

Soviet Civil Defense: Insiders Argue Whether Strategic Balance is Shaken

An emotionally charged debate, which is now erupting into the public arena, has been raging within the American intelligence community about the Soviet Union's ability to protect its leadership, industry, and population in the event of an all-out nuclear war with the United States.

Some high officials believe that the Soviet Union is becoming so well fortified through its civil defense program that it could survive and recover from a nuclear war. Therefore, they assert, the strategic balance between the two countries, which has governed foreign policy and arms control for over a decade, has been upset.

But this conclusion is hotly contested in some quarters, and one official simply calls it "a joke."

No matter who is right, the controversy seems to be rekindling discussion of whether the United States should step up its civil defense effort.

The evidence that a massive, accelerated civil defense effort is under way in the Soviet Union is hotly disputed, but government officials who believe this is taking place cite the following to support their case:

- ▶ A gigantic, 7- to 8-million-square-foot factory hidden under a mountain, "west of the Urals and east of Moscow" of which the stacks, blast doors, and service roads are the only visible elements. Others have also been found.

- ▶ Population shelters near apartment complexes in Moscow, Leningrad, and Kiev. These look like dirt mounds, but they have ventilation panels on top and stairwells on the side.

- ▶ About 40 underground grain silos whose reserves are replenished periodically to prevent spoilage.

- ▶ Approximately 30,000 blast-proof and fallout-proof shelters to protect military equipment, troops, and communications. These include approximately 75 hardened underground facilities in the vicinity of Moscow. Bunkers for the Politburo and other elements of the leadership are said to be enclosed in "giant steel spheres."

- ▶ An extensive military-run civil defense organization led by General-Colonel A. T. Altunin, an aggressive, relatively young officer, whose rank is equal to that of the heads of the armed forces.

Altunin is said to have 78 generals under him whom American sources can identify by name.

- ▶ New industrial plants in dispersed locations away from urban centers. The patterns of development follow those outlined in Soviet civil defense manuals. Several underground facilities have also been found, apparently designed to shelter the work force, goods, or machinery.

Within the intelligence community, the Central Intelligence Agency (CIA) is said to be most skeptical of claims that the above findings, and other evidence, add up to a civil defense effort that military strategists and foreign policy-makers need worry about. Opposing this view is the Air Force Intelligence Service, which found some of the new evidence and which adheres to the view that the program is large enough to threaten national security. The Defense Intelligence Agency (DIA), which oversees the intelligence bureaus of the armed services and which is officially responsible for information on Soviet strategic targets, has taken a middle position.

The discussion has spread to Congress, where members and key staffers have received sometimes conflicting briefings, and where emotions are run-

ning high, both among those who think the whole argument is ridiculous and those who believe the United States is already Number Two. Calls for a U.S. civil defense effort, and for new strategic weapons have been issued; and the controversy shows every sign of gathering momentum in the coming year. While his boss was being briefed, for example, an aide to one conservative Republican said, with a gleam in his eye, "It was when I realized the Russians were Number One, that I really began to worry."

Several congressmen have been briefed by Thomas K. Jones, a Boeing Aerospace Company employee and former member of the Strategic Arms Limitations Talks (SALT) staff. Jones, with his mod style of dress, plain-spoken manner, and fervent, almost religious belief in the issue, has become a star witness at a number of hearings. He also acknowledges that he is privy to intelligence information on the status of Soviet civil defense. Jones claims that after a nuclear war, 98 percent of the Soviet population would survive and Soviet industry would recover in 2 to 4 years, as compared with industry in the United States, which would take 12 years to recover.

Prominent nongovernment experts have become embroiled in the controversy. Former Navy Secretary Paul H. Nitze, one of the elder deans of the defense community, recently added legitimacy to Jones's claims when, in an article in the January issue of *Foreign Affairs* magazine, he included Jones's calculations of the relative weakness of U.S.



T.K. Jones testifying before the Joint Committee on Defense Production

forces remaining after a nuclear exchange. Among the scientists and academic experts who have become involved on either side of the issue are Leon Gouré, of the University of Miami, Richard Garwin of the IBM Corporation, and Wolfgang Panofsky and Sidney Drell, both of the Stanford Linear Accelerator Center.

