The Hazards of Operations Involving Nuclear Weapons during the Cold War

✢   Milton Leitenberg

This article was inspired by a book published in 2015 by William Burr and Jeffrey A. Kimball looking at the effort in 1969 by Richard Nixon and his national security adviser, Henry Kissinger, to use negotiations with the Soviet Union as a means of convincing the North Vietnamese that Nixon's unpredictable behavior might spur him to use nuclear weapons to force a settlement of the Vietnam War.[1] Nixon and Kissinger failed in their attempt at "nuclear diplomacy"—an attempt that was only one of many failed initiatives during the years of U.S. military involvement in Vietnam. As an instance of nuclear "use" and nuclear risk-taking and confrontation between the United States and the Soviet Union, it ranks very low. Dozens of events after 1945 ran far greater risk of nuclear use. In particular, the Johnson administration looked in detail at possible options for nuclear attacks during the Vietnam War that were far more serious than the Nixon-Kissinger venture. These options were ultimately rejected, but they would have involved far more than just coercive diplomacy.

Official U.S. discussions of the use of tactical nuclear weapons (TNW) in Vietnam had begun at the level of the National Security Council (NSC) and Joint Chiefs of Staff (JCS) by 1965. Several members of the JCS and U.S. commanders in Vietnam and the Pacific were interested in the ideas. A study group organized by the JASON scientific advisory body examined the potential benefits of using TNWs to destroy the Mu Gia Pass on the Ho Chi Minh Trail, as well as other parts of the trail.[2] A second group looked at using TNWs to destroy the railroad supply lines between China and North

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1. William Burr and Jeffrey P. Kimball, *Nixon's Nuclear Specter: The Secret Alert of 1969, Madman Diplomacy, and the Vietnam War* (Lawrence, KS: University Press of Kansas, 2015). For a discussion forum on the book with appraisals by Robert Jervis and Mark Atwood Lawrence and a reply by Burr and Kimball, see "Forum: Nuclear Weapons, Coercive Diplomacy, and the Vietnam War—Perspectives on *Nixon's Nuclear Specter*," *Journal of Cold War Studies*, Vol. 19, No. 4 (Fall 2017), pp. 192–210.

2. F. J. Dyson et al., *Nuclear Weapons in Southeast Asia*, Study S-266 (Institute of Defense Analysis, JASON Division, March 1967). See Burr and Kimball, *Nixon's Nuclear Specter*, p. 48.

Vietnam. Although Daniel Ellsberg ridiculed the assumptions behind the JASON study, he contends that

> We have the fact, then, that a year after this study is published—exactly a year—Westmoreland admits that he did have a small study group looking into the question of the use of nuclear weapons, for two reasons: to actually destroy the North Vietnamese division around Khe Sanh, just above the DMZ and second "to send a signal to China and to North Vietnam" that we could use them more extensively if they didn't meet our terms or if they didn't back off. And clearly, the more extensive use would have been against what they would call "lucrative targets." Not in the jungle. It would have been ports and industrial targets and cities, really, ultimately. So you have this study in a kind of vacuum of serious consideration of the use of nuclear weapons.[3]

The journalist Seymour Hersh claims that Roger Morris, working on plans for Duck Hook (the code name used by the White House for a proposed large-scale military operation against North Vietnam) on Kissinger's NSC staff, "was shown nuclear target folders describing the predicted results of low-yield nuclear air bursts over at least two sites in North Vietnam."[4] If this is so, it is unclear whether these folders were connected with the work of the JASON study or what other agency in the government might have produced them, when, or why.

On at least two other occasions during crises, plans for the use of nuclear weapons were elaborated or discussed at the highest level in the U.S. government. Burr has contributed significant research on one of these, the August 1961 Berlin Crisis.[5] To try to avoid the president's reliance on the Single Integrated Operational Plan (SIOP), as elaborated by the Joint Strategic Target Planning Staff (JSTPS) at the Strategic Air Command (SAC) to specify which weapons should be used against which targets if circumstances led to a nuclear war, two U.S. officials, Carl Kaysen of the NSC staff and Henry Rowen in the Office of the Secretary of Defense, elaborated a much more limited plan for striking only Soviet nuclear delivery systems.

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3. "Interview with Daniel Ellsberg," n.d., Nautilus Institute, available at https://nautilus.org/essentially-annihilated/essentially-annihilated-interview-with-daniel-ellsberg/. See also "An Inside Account: Seymour Deitchman," n.d., Nautilus Institute, available online at https://nautilus.org/essentially-annihilated/an-insiders-account-seymour-deitchman/.

4. Seymour Hersh, *The Price of Power: Kissinger in the Nixon White House* (New York: Summit Books, 1983), p. 126.

5. William Burr, ed., "First Strike Options and the Berlin Crisis, September 1971," National Security Archive Electronic Briefing Book No. 56, 25 September 2001, http://nsarchive.gwu.edu/NSAEBB/NSAEBB56/. See also Fred Kaplan, "JFK's First Strike Plan," *The Atlantic*, Vol. 288, No. 3 (October 2001), pp. 81–86.

In the early 1960s, the SIOP envisaged the use of the full arsenal of SAC's weapons—3,423 warheads and bomb—against 1,077 "military and urban-industrial targets" in the USSR, the East European Warsaw Pact countries, and China.[6] However, U.S. satellite reconnaissance programs had discovered that the Soviet Union at the time had only twenty launch pads for intercontinental ballistic missiles (ICBMs) and only eight ICBMs, that Soviet heavy bombers sat on open runways, and that Soviet air defense systems were poor and vulnerable.

