

The Soviet Atomic Explosion and Its Consequences

The Soviet Union Detonates a Nuclear Device

On 3 September 1949, an Air Force WB-29 weather reconnaissance plane on routine patrol from Japan to Alaska picked up signs of radioactivity that slightly exceeded the intensity necessary to constitute an official alert. A second measurement by the same aircraft recorded a greater level of intensity. On the chance that the Soviet Union might have detonated a nuclear device, the Air Force dispatched aircraft to sample the air in various parts of the Pacific. Other routine flights, meanwhile, were picking up evidence of abnormal radioactivity over the Pacific.

Within four days, laboratory analysis of the samples had revealed that the radioactivity was the result of nuclear fission. As additional samples came in, radiochemical analysis began to supply more detailed information of the event, and by 14 September most of the officials concerned at the Air Force Long Range Detection Center and the Atomic Energy Commission (AEC) were convinced that the Soviets had conducted an atomic test. Interpretation of the scientific evidence, however, was a highly sophisticated process in which disagreement was possible.

The Atomic Energy Commission appointed a panel of distinguished scientists to review the evidence. This group, under the chairmanship of Dr. Vannevar Bush and including Dr. Robert Oppenheimer, Dr. Robert F. Bacher, and Admiral William L. Parsons, met on 19 September. After a thorough briefing on all the evidence by experts from the Atomic Energy Commission and other government laboratories, the committee reached the unanimous conclusion that the observed phenomena were "consistent with the view that the origin of the fission products was the explosion of an atomic bomb."

President Truman was informed of the committee's findings that evening by the Joint Chiefs of Staff, Secretary of Defense Johnson, and Under Secretary

Stephen Early. They urged him to make a public announcement of the Soviet achievement at once. The Atomic Energy Commission made a similar recommendation the next day. The President, after a full review of the evidence with the Joint Chiefs of Staff on 21 September, agreed that the fact of the Soviet atomic explosion should be made public. He briefed Senator Brian McMahon, Chairman of the Congressional Joint Committee on Atomic Energy, on 22 September and on 23 September he issued a statement to the press announcing the Soviet accomplishment. To minimize public alarm, the President stressed the fact that the event had been long expected.¹

The Soviet atomic explosion symbolized the end of the American monopoly of weapons of mass destruction. Summing up the military implications of Soviet possession of atomic weapons for the Joint Chiefs of Staff, the Joint Intelligence Committee pointed out that

with the growing atomic capabilities of the Soviet Union for attacking the United States, the time is fast approaching when both the United States and the Soviets will possess capabilities for inflicting devastating atomic attacks on each other. . . . A tremendous military advantage would be gained by the power that struck first. . . . Such an attack against the United States might well be decisive by reducing the atomic offensive capability, possibly to a critical degree, and destroying the capability for mobilizing and carrying on offensive warfare.²

United States officials had long recognized, of course, that the monopoly of atomic weapons would eventually be broken, but there had been a tendency to postpone actions that would be necessary when the Soviet Union became a nuclear power. The test explosion served as a reminder that these decisions could not be postponed indefinitely, and that the United States faced the necessity of taking positive steps in order to maintain a position of military superiority over the Soviet Union.

Reevaluation of Intelligence Methods

Of particular concern with regard to the Soviet atomic explosion of August 1949 was the fact that it occurred nearly a year earlier than the most pessimistic American intelligence estimate assigned for it. The official estimate of Soviet nuclear capability at the time of the Soviet explosion was a statement by scientists from the three Service intelligence staffs, which was approved informally by the Joint Intelligence Committee on 22 March 1948. The statement was as follows:

1. It is believed that the Soviet Union does not possess atomic bombs now.
2. It is estimated that:
 - a. The earliest date by which the Soviets may have exploded their first test bomb is mid-1950.

- b. The probable date by which the Soviets will have exploded their first test bomb is mid-1953.
- c. Based on a mid-1950 test explosion, the greatest possible number of bombs in the Soviet stockpile in mid-1955 is about 50.
- d. Based on a mid-1953 test explosion, the probable number of bombs in the Soviet stockpile in mid-1955 is about 20.³

Following the Soviet atomic explosion, the Joint Intelligence Committee revised upwards its estimates of the Soviet atomic bomb stockpile. The Committee now believed that the Soviet Union would have 10 to 20 bombs by mid-1950, 25 to 45 by mid-1951, 45 to 90 by mid-1952, 70 to 135 by mid-1953, and 120 to 200 by mid-1954.⁴

There was, of course, a valid question whether these revised estimates were any more accurate than the ones they superseded, particularly because the intelligence basis for both was essentially the same. The need for better intelligence of Soviet atomic developments, therefore, became a matter of major concern to the Joint Chiefs of Staff.