The Soviet civil defense issue, already controversial, shows signs of heating up in the next year. Those who feel the program is extensive, such as Jones, even predict the end of Western civ-

ilization. Says one official source, "We have accidentally discovered a vast effort to protect Soviet defense industry and an extraordinary effort to shelter their population. . . . In my judgment the U.S. strategic forces today are incapable of inflicting the levels of damage previously assumed by higher authorities in the United States."

But another official counters, "this whole thing has become a joke. The analysis just hasn't been done to justify any conclusions at all—let alone the end of civilization." On a more elevated plane,

a secret interagency report concluded: "The recent study of Soviet civil defense has not revealed any major changes in the Soviet program since about 1971, nor does it suggest a crash program. Rather, the Soviets have been proceeding gradually but steadily to implement decisions evidently taken previously."

Apart from all the bickering, the problem seems to have caught the intelligence community napping. Several sources say that CIA, for example, has had only a few analysts studying Soviet civil defense on a part-time basis in recent

Briefing

Inequality the Main Cause of World Hunger

A revolutionary new view of the world food problem has been produced in that unrevolutionary organization, the World Bank.

An analysis* prepared by two World Bank economists, Shlomo Reutlinger and Marcelo Selowsky, arrives at the following conclusions:

- Previous studies have underestimated the extent of malnutrition by about 30 percent.

- When allowance is made for the uneven distribution of food between rich and poor, it is estimated that 75 percent of the population of underdeveloped countries (some 1030 million people) receive diets with less than the recommended number of calories.

- The extent of this deficiency amounts to 400 billion calories a day, the equivalent of 38 million tons of food grain a year. This is a mere 4 percent of the world's cereal production.

- In other words, it is not so much the absolute amount of food produced, as the way it is distributed among rich and poor, that is the main cause of malnutrition.

- Yet even if incomes in underdeveloped countries increase as projected, the poor will not be able to buy themselves a substantially better diet for the foreseeable future. Thus malnutrition will not disappear in the ordinary course of economic development, unless special steps are taken to address it.

- Such steps should consist of food stamp or income transfer programs directed to the hungry. The cost of food equivalent to the calorie deficit is only about \$7 billion, but because of the diffi-

culties of getting the food only to those who need it, much larger quantities would in fact be required.

The study was released last month to the sound of numerous disclaimers that the World Bank was responsible for anything in it that anyone might find controversial.

It is based not on any new data but a reinterpretation of old data. Previous surveys have taken the total calorie consumption of a country or region, and if it exceeded the minimum calorie requirement times the number of inhabitants, have assumed there was no hunger problem. The approach followed by Reutlinger and Selowsky is to assume that food within a country is distributed not according to need but according to income. They concede that their data, being based on a mathematical model, are only approximate.—N.W.

Glomar Explorer Said Successful After All

Contrary to previous reports, the deep-sea salvage vessel *Glomar Explorer* succeeded in its mission to retrieve a foundered Russian submarine carrying nuclear weaponry. So says *Time* magazine on the basis of information attributed to a "senior U.S. Navy officer." The *Time* story, if true, corroborates what was already clear from study of the ship's operating manual, that previous accounts were full of inconsistencies, and that conceivably, "the *Glomar Explorer* has been declared surplus because she scooped up almost everything her designers intended her to garner" (*Science*, 25 June 1976).

When news of the *Glomar Explorer*'s venture first broke in March last year, most newspapers carried a version—almost certainly put out by the CIA—ac-