Exactly a year later, at the time of the Cuban missile crisis, U.S. nuclear weapon superiority versus the Soviet Union was 17:1. It was presumably roughly the same in October 1961, and a limited preemptive attack against a handful of Soviet ICBMs and a vulnerable bomber force would have been feasible. President John F. Kennedy had Deputy Secretary of Defense Roswell Gilpatric deliver a public address revealing that the U.S. government had learned about the limits of Soviet ICBM capabilities. When Secretary of Defense Robert McNamara was asked by a reporter on *Meet the Press* in September 1961, whether "you mean to imply . . . that [the Kennedy administration] would then perhaps use nuclear weapons in connection with the Berlin situation," McNamara responded,

> Yes, I definitely do. We will use nuclear weapons wherever we feel it necessary to protect our vital interests. Our nuclear stockpile is several times that of the Soviet Union, and we will use either tactical weapons or strategic weapons in whatever quantities, wherever, whenever it's necessary to protect this nation and its interests."

These events led directly to Nikita Khrushchev's attempt to redress the Soviet disadvantage by placing missiles in Cuba.

The second occasion also occurred in 1961 as President Kennedy and the JCS debated what response the United States could adopt in Laos in the face of a deteriorating military situation for the U.S.-supported side. The JCS wanted no repeat of the Korean War experience. JCS Chairman General Lyman Lemnitzer demanded "an advance commitment from the President that, if they agreed to the use of American force and there were any fighting at all, then there would be no holds barred whatsoever—including use of nuclear weapons."[7]

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6. In 1960–1962, official estimates indicated that SAC and Tactical Air Command (TAC) could together deliver 18,000–20,000 megatons in a 24-hour period. See Arthur T. Hadley, *The National Safety and Arms Control* (New York: Viking Press, 1961), pp. 3–4, 33.

7. Roger Hilsman, *To Move a Nation: The Politics of Foreign Policy in the Administration of John F. Kennedy* (New York: Doubleday, 1967), p. 129.

Burr and Kimball describe a "JCS Readiness Test" in October 1969 that did not entail any change in the Defense Readiness Condition (DEFCON) status of U.S. strategic and tactical nuclear forces. They mention twelve "Major Measures" of this test: (1) heightened alert and stand-down at SAC bases in the United States (on 13–18 and 25–30 October 1969); (2) stand-down at Tactical Air Command, Alaskan Command, and Continental Air Defense Command bases in the United States (14–18 and 25–30 October); (3) emergency movement by aircraft carriers in the northern and western Atlantic (18–20 October; (4) stand-down by U.S. air forces in Europe (15–18 and 25–30 October) and heightened surveillance and intelligence-gathering, beginning 18 October; (5) the extended deployment of Task Force 71 in the Sea of Japan until 24 October; (6) stand-down of CINCLANT air assets (25–30 October); (7) Sixth Fleet emissions control (15–30 October); (8) Seventh Fleet trails Soviet merchant ships headed toward Haiphong (20–29 October); (9) increased ship activity in Gulf of Aden (19–27 October); (10) enhancement of SIOP naval forces at sea (19–30 October); (11) stand-down by Pacific Air Forces in Japan and South Korea (14–18 and 25–30 October); and (12) SAC nuclear-armed airborne alert flights over northern Alaska (27–30 October).[8] Even though components of this readiness test were significant, Nixon's meeting with Soviet Ambassador Anatoly Dobrynin on 20 October undermined the point of the whole exercise. Hence, the readiness test discussed by Burr and Kimball is not a good example of the dangers inherent in many nuclear crises during the Cold War.

What sorts of Cold War–era events involved substantially more risk than the Nixon-Kissinger "nuclear specter" in 1969? They range across a very wide array of activities and events. Some of these were considered dangerous in the past but may actually have been comparatively benign. Others occurred "routinely," but their dangers have been largely overlooked. Moreover, one can compare the components of many of these to the twelve "Major Measures" in the JCS Readiness Test. A partial list would include:

- Nuclear weapon accidents.
- Alert failures, failures in warning systems, sensors, and command, control, and communications networks. Of great importance to understanding the significance of events in this group is an examination of the numbers and kinds of events monitored daily at the North American Air Defense Command (NORAD) and the responses that are made to these.

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8. Burr and Kimball, *Nixon's Nuclear Specter*, pp. 265–309.

- The frequencies of exercises, tests of nuclear weapons systems, command-and-control exercises, and so on.
- Interactions of U.S. and Soviet nuclear weapons platforms during exercises.
- U.S. and Soviet incidents at sea during the years when the navies of both countries were equipped with numerous nuclear weapons systems.
- U.S. low-altitude reconnaissance flights over Soviet and East European territory.
- The deployments of aircraft carriers to sites of crises, primarily U.S. carriers but also British and French, laden with nuclear weapons and strike aircraft. These included many low-key deployments of aircraft carriers as well as publicized ones. The practice was active worldwide for many decades.
- The direct close-quarter interactions of U.S. and Soviet fleets armed with nuclear weapons during major crises and U.S. nuclear alerts.
- The record of U.S. DEFCON alerts.

Numerous such incidents occurred in the 1950s and 1960s. On 30 October 1954, President Dwight D. Eisenhower approved NSC 162/2, the U.S. policy document that was the basis for what became known as "massive retaliation." The document reflected the abandonment of the assumption that the United States might fight large-scale limited wars without recourse to nuclear weapons. The JCS were directed to plan on using nuclear weapons in conflicts if they could achieve a military advantage. An important aspect of the guidance is the emphasis on TNW "for deterrence of local aggression." Public expressions of the policy were common and frequent. In January 1956

> The Air Force Chief of Staff, General Nathan Twining, while granting the possibility of "peripheral action" of a non-nuclear character for "a few more years," asserted that "developments were rapidly approaching the day when any conflict would be waged with atomic weapons." The Air Force Secretary, Donald Quarles, insisted that even the condition of "mutual deterrence" would not inhibit the United States from the use of nuclear weapons. No aggressor, he said, "should ever again expect us to employ our air power and weapons as we did in Korea"—i.e., with mere "iron bombs" and a conscious restraint. In future, the United States would use "modern quality weapons as are needed for the job in hand."[9]

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9. Townsend Hoopes, *The Devil and John Foster Dulles* (Boston: Little Brown, 1973), p. 312.