Initiated on 17 September 1947 as an Air Force responsibility, the current system of surveillance, designated the Long-Range Detection Program, was limited to detection of atomic explosions by radiological means. In August 1948, the Air Force proposed to supplement this program during FY 1949 with methods intended to detect explosions by their seismic and acoustic effects. These methods, however, were still experimental, and their reliability was a matter of dispute among scientists of the Research and Development Board (RDB).⁵ This body sought guidance from the Joint Chiefs of Staff concerning the relative importance of the various approaches to detection; the Joint Chiefs of Staff, in turn, looked to the Board for a technical evaluation of the feasibility of each. Disagreement within the Joint Chiefs of Staff also delayed a decision on the expanded Air Force program. At one point, General Bradley contended that the Air Force was relying too heavily on the untried seismic and acoustic methods at the expense of conventional intelligence. Finally, on 28 March 1949, the Joint Chiefs of Staff agreed to advise the RDB that, while an adequate intelligence system was of the utmost importance, the research needed to make it effective involved technical considerations that they were not competent to judge. It would be desirable, they said, to have the system in operation by mid-1950, but since they had been informed that this date could no longer be met, then it should be put into effect as soon as practicable and should subsequently be improved as more reliable methods became available.

During their deliberations on the atomic surveillance system, the Joint Chiefs of Staff had also foreseen an eventual need for methods of ascertaining the size of the Soviet atomic stockpile. General Vandenberg judged this to be as important as detecting a nuclear explosion. General Bradley foresaw that the question of the production rate might soon become of "critical" importance. He implied that conventional methods of intelligence had more to contribute than the advanced

scientific gadgetry envisioned in the Air Force plan. In the end, however, the Joint Chiefs of Staff laid the problem aside and ignored it in their memorandum to the RDB. After all, there was at that time no reason to believe that the Soviets had a "stockpile."⁶

As a result of delays in instituting what the Air Force regarded as a complete detection system, there was in operation in August 1949 only an "interim" system consisting of patrolling aircraft equipped with filters for collecting air samples, plus a handful of acoustic stations operated by the Army Signal Corps. Nonetheless, this system sufficed not only to detect the Soviet atomic explosion, but to verify that it had involved a weapon (as distinct from an accidental explosion of an atomic pile), to conclude that plutonium had been used, to establish within one day the date of origin of the fission products, and to establish a location "somewhere over the northern part of the continent of Asia."⁷

The Soviet accomplishment pointed out the need for much broader and more precise information on atomic energy developments within the Soviet Union. The initial assignment of responsibility to the Air Force had been limited to the detection of atomic explosions. Since the ability of the USSR to detonate a weapon had been proven, the task now was to follow the inevitable unfolding of Soviet nuclear development. The Director of Central Intelligence, writing to the Joint Chiefs of Staff on 28 October, pointed out that the Soviet nuclear explosion called for a reevaluation of the Long-Range Detection Program. He recommended a program of technical surveillance that would yield the following types of information (listed in order of importance): the type of weapons tested; the time and place of nuclear explosions; and the location of nuclear processing plants. Except for the last of these, conventional intelligence methods were likely to yield relatively little information. General Vandenberg informed his colleagues on 2 November that the Air Force detection program, if suitably expanded, could respond effectively to all four of these requirements. He urged that the directive to the Air Force be revised accordingly.⁸

The Joint Chiefs of Staff, on 20 January 1950, agreed to the necessity for improved intelligence of Soviet atomic activities. They singled out the rate of weapons production as the most important element of information needed for national defense planning. Determining the location of processing plants for target planning was next in importance. Knowledge of the time and place of future explosions would be of value in contributing to other elements of intelligence, and particularly in detecting the explosion of a thermonuclear (fusion) weapon. They accordingly requested the Research and Development Board to determine what was needed to create an adequate detection system. Meanwhile the Air Force was to continue research and development in this field.⁹

The Research and Development Board, at a meeting on 5 April 1950, continued this delegation of authority, making the Department of the Air Force responsible for specific research programs recommended by a panel of the RDB. Results from this research were not significant prior to the outbreak of the Korean War, but the expanded detection system, using seismic and acoustic as well as radiological means, was ultimately to prove of great value.¹⁰