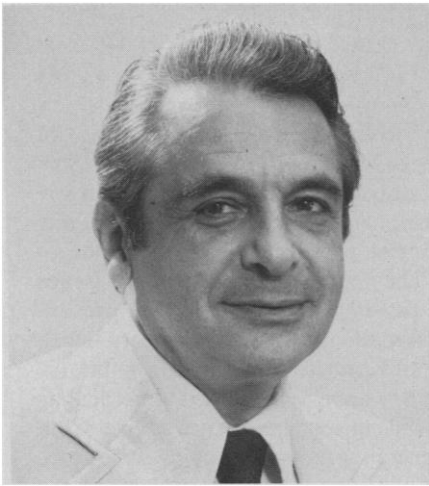
cording to which the mission was a very limited success. The Russian submarine, as this version had it, was raised in one piece from a depth of 17,000 feet, but during the ascent two thirds of the wreck broke free of the *Explorer*'s grapple and plunged back to the ocean floor, never to be recovered. The piece that came up contained no missiles, no code room and no nuclear torpedoes—in fact nothing that might be the cause of public humiliation for the Russians.

The general thrust of this account has not been seriously challenged, although it was unlikely from the start that the Russian submarine would have survived intact its plummet to the bottom. The story seemed no more plausible in light of the facts in the *Explorer*'s operating manual, made available earlier this year as a part of the government's attempt to lease the ship. Neither the *Explorer* nor her associated barge could have accommodated the full length of the submarine. The whole system was custom-designed, as if the submarine was to be salvaged in pieces, of which the largest did not exceed the dimensions of the *Explorer*'s well or moon-pool. And the *Explorer* seems in fact to have spent enough time at the site, some 750 miles northwest of Oahu, Hawaii, to have sent its grapple on as many as five separate journeys to the bottom and back.

The *Time* story now reports that the "entire wreck . . . was recovered virtually intact," which is puzzling in that it implies the whole submarine was recovered in one piece. Be that as it may, the booty included "three SSN-5 surface-to-surface ballistic missiles armed with nuclear warheads and several torpedoes." There is no mention of what would have been an equally significant prize—the communications systems, code machines and ciphers. Also left hanging is the question of why we are being told all this now.

—N.W.

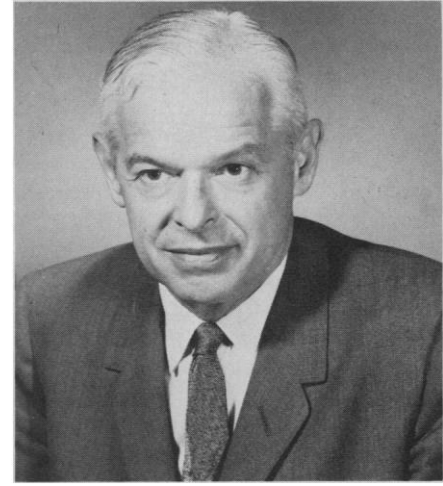
**Malnutrition and Poverty*. Johns Hopkins University Press, Baltimore. \$4.75.



Dr. Leon Gouré



Maj. Gen. George J. Keegan, Jr.



Paul H. Nitze

years, and that DIA has had even fewer people. The United States collects hundreds of thousands of satellite photographs of the Soviet Union—but analysts have time to examine only a tiny fraction of them.

Thus, a new structure whose location was not precisely known, such as the 7-to-8-million-square-foot underground factory, can go unidentified for many years. According to one source, the search for the factory began only after reports of its existence were obtained by other means. Even so, the facility was not discovered on the first search.

What brought the problem to the foreground, according to several officials, was a review, begun several years ago, by a group of Air Force reserve officers. Since the entire effort has been stepped up. "I'd say the CIA has done more on this problem in the first half of 1976 than it has in the last five years," says one observer. "The agency has been making up for lost time."

Analysts are trying to discover how many facilities the Soviets have hardened in recent years, the rate of construction of them and, most importantly, Soviet motives behind the effort.

For example, it was already known that Soviets hardened their military targets: the bunkers for leaders, revetments and shelters for aircraft, new missile silos capable of withstanding blast pressures of 2500 pounds per square inch, and protected launch sites of surface to air missiles (SAM's). The analytic problem is whether recent efforts have hardened these sites to the point where they are invulnerable to the weapons aimed at them. For example, are SAM launchers now capable of withstanding an attack from SRAM's (short-range attack missiles) which would attack them in an actual war? But military hardening is not that important, many officials point out, because U.S. doctrine, since the tenure

in the 1960's of former Defense Secretary Robert McNamara, has been that, in response to a first strike by the Soviet Union, the United States would inflict "unacceptable damage" on Soviet society.