The declaration that the United States might respond with a nuclear strike to non-nuclear aggression directed at areas other than North America and Western Europe remained the policy of the Eisenhower administration for the remaining six years of its tenure—a period in which the administration threatened and considered the use of nuclear weapons on several occasions.

U.S. nuclear weapons security during this period was lax compared to later years. No Permissive Action Links (PALs) had yet been installed on nuclear weapons. The widespread use of PALs was not initiated until 1962, during Secretary of Defense McNamara's tenure. Some weapons and their storage places did not even have manual locks or padlocks, as McNamara discovered upon taking office.[10]

The U.S. nuclear weapons stockpile rose dramatically under McNamara, reaching its peak number in 1967 of roughly 31,250.[11] This period also witnessed the greatest continual movement of U.S. nuclear weapons, especially via the bomber airborne alert program and shipboard deployments, which played a direct role in the rate of accidents. Command and control of the nuclear forces was much looser than in all subsequent administrations. Soon after Kennedy became president, his national security adviser, McGeorge Bundy, laid out for him the "policies previously approved in NSC which need review":

> The most urgent need is for a review of basic military policy. What is our view of the kind of strategic force we need, the kinds of limited-war forces, the kind of defense for the continental U.S. and the strategy of NATO? What should be your thinking about the great decisions, at crisis moments, on levels of U.S. military action? The urgency of these matters arises from existing papers which in the view of nearly all your civilian advisors place a debatable emphasis (1) on strategic as against limited-war forces, (2) on "strike-first," on "counter-force" strategic posture, and (3) on decisions-in-advance, as against decisions in the light of all the circumstances. These three forces in combination have created a situation today in which a subordinate commander faced with a substantial Russian military action could start the thermonuclear holocaust on his own initiative if he could not reach you (by failure of communication at either end of the line). There are good arguments for the decisions which led to this situation,

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10. U.S. Congress, Joint Committee on Atomic Energy, *Military Applications of Nuclear Technology*, 93rd Cong., 1st Sess., 1973, pt. I.

11. U.S. Department of Energy, "Stockpile Numbers: End of Fiscal Years 1962 through 2017," unclassified, March 2018.

but there are arguments on the other side, and it seems absolutely essential that you satisfy yourself, as President, on these basic matters.[12]

Years later, Ellsberg, who was assigned as a consultant to the NSC and the Department of Defense in the early 1960s, wrote that "a low-level military commander could have sent off nuclear weapons" during the Cuban missile crisis and that President Kennedy "'was very worried about it,' and took steps to see that it would not happen."[13] Harold Brown, who played a major role in the Kennedy administration in the development of more rigorous controls on nuclear weapons (and subsequently served as secretary of defense under Jimmy Carter), commented years later:

> The possibilities of accidents or unauthorized use were understood at the time. There was a reliance, with respect to unauthorized use, on military discipline. . . . But we subsequently concluded that really wasn't enough, in many cases. . . . When the Kennedy Administration came in in 1961, we began looking at some sort of mechanical control. The impetus for that was, I think, substantially accelerated as a result of the Cuban missile crisis. And during the subsequent years, 1963 and 1964, actions began to be taken which put mechanical controls first on tactical nuclear weapons, which of course are deployed at a much lower level of command, and subsequently on strategic nuclear weapons, or at least most categories of strategic nuclear weapons.[14]

These problems were especially relevant to TNWs. From the 1960s through the end of the Cold War, the United States and the Soviet Union deployed many types of TNWs, including air-dropped free-fall bombs and glide bombs, air-to-surface missiles and air-to-surface stand-off missiles, air-breathing cruise missiles, surface-to-air missiles, shorter-range surface-to-surface missiles, air-to-air missiles, artillery, depth charges, torpedoes and rocket torpedoes, atomic demolition munitions (ADMs), nuclear landmines, and ocean mines.[15]

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12. McGeorge Bundy, Memorandum to the President, 30 January 1961, in U.S. Department of State, *Foreign Relations of the United States*, Vol. VIII: National Security Affairs, 1961–1963 (Washington, DC: U.S. Government Printing Office, 1996), pp. 51–54.

13. "Nuclear Peril," *The Washington Star-News*, 19 December 1974, p. 13.

14. Transcript of interview with Harold Brown, 16 May 1985, for *Hiroshima*, CBS News/Walter Cronkite documentary (available from CBS).

15. Milton Leitenberg, "Background Materials on Tactical Nuclear Weapons," in Stockholm International Peace Research Institute, *Tactical Nuclear Weapons: European Perspectives* (London: Taylor and Francis, 1978), p. 4.

Nuclear Weapons Accidents

The rates of nuclear weapons accidents were governed by several parameters, including the total number of weapons that a country possessed; the means of deploying and handling those weapons; and, most important, the movement of weapons over sizable distances, in which case rates of accidents per kilometer apply to all means of transport (road, rail, air, barge, ocean).[16] In the 1960s and 1970s, nuclear weapons accidents were often depicted as a potential spark of a U.S.-Soviet nuclear war. This was a primary preoccupation, for example, of the International Physicians for the Prevention of Nuclear War (IPPNW) in its early years. Two basic questions about this scenario need to be addressed:

(1) Could an accident involving a nuclear weapon produce a nuclear detonation?

(2) Could such a detonation have precipitated a larger U.S.-Soviet nuclear exchange?

