiting the scale of the civil war]." □

—Jeremy J. Stone

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