Intelligence analysts, as well as Gouré and Jones outside the government, are trying to determine the extent of and motives behind Soviet population defense. This is a sensitive subject since one assumption behind U.S. policy has been that each could hold the others' civilian populations hostage in the event of a threatened nuclear war.

Jones and Gouré seem to believe that the Soviet Union is extending its plan for mass evacuations of urban areas. Jones explains that his calculation that 98 percent of the Soviet population would survive is based on a scenario in which the Soviet people, directed by Altunin and his generals, would leave the cities and strike out across the countryside, carrying shovels to dig their own shelters, approximately 3 days before the U.S.S.R. instigated a nuclear war. Jones told *Science* that the Department of Defense calculates much greater loss of life because it assumes that people will stick to the roads and railway lines, and that evacuation would begin after a nuclear war had started.

On the other hand, the existence of dirt-covered population shelters near urban apartment complexes could show that the Soviets are planning to have a significant number of people stay in the cities and survive.

The secret interagency report concluded that the Soviets have "modified to a degree their previous policy of mass evacuation of cities by placing somewhat greater emphasis on constructing hardened shelters within urban areas." An open question, however, is their motive, and how many people they are trying to protect. Asks one source, "What is the

denominator of this effort? If you find ten shelters in a city of 200,000, does that mean the Soviets are trying to protect only a fraction of the population? Or do they represent an unfinished effort to protect all 200,000?"

As for the grain silos, everyone acknowledges that they are fairly new, but skeptics note that their capacity seems only enough to feed 1 percent of the population within 50 miles of them. Also, the Soviets could have other motives, such as saving construction costs, for storing grain underground.

All sides agree, however, that the crux of the question for U.S. strategic policy lies in the Soviets' program of industrial hardening. The United States has assumed it could destroy 75 percent of Soviet industry, and the question is whether that assumption is still valid.

The large underground facilities already identified could be a one-time effort, or part of a program aimed at enabling many key industries to withstand attack. Jones explains that his estimate that the Soviet economy could recover in 2 to 4 years assumes that the current effort is extensive and will be carried out. But when asked by *Science* how much industrial hardening U.S. intelligence has actually found, Jones admitted it was not much. "But," he added, "I just have this cold, sinking feeling when I think about how much there might be that we don't know about."

Government skeptics counter that, except in a macabre imagination, there is no basis for anybody's having a "cold, sinking feeling" about the true extent of Soviet industrial hardening. Strategic targeting, explains an official who is in this camp, distinguishes between critical facilities, such as petroleum refineries, steel mills and power plants, and less important, light industry. "Sure they're finding new industries outside the cities, but how do we know these aren't cosmet-

ics factories?" At present, he explained, there is no evidence that critical facilities are any less vulnerable than they have been in the past. "There is no evidence," he says, "of a Soviet effort to harden industry to the point where it could survive a U.S. attack. And, you can underline the 'no evidence'."

Obviously, the matter of headcounting new industries, detecting underground factories, distinguishing between dirt mounds and civilian shelters, poses a long and arduous analytic task. Therefore, a recent National Security Decision Memorandum indicated, a definite answer on Soviet civil defense and its implications will not be available until 1977. Yet even the analytic problems seem to have become clouded by emotion and other interferences. Says one congressional aide who is close to the work of all the intelligence agencies on the issue, "The issue is so critical and important to our strategic thinking that it requires the highest standards of logical thinking and analysis. I haven't seen that standard met—anyplace."

The entire subject of Soviet civil defense seems destined to be caught up in a whole range of issues facing Congress and the incoming Carter Administration. Nitze, for example, in his *Foreign Affairs* article, cited the strategic imbalance as a justification for a new, multiple launch point missile system—a strategic concept the Air Force has embodied in the M-X, a ground-mobile intercontinental missile. Likewise, President-elect Carter faces a crucial decision on whether to produce the B-1 bomber, which is designed to survive a Soviet first strike and deliver a key portion of the U.S. retaliatory punch against Soviet military and industrial targets. (Jones' calculations assume that all 244 B-1's that the Air Force has requested, as well as the Navy's new Trident submarines, are built.) To those who want to upgrade or expand the U.S. strategic weapons

arsenal, the threat posed by Soviet civil defense offers a brilliant rationale.