The answer to the first question is affirmative, at least for some years and to a limited degree. Several small yields resulted from a series of seventeen safety tests carried out by the U.S. Atomic Energy Commission (AEC) from November 1955 to October 1958. In a well-known case of a true operational accident in Goldsboro, Georgia, an air-dropped high-yield weapon apparently came close to detonation when the bomber jettisoned the weapon and crashed. At least for some years SAC compensated for this possibility by holding an integral component—referred to as a "capsule" that had to be manually inserted—separate from air-delivered nuclear weapons deployed on strategic bombers. After that, warhead redesign and new conventional explosives were introduced to lower the risk of detonation following an accident. On the Soviet side, at least for some years, the practice of not mating warheads to ICBM delivery systems under normal conditions reduced risk.

Official U.S. characterizations of nuclear weapons accidents defined three levels of severity: (1) a "major" "accident" carried the code designation "Broken Arrow"; (2) a "minor" "incident" carried the code designation "Bent Spear," which also included accidents to auxiliary equipment, not just the weapon; and (3) the least serious category, known as "Dull Sword." As of 1980, major U.S. accidents totaled around 35, according to an official U.S.

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16. According to U.S. Air Force Regulation No. 122-3: "Nuclear weapons are handled daily throughout the world as a matter of routine. From a nuclear surety point of view, any time a weapon is exposed to people, there is a possibility of it being subjected to an insecure or unsafe environment."

government compendium released in December 1980.[17] However, the actual number is certainly substantially higher, insofar as the official number excludes any reporting of accidents involving tactical nuclear weapons and any accidents outside U.S. borders unless they became the cause of international reporting, such as occurred in Palomares, Spain, or in Thule, Greenland. For example, nine major U.S. SAC aircraft accidents that occurred in Canada were never reported by the U.S. government but are included in the list of accidents compiled by the Stockholm International Peace Research Institute (SIPRI) in 1976.[18] The official totals also exclude fires on board U.S. aircraft carriers that should probably also have been considered "major," as well as fires on board several other nuclear-armed U.S. naval vessels. No further lists of nuclear weapons accidents have been released by the U.S. Department of Defense since 1980.

Data for U.S. "minor" incidents are extremely limited. They are available for only one of the military services, the U.S. Navy, and only for a restricted period of time. U.S. Navy compilations for 1965–1985 show 628 "Bent Spear" events, of which 266 involved nuclear warheads and 362 involved auxiliary systems. Another set of data for the U.S. Pacific Fleet alone for the thirteen years from 1965 to 1977 records 379 "Bent Spear" events. A report from July 1989 indicates that 42 collisions of undetermined kinds involving U.S. submarines carrying nuclear weapons had occurred since 1983 and that a collision of a U.S. attack submarine and a Soviet submarine occurred in the North Atlantic in the fall of 1986. All these would have to count as "Bent Spear" events. The numbers therefore can serve as only a small indicator of the magnitude and frequency of minor incidents. There is no indication that any of these events—probably totaling in the thousands—ever resulted in a detonation. Presumably, such events have taken place in all countries that possess nuclear weapons, although in my analysis here I focus only on U.S. and Soviet accidents.

Whatever the rate of U.S. nuclear weapons accidents and incidents was, they most certainly have been drastically reduced since 1990. For one thing,

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17. U.S. Department of Defense, "Narrative Summaries of Accidents Involving U.S. Nuclear Weapons, 1950–1980 (interim)," December 1980, in National Security Internet Archive, "Documents from and Relating to the U.S. Department of Defense" collection.

18. Milton Leitenberg, "Accidents of Nuclear Weapon Systems," in *World Armaments and Disarmament. SIPRI Yearbook 1977* (Cambridge, MA: MIT Press, 1977), pp. 52–85. See also Milton Leitenberg, "Accidents of Nuclear Weapons and Nuclear Weapon Delivery Systems," in *SIPRI Yearbook of World Armaments and Disarmament, 1968/69* (Stockholm: Almqvist and Wiksell, 1969), pp. 259–270; and Shaun Gregory, *The Hidden Cost of Deterrence: Nuclear Weapons Accidents* (London: Brassey's, 1990).

nearly all U.S. tactical nuclear weapons are gone. Moreover, the total number of U.S. nuclear weapons has been greatly reduced, and the highest-yield U.S. nuclear weapons were retired long ago. Overall U.S. megatonnage, both air delivered and ICBM based, was enormously reduced by the mid-1970s and dropped still further after nuclear weapons were removed from the U.S. Navy's strike carriers. The continuous airborne alert of B-52 bombers ended in early 1968 after a B-52 crashed at the Thule Air Base in Greenland.[19] More generally, the end of the Cold War has meant that a much smaller fraction of the total U.S. nuclear force is on combat alert.

The Soviet Union's deployed nuclear weapons systems also suffered large numbers of "major" accidents, although little information is available regarding "minor" incidents with Soviet forces. Using the same categories as existed for the United States, ten major and 41 minor accidents had been publicly identified by 1976.[20] In 1975 Admiral James D. Watkins stated that the Soviet Union had suffered more than 200 submarine accidents "in the last 10 years." Assuming that all these submarines carried nuclear torpedoes, which is highly likely, the number 200 suggests that many of these incidents were "minor." In 1989, William Arkin and Joshua Handler claimed there had been 77 "accidents on Soviet ships," presumably nuclear armed, and 23 on submarines.[21] Soviet ships lost to sinking or fire included, among others, a Golf submarine in 1968, a November submarine in 1970, a Kashin destroyer in 1974, a Charlie I submarine in June 1983, a Yankee-class submarine in 1983, a Victor submarine in November 1983, a Yankee-class submarine in October 1986, an Echo II submarine in June 1989, an Alfa submarine in July 1989, and a Mike submarine in April 1989. The USSR maintained an unknown portion of its nuclear bomber force on ground alert for some years and increased its general strategic alert rates in the 1970s and 1980s.

