Soviet Civil Defense

Deborah Shapley's article "Soviet civil defense: Insiders argue whether strategic balance is shaken" (News and Comment, 10 Dec. 1976, p. 1141) provides information that should prove useful to scientists and others concerned with the strategic significance of realistic civil defense preparations.

Her description of the Soviet civil defense installations is quite comprehensive. The only relevant point that we found lacking is the instruction of the people in civil defense measures. Every schoolchild has 3 years' instruction in the effects of nuclear weapons and in the civil defense measures to minimize them. A total of about 135 hours is devoted to the subject. There is similar instruction in factories, and hundreds of thousands of handbooks on civil defense are published and distributed.

Another factor, mentioned by Shapley but in our view underemphasized, is the plan for evacuation. If this is carried out and followed by a set of demands resulting in a confrontation, the bargaining position of our country would be miserable. The Soviet Union could threaten to destroy half of the U.S. population; we could destroy only a small fraction of theirs. The Soviet losses would be well below those suffered in World War II. Such a threat, "nuclear blackmail," is the danger many of us fear most. The first of the above numbers is confirmed in the published part of the *Ponast II* study (*1*). Soviet losses are estimated to be between 2¾ and 4½ percent in their civil defense handbooks, but some of the U.S. estimates, though still quite low, are considerably higher. The estimate of one of us (E.P.W.) agrees with the Soviet estimate.

To discover the "motives behind Soviet population defense" one should read what Soviet leaders have clearly and repeatedly told their own people. One key to the understanding of these motives is Lenin's often quoted dictum: "The primary productive factor of all of humanity is the laboring man, the worker. If he survives, we can save everything and restore everything—but we shall perish if we are not able to save him" (*2*). Of course, if they can push us by threats into repeated concessions, just as Hitler pushed Czechoslovakia, there would be no need to rebuild their factories. The Soviets, like the majority of mankind, always have believed that a primary responsibility of any nation's government is making preparations to save the lives of its citizens if war occurs. Soviet military and civilian leaders have always rejected the concepts of "mutual assured destruction," a strategic theory based on the United States and the Soviet Union leaving their populations vulnerable. One of the Soviet responses to U.S. threats, first of "massive retaliation" and then of "assured destruction," is their comprehensive preparations to survive even an all-out war.

Let us observe, finally, that we cannot quite understand Panofsky's and Garwin's fear, quoted in the article, that a U.S. civil defense effort would alarm the Soviet leaders and would be destabilizing. If the Soviet civil defense does not alarm them and is not destabilizing, why would our emulation of some of these measures be alarming and destabilizing? Did Khrushchev not say, "Don't be afraid. If I offer my embrace, you will not refuse it"?

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References

1. *Ponast II* (briefing prepared by the Defense Civil Preparedness Agency, Washington, D.C., 1975; based on a classified interagency study sponsored by the Joint Chiefs of Staff, Studies Analysis and Gaming Agency, Washington, D.C., 1973).
2. V. I. Lenin, *Collected Works*, vol. 38, p. 359, as quoted in the comprehensive Soviet handbook *Civil Defense* (Publishing House for Higher Education, Moscow, ed. 2, 1974).

TVA's Record

I should like to compliment Deborah Shapley on her article (News and Comment, 19 Nov. 1976, p. 814) concerning the Tennessee Valley Authority (TVA). The case against TVA is convincingly delineated from the early days when it "arrived" to tame the rampaging rivers, advise the farmers on better agricultural methods, and, yes, as a by-project, to produce the electrical energy hitherto absent in the Tennessee Valley.

Over the course of its development, TVA has performed a comprehensive service to the citizens of this poverty-shackled valley that private utility companies were reluctant to offer. Utility planners worth their keep could not survive for long by suggesting that large capital expenditures be directed toward a rural, backward region where the median income was less than half that of the rest of the country. However, Congress accepted the socioeconomic challenge and created TVA. Yet because it is the largest utility in the nation, TVA de-

serves more than a thumbnail analysis. Bigness, in and of itself, does not connote wrongness, nor does it imply that decision-making is divorced from humanistic considerations. Perhaps these people, who must gaze into the crystal ball of future energy needs, may see a demand mirage which will vanish as time progresses. Then, again, one may also assume that their projective techniques are reasonably accurate. After all, our natural gas deliveries have been curtailed by almost 50 percent since 1973, while the price of other hydrocarbon fuels has more than doubled. Availability and price coupled with national security implications have already begun to exert their combined influence on our traditional energy mix. We must become increasingly dependent on the electrical energy provided by utilities like TVA.

The decision to use the controlled fission of slightly enriched uranium to produce this additional electrical energy was not something that TVA's engineers, economists, and planners came up with overnight. Such decisions required long, arduous studies by many talented experts. From the time a decision is reached to add nuclear generating capacity, or for that matter any capacity, it takes another 5 to 10 years to design, construct, and license this capacity. Large, 1000-megawatt generating units now require capital investments in excess of a quarter of a billion dollars. In short, electric utilities cannot create additional capacity without gargantuan front-end investments of manpower, time, and capital.

TVA rates have, like the price of coal, escalated rapidly since the 1973 energy crisis. Poor people, as well as those more economically blessed, have felt the pinch of higher monthly electric bills. However, there are few rich or poor consumers in the Valley who would trade their electric bills for those arriving at the homes of residents in the northeastern part of the country.

It is true that the massive fire born from the small candle at TVA's Brown's Ferry Nuclear plant should never have happened. Although the damage and resulting inactivity of the plant was very costly, the fire did illustrate that the multiplicity of safeguards built into the plant did indeed work. Nuclear power, as the proponents had preached, was safe.

Finally, it has become increasingly popular to heckle TVA and to attack it as being nonresponsive, self-serving, and divorced from the real needs of the Valley residents. Critics have forced TVA to open its board meetings to public scrutiny. This move has not damaged the effec-

tiveness of TVA, nor made it vanish; in fact, the move may prove to be highly beneficial over the long run.

TVA will continue to make mistakes, like all institutions which are managed by man. However, they will be honest mistakes from which all of us can learn. It is in this atmosphere of trust and mutual respect that the TVA experiment will go forward toward improving the stations of those of us fortunate enough to call the Valley our home.

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Human Rights

The recently appointed AAAS Committee on Scientific Freedom and Responsibility (*1*) has asked us to constitute its Subcommittee on Infringements of Scientific Freedom in Foreign Countries. We are, of course, well aware of widespread violations of human rights, which affect people of all classes and occupations in many parts of the world. We believe, however, that we can be more helpful by focusing attention on rights of our fellow scientists, rather than diffusing our concern more widely. This subcommittee therefore will collect data on, and endeavor to find ways to ameliorate, violations of the human rights of scientists, particularly those rights which are of special importance to their scientific work. Briefly, these rights include (*2*):

- Free access to education and employment.
- Freedom of expression and publication.
- Freedom of assembly and association.
- Freedom of movement and residence, including the freedom to attend international scientific meetings.
- Fair recognition for one's work.

There are continuing violations of these rights in many nations, and the situation in some of them is growing worse. The recent instances of serious persecution of scientists in nations such as Argentina (*3*), which had hitherto generally respected the human rights of scientists, demonstrate that there is unfortunately much that needs to be done in this area. Infringement of scientists' rights in any country should be of concern to citizens of all countries, since the success of any scholar's work depends as much on the freedom of others to study and do research as it does on his own.

Our subcommittee will act as a clearinghouse for information on foreign infringements of scientific freedom. We