The issue is also being used by congressional conservatives in an attempt to discredit the détente and arms control policies of outgoing Secretary of State Henry Kissinger. Administration officials for years have said that an unwritten assumption behind the 1969 Soviet-U.S. treaty limiting deployment of antiballistic missiles (ABM's) and behind the SALT treaty was, that if nuclear war threatened, each country could hold the other's population hostage. If, since that time, the Soviets have been mounting a massive civil defense effort with the aim of fighting, surviving, and winning such a war, these American assumptions, and the disarmament decisions of U.S. leaders which were based on them, could look foolish indeed.

Most importantly, the entire subject is an opening wedge in calls for a rejuvenated U.S. civil defense program—an effort with which the country experimented in the early 1960's and abandoned because of stiff public resistance. The military debate has many of the same elements today as it did 15 years ago. Proponents of such an effort note that the U.S. effort is small (the government now spends approximately \$100 million, which the Office of Management and Budget has been trying to cut further), while the Soviet program, estimated at \$1 billion, is, they imply, ten times taller. "The asymmetry bothers people," says one official.

Scientists and analysts both have picked apart arguments for a U.S. civil defense effort. Before the Senate last April, Garwin of IBM argued against it on the grounds it is "a side issue" to more urgent problems Congress should consider. Likewise Panofsky called the possibility that the Soviets would be more prone to start a war on the basis of their current civil defense effort "absurd, and unsupported by both technical

fact and currently available intelligence." The alarm, Panofsky noted, is mainly based on Soviet manuals; if someone read the U.S. manuals they might get the impression that the United States also had a massive, effective, civil defense effort.

Both scientists warned of the danger of a rekindled U.S. civil defense effort alarming Soviet leaders, who would perceive it as destabilizing, and accelerate their civil defense effort still further.

But to those who believe there already is a Soviet threat, the matter of fortifying America is an emotional issue, defying logical protest. Jones, for example, scored in an exchange with Senator William Proxmire (D-Wisc.), before the television lights and cameras on 17 November, when he testified to his estimate that a U.S. civil defense program would cost only \$2 to \$3 billion. Proxmire, in his sharpest, budget-slasher's manner, retorted "... I'd be surprised if it didn't cost \$20, \$30, or \$40 billion, ... money which would be sterile in terms of economic benefit." But, Jones countered, "Senator, I think it would be a good investment if you look at what the country is worth."

Sidney Drell, a Stanford physicist and long-time government weapons consultant, says that he thinks the whole subject will send shivers up the spines of many scientists, who will refuse to engage the issue. But, he notes, the issues of limited nuclear war, and survival from nuclear war, have been very little studied. Meanwhile Jones and other people claim to have examined them and reached some astonishing conclusions.

"Whenever there are changes in the technical terms and assumptions of our military strategy, scientists have a responsibility to examine them. This testimony has to be answered to see if it has weaknesses or uncertainties, or an Achilles heel. We can't walk away from it."

—DEBORAH SHAPLEY

Senate Class of '76: For Ph.D.'s, A Vintage Year at the Polls

A familiar admonition to scientists interested in public policy issues has been that they get involved in the decision-making process. Those who had heeded the call have generally aimed for adminis-

trative or advisory jobs, but in the 2 November election several candidates with scientific and academic credentials won high elective office.

The senatorial contests which drew

the most national attention were those in the two largest states, New York and California, in part because of the personalities and curriculum vitae of the winners, Patrick Daniel Moynihan and S. I. Hayakawa. As professor-senators they may come as close to Plato's idea of the philosopher-king as the present system allows.

They will be joined in the Senate by another Ph.D.—in geology—Harrison H. "Jack" Schmitt, an Apollo 17 astronaut who won in New Mexico to become the second astronaut, after John Glenn