Now to the second question raised above: If one of these major accidents had resulted in a nuclear explosion over either the owner's home country or another country, could it have sparked a larger nuclear exchange between the United States and the Soviet Union? Although no definitive answer is possible, the prospect seems very unlikely. In 1960, Bernard Barber, a U.S. Department

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19. U.S. Secretary of Defense, Office of the Assistant for Atomic Energy, *History of the Custody and Deployment of Nuclear Weapons: July 1945 to September 1977*, February 1978 (Top Secret), in National Security Internet Archive, "Documents from and Relating to the U.S. Department of Defense" collection.

20. Leitenberg, "Accidents of Nuclear Weapon Systems."

21. William M. Arkin and Joshua Handler, *Naval Accidents 1945–1988*, Neptune Papers No. 3 (Washington, DC: Greenpeace and Institute for Policy Studies, June 1989).

of Defense official, used the example of an accidental explosion of the propellant in a U.S. Bomarc surface-to-air missile carrying a nuclear warhead in northern New Jersey in 1960. He asked whether a similar accidental nuclear explosion on the Soviet border, in a crisis and with its source unidentifiable, could produce a U.S.-Soviet nuclear exchange. However, even though at least a half dozen studies were undertaken in the 1980s to explore what might initiate a U.S.-Soviet nuclear exchange, none of them considered an accidental nuclear weapons explosion as a mechanism that would lead to nuclear war. Nuclear weapons accidents should not be included among "incidents of near nuclear use," as was done in a recent study.[22] There is no "intent to use" in a nuclear weapons accident.

Alert Failures, False Alerts, and False Identification of ICBM or SLBM Attacks

The next category of events is of much greater significance: alert failures, false alerts, and false identification of ICBM or submarine-launched ballistic missile (SLBM) attacks. These may be purely technical, or they may be primarily dependent on human error and misinterpretation, as in the Russian government's reaction to the launch of a Norwegian sounding rocket in 1996. When the United States began operating its over-the-horizon (OTH) radar networks and the Distant Early Warning (DEW) line, mistaken warnings were produced by a large flock of geese, reflections from a rising moon, and other extrinsic phenomena. Apparently, software failures also occurred. Officers at command-and-control posts were told to follow protocols that assumed the warnings were spurious and were provided guidelines to determine whether that was the case. SECT buoys attached to U.S. strategic and attack submarines also sometimes failed, accidentally detaching, rising to the surface, and transmitting a message via satellite links saying the submarine had been sunk.[23] An interview regarding the SECT failures with an officer who had worked in the National Command Center produced some more general observations:

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22. Patricia Lewis et al., *Too Close for Comfort: Cases of Near Nuclear Use and Options for Policy* (London: Royal Institute for International Affairs, 2014), p. 2.

23. Les Aspin, "Major Flaw in Navy Submarine Buoys Threatens Accidental War, Aspin Says," Press Release, 16 January 1974,; and Elmer B. Stats, "Certain Aspects of the Navy's Submarine Emergency Communications Transmitter (SECT) Program," B-160877, Comptroller General of the United States, 24 June 1974., both in author's personal holdings.

There are plenty of false alarms. They are happening all the time. They are expecting them . . . that is the first presumption. Single reports are never acted on, except to seek confirmation. Even NORAD's National Command Center system warning that a city has been destroyed has frequent failures. All it does is make them get confirmation. They are not expecting anything unless there has been a buildup of tension, a severe crisis. They are not expecting a strike out of the blue, and all the more so, not on single units in the system.[24]

Finally there were three highly publicized U.S. computer and human failures within a span of eight months, on 9 November 1979 and on 3 and 6 June 1980. Two were computer component failures, and one was a human error in which a simulation test tape was mistakenly inserted into a NORAD computer. In all three cases, the image screens of monitoring console operators showed the United States under ICBM and SLBM attack—or seemed to show that by displaying rapidly changing random signals.[25] These events lasted two to six minutes, and in some cases U.S. SAC aircraft on runway alert and command-and-control aircraft and tankers started their engines or took off at SAC bases.

But what do these events mean? Was there danger? If so, how much and to whom? To the United States, where the computer failures were taking place, or to the observing side, the potential target of any response, which was watching via satellite, electronic intelligence (ELINT), communications intelligence (COMINT), or even human intelligence (HUMINT) if the Soviet Union had observers on the ground in the periphery of SAC bases, as has been suggested at times? Or what combination of the two? To assess the meaning and danger of these events, they should be considered within a matrix of the wide array of events in which they are embedded.

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24. U.S. Department of Defense official, interview, Washington, DC, 30 October 1974.

25. U.S. Congress, House of Representatives, Committee on Armed Services, *Strategic Warning System False Alerts: Hearing*, 96th Cong., 2nd Sess., 24 June 1980; U.S. Congress, Senate, Committee on Armed Services, *Recent False Alerts from the Nation's Missile Attack Warning System: Report*, 96th Cong., 1st Sess., 9 October 1980; U.S. Congress, House of Representatives, Committee on Government Operations, *Failures of the North American Aerospace Defense Command's (NORAD) Attack Warning System: Hearings*, 96th Cong., 2nd Sess., 19–20 May 1981; U.S. General Accounting Office, *NORAD's Missile Warning System: What Went Wrong?*, MASAD-81-30 (Washington, DC: U.S. Government Printing Office, 15 May 1981); and William Burr, "The 3 A.M. Phone Call: False Warnings of Soviet Missile Attacks during 1979–80 Led to Alert Actions for U.S. Strategic Forces," National Security Archive Briefing Book No. 371, 1 March 2012, available online at http://nsarchive.gwu.edu/nukevault/ebb371/index.htm.

The most detailed unclassified work on this subject is by Bruce Blair, a former Minuteman ICBM launch-control officer.[26] In November 2015 he wrote:

> Early warning teams in the U.S. receive sensor data at least once a day that requires them to urgently assess whether a nuclear attack is underway or the alarm is false. Once or twice a week they need to take a second close look, and once in a blue moon the attack looks real enough to bring them to the brink of launch-on-warning. The early warning team on duty is supposed to take only three minutes from the arrival of the initial sensor data to provide a preliminary assessment and notify the top military and civilian leaders if an attack is apparently underway.[27]

Blair's "once in a blue moon" apparently was about every twenty years, but data from sources released in connection with the publicized failures suggest it might have been more often. A more detailed description of what Blair is referring to is evident in data compiled by Michèle Fluornoy in 1986 for the Center for Defense Information. Her compilation is worth quoting at length because no equivalent information has been released by the U.S. government since 1986:

> **Emergency Action Conferences**
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> When the U.S. early warning system detects a possible missile launch, four command posts—the North American Aerospace Defense Command (NORAD), the Strategic Air Command (SAC), the National Military Command Center (NMCC) at the Pentagon and the alternate NMCC at Fort Ritchie, Maryland—begin formal evaluation procedures known as Emergency Action Conferences. The actual procedures for conducting these conferences are classified. The general sequence of events can, however, be outlined.
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> If the system picks up an event that could potentially threaten North America, the chief of NORAD calls a routine Missile Display Conference (MDC) to evaluate whether a threat exists. If there is no danger, the conference ends. If, however, a danger seems present, a second MDC to evaluate possible threats is called, bringing senior DoD officials into the assessment process. If the threat persists, additional senior personnel join a Threat Assessment Conference (TAC). Ultimately, if the threat appears real, the President is brought into the final Missile Attack Conference (MAC). The chart below details the Emergency Action Conferences the U.S. called between 1977 and 1984. According to unclassified information, a Missile Attack Conference has never occurred. Figures

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26. Bruce Blair, *The Logic of Accidental Nuclear War* (Washington, DC: The Brookings Institution, 1993).

27. Bruce Blair, "Could U.S.-Russia Tensions Go Nuclear?" *Politico*, 22 November 2015, http://www.politico.com/magazine/story/2015/11/russia-us-tensions-nuclear-cold-war-213395.

Year	Routine Missile Display Conferences (MDCs)	MDCs to Evaluate Possible Threats	Threat Assessment Conferences
1977	1,567	43	0
1978	1,009	70	2
1979	1,544	78	2
1980	3,815	149	2
1981	2,851	186	0
1982	3,716	218	0
1983	3,294	255	0
1984	2,988	153	0
1985	Numbers no longer released by NORAD		
Total (8 years)	20,784	1,152	6

for the years prior to 1977 are, according to NORAD, "unavailable." The Reagan Administration classified the 1985 figures [and those for subsequent years].

When asked about the substantial rise in the number of Missile Display Conferences in 1980 and 1982, NORAD officials attributed the increases to a) the operational testing and evaluation of a Pave Paws phased-array radar and b) two sets of revisions (by the Joint Chiefs of Staff) in the criteria for convening MDCs. As the system is upgraded with increasingly sensitive and redundant sensors, the number of detections (and routine MDCs) may continue to rise.[28]

Based on what is known about Soviet and U.S. tests of missiles and space vehicles, we can deduce the sorts of events that generated the numbers in Fluornoy's table. In 1985, the Soviet Union carried out 488 SLBM and ICBM tests and space launches. From October 1957 to December 1991, the Soviet government launched around 2,300 spacecraft. Not all of the Soviet launches were publicly announced.[29] The Soviet Main Directorate for Space Hardware (GUKOS) did not even report some of the more secret military missions to

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28. "Accidental Nuclear War: A Rising Risk?" *The Defense Monitor*, Vol. 15, No. 7 (1986), p. 6. The information is based largely on North American Aerospace Defense Command Headquarters, "Fact Sheet on NORAD Computer System," 30 June 1983, 3 pp.

29. "Former ABM Commander on System's History, Prospects: Interview with Col-Gen Yuriy Votinsev (ret)," *Vecherniy Almaty*, 3 June 1983, trans. in U.S. Joint Publication Research Service (JPRS), *Soviet Union: Military Affairs*, JPRS-UMA-93-035, 22 September 1993, pp. 5–10.

the Soviet Center for the Monitoring of Space (TsKKP).[30] For half a dozen years in the late 1970s and early 1980s, the USSR carried out a sequenced and rapid-fire "chain" of ICBM, SLBM, antiballistic missile (ABM), and anti-satellite (ASAT) tests. These consisted of two ICBMs, two ABMs, one ASAT, one SS-20 intermediate range ballistic missile (IRBM), and one SLBM all fired from operational silos in rapid and precise sequence. These were carried out a year and a half apart, on three occasions.[31] The Soviet Union conducted all test launches of its ballistic missiles from operational silos. By contrast, when the United States test-launched its missiles, it did so by taking them out of their operational silos and transporting them to a missile firing range from which they could be launched. The United States conducted far fewer such tests than the Soviet Union did.

U.S. sensors could also be thrown off by satellite reentry debris, particularly if the reentry trajectory approached the United States. NORAD computers monitored not only all space satellites in orbit but "space debris," tens of thousands of pieces of launcher segments, and fragments resulting from anti-satellite destruction tests. Some of these fragments regularly reentered the atmosphere and needed to be monitored in order to differentiate them from a missile flight.

The Soviet Union had a related monitoring facility located at the TsKKP. One can safely assume that the Soviet tracking sensors had the same range of objects to monitor that NORAD did, including "false alarms," with the exception that it would have known about the large proportion that were Soviet-initiated events.[32] However, Soviet publications never discussed malfunctions of the TsKKP's systems; the publications mentioned only U.S. failures, and relevant documents in the former Soviet archives about Soviet false alarms have not yet been made available.

Even gas well flares, the burning of the Iraqi oil fields, fires from ruptured oil pipelines, and events such as the 2010 Gulf of Mexico oil platform

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30. Igor Tsarev, "'A Diamond-Studded Sky': Should the Military Who Maintains That They Have Stopped Preparing for 'Star Wars' Be Trusted?" trans. in U.S. Joint Publication Research Service, *Soviet Union: Military Affairs*, JPRS-UMA-93-039, 20 October 1993, p. 31.

31. "Soviets Stage Integrated Test of Weapons," *Aviation Week and Space Technology*, Vol. 111, No. 26 (28 June 1992), pp. 26–27. See also Molly Moore, "US Protests Soviet Pacific Missile Tests, Impact Closest Yet to American Soil," *The Washington Post*, 2 October 1987, p. A3; Bill Gertz, "Soviets Test-Fire ICBM Just North of Hawaii," *The Washington Times*, 2 October 1987, p. 4; Owen Wilkes, "Missile Testing in the Pacific: The 'Soviet Threat'—Part 3," *New Zealand Monthly Review*, June 1986, pp. 7–8; Alton Quanbeck and Barry Blechman, "Risks of Missile Tests in the Pacific Northwest," *The New York Times*, 30 January 1974; and Edward Neilan, "Soviet Cruise Missile Tested in Sea of Japan," *The Washington Times*, 28 December 1987, p. 7.

32. "Former ABM Commander on System's History, Prospects."

explosions were readily detected by U.S. infrared detection satellites, which potentially could misconstrue them. Computer error and the lack of external sensor input also posed serious problems. NORAD claimed there were only two to three computer errors per year around the 1980 period, but whether this was also true of other periods is unknown. Most of the events enumerated above involved sensor registration errors of the sort that must be routinely excluded by officers monitoring consoles around the clock. The large number of Soviet missile and space vehicle launches generated roughly two events per day for the U.S. side to evaluate. The total was around three events per day.

In March 2017, Blair reported a quite different sort of event that took place in 2010, also resulting from "an improperly inserted circuit card in an underground computer": the disappearance of 50 Minutemen ICBMs from the monitors of their launching crews.[33] The incident was quickly resolved, but it raised much broader and more serious questions about whether an opponent could achieve the same effect by remote electronic interference (hacking) or could attempt to launch U.S. missiles against another state. Because these issues and closely related ones involving potential external interference with U.S. ICBMs or SLBMs prior to launch or after launching did not arise during the Cold War, I am not covering them here.

On the Soviet side, potential false alarms from the late 1950s through the late 1960s could be triggered by U.S. airborne alert rates. At their peak, the rate was 30 percent of the SAC bomber force. Soviet sensors and COMINT were presumably of a lower quality in the mid-1960s than during the 1980s. After the Palomares incident in 1968 put an end to the continuous airborne alert program, SAC maintained a runway alert level of 30 percent of its bomber force. In addition, U.S. and allied aircraft were maintained on Quick Reaction Alert (QRA) in Europe. In some years, even Pershing missiles in Europe were kept on QRA. The potential risks involved were highlighted by Valerii Yarynych, the former head of the Soviet General Staff's nuclear command-and-control system, who claimed that false "alarms were quite frequent [in the USSR] because the early warning systems were unreliable."[34] This was also the view of Vitaly Kataev, a senior defense expert for the Soviet Communist Party's Central Committee, who asserted in his memoirs that "malfunctions of [early warning] systems were not rare."[35]

33. Bruce G. Blair, "Hacking Our Nuclear Weapons," *The New York Times*, 14 March 2017, p. A19.

34. Cited in Gordon Barrass, *The Great Cold War: A Journey Through the Hall of Mirrors* (Stanford, CA: Stanford University Press, 2009), p. 296.

35. Vitaly Leonidovich Kataev, *A Memoir of the Missile Age: One Man's Journey* (Stanford, CA: Hoover Institution Press, 2015), p. 153. Kataev's memoir was written before his death in 2001 and published posthumously in translation.

Some of the associated practices accompanying the U.S. airborne-alert posture during these years were at least as troublesome as the airborne alert itself, and perhaps more so. When McNamara became defense secretary, he discovered that SAC "has but one pre-planned Ground Alert launch option. This is to launch the whole Ground Alert Force. Moreover, I understand that there is no procedure for recall other than to permit the bombers to fly to the Positive Control Line and then turn back."[36] The Positive Control Line was the Fail-Safe point; that is, the point at which U.S. airborne bombers approaching the Soviet Union's borders were to turn around and return to their bases unless they received orders to proceed further. The SAC bomber force had in fact been sent on its way to that point on at least several occasions in the late 1950s and 1960s as a result of misinterpreted radar indications of the DEW network. The Soviet government had complained about those flights in the United Nations (UN), saying that the U.S. nuclear-armed bombers had made "provocative flights" across the Arctic toward the USSR.[37]

In one case, Soviet Foreign Minister Andrei Gromyko asked for an urgent meeting of the UN Security Council to discuss the Soviet complaint. The Eisenhower administration's press secretary responded: "Mr. Gromyko's statements are not true." The U.S. Department of State added, "It is categorically denied that the U.S. Air Force is conducting provocative flights over the Polar regions or in the vicinity of the USSR."[38] Everything in this statement hung on the word "provocative." SAC *did* conduct flights, aircraft *did* reach the "fail safe" line, and they were loaded with *very* high yield weapons in those years. It took some time for McNamara's suggested modifications of a system of graduated ground alert responses to be initiated, as well as "provision for possible early recall" of bombers long before they reached the Positive Control Line. This, McNamara wrote, "would reduce the likelihood of a false alarm accidentally triggering a general war."[39]

Other problems for Soviet early warning systems were posed by SAC B-52 *weekly* aircraft scramble exercises, which were conducted on every B-52 base for nearly 30 years. In addition, the JCS held 40 command post exercises (CPX) every month, a rate of 1.3 per day. Throughout the latter half of the

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36. Robert S. McNamara, Memorandum for the Chairman, Joint Chiefs of Staff, Subject: SAC Ground Alert Response (S), 26 October 1961, in National Security Archive, Nuclear Weapons Collection.

37. "Report of Mock SAC Attacks across Arctic Angered Russia," *The New York Times*, 19 April 1958, p. 4.

38. E. W. Kenworthy, "US Is 'Glad to Discuss' Gromyko Charge in UN," *The New York Times*, 19 April 1958, p. 5.

39. McNamara, Memorandum to JCS Chairman (see note 33 supra).

1950s, SAC conducted deep-penetration (and some low-altitude) reconnaissance flights over, or toward, Soviet borders. These were followed by U-2 and SR-71 overflights conducted by the U.S. Central Intelligence Agency (CIA), posing further problems for Soviet sensors.

SAC's alert rate and aircraft dispersion were also influenced by Soviet Yankee-class SLBM "routine" patrol locations. The two were, in a sense, paired in a continuous, year-in-year-out cycle. Whenever Soviet strategic missile-carrying submarines came within their "normal" Atlantic Ocean patrol positions of 1,200 miles from the U.S. east coast, which placed SAC bases and Washington, DC, within an 8-minute flight time for Soviet SLBM strikes, SAC would disperse aircraft and increase alert rates.[40] Publicly disclosed examples occurred in August 1978 and March 1981. After the U.S. deployment of Pershing II missiles in Europe in late 1983, the Soviet Union put its SLBM patrols off the U.S. east coast on the surface rather than submerged. The decision to "bring our submarines with nuclear missiles closer to the shores of the United States" was taken as a "means of actively countering the Pershing-II" missiles.[41] The Soviet source says nothing about the submarines patrolling on the surface, but the context of the decision suggests that the move was a means of pressuring NORAD and certainly not of reassuring it.

The tape insertion error on 9 November 1979 (despite the claim of a two-man rule) took place on a U.S. Worldwide Military Command and Control System (WWMCCS) computer. If one looks at the "normal" performance record of these computers around 1980, one finds defects every 35 minutes ("mean time between defects"), a maximum time without interruption of only one hour, and a 12-hour-long period without connection during a command-and-control exercise in November 1980. During a 1977 exercise ("Prime Target") in which WWMCCS was linked to United States Atlantic Command (LANTCOM), United States European Command (EUCOM), the United States Readiness Command (REDCOM), and the National Military Command Center (NMCC), the results were sobering:

- EUCOM tried 124 uses and failed in 54;

40. "B-52 Alert Ends," *International Herald Tribune*, 12 March 1981, p. 3; "The Russians Are Coming," *Newsweek*, 11 June 1975, p. 11; and "A Soviet War of Nerves," *Newsweek*, 5 January 1981, p. 23. Paul Bracken's book *The Command and Control of Nuclear Forces* (New Haven: Yale University Press, 1983), pp. 61–63, also discusses an instance in April 1978.

41. Dmitriy Tikhanov, "If There Is War Tomorrow . . . 'We Defended the USSR against Nuclear Attack: The CIS Cannot Be Saved from It,'" *Vercherniy Almaty*, 1–3 June 1993, in JPRS, *Central Eurasia: CIS/Russian Military Issues*, JPRS-UMA-93-o35, 22 September 1993, U.S. Foreign Broadcast Information Service (FBIS), Doc. No. JUR3-000010373.

- LANTCOM tried 295 uses and failed in 132;
- Tactical Air Command (TAC) tried 63 uses and failed in 44; and
- REDCOM tried 290 uses and failed in 247.
- Overall, the computers worked only 38 percent of the time.[42]

Interactive practices between U.S. and Soviet offensive and defensive forces undoubtedly gave rise to many of the "accidental" events. Several of these practices appear to have been far more dangerous—carried out much more frequently and at heightened risk—as well as being more "threatening" to the USSR than the true accidents. The "routine missile display conferences" should probably be considered "not threatening" to the United States and the second group of MDCs "possibly threatening." If one looks closely at the three alert failures in 1979–1980, as well as an event on 3 October 1979 when an "SLBM detection radar picked up a low orbit rocket body . . . and generated a false launch and impact report," and another in March 1980 when NORAD registered a series of Soviet training launches that "generated an unusual threat fan," and examines precisely what order went to SAC aircraft on runways, which orders were or were not countermanded, and what decisions were made by officers monitoring command consoles, one finds that the system worked as it should have. Officers checked with sensor sites and immediately learned that the sensors were *not* showing what their computer errors were presenting.

At the time, procedures were such that duty officers were required to alert some runway bomber crews and airborne command post aircraft upon receiving any ambiguous notice of SLBM or ICBM attack, and those notices were quickly countermanded. At the same time, duty officers had no authority to go beyond those alerting steps. Given the timeline involved in missile warning/command sequences, this is not at all surprising, although there might have been alternate sets of instructions depending on the level of bilateral tension. That was exactly the modification to procedures initiated after the 1979–1980 alert failures: "under most conditions" duty officers could check NORAD warning data with sensor sites themselves before alerting any response system at all.

The degree of risk in the three alert failure events that attracted major public and U.S. congressional attention, and that were seen by some in the

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42. Desmond Ball, *Can Nuclear War Be Controlled?*, Adelphi Paper 169 (London: International Institute for Strategic Studies, Autumn 1981), p. 13. See also U.S. Congress, House of Representatives, Committee on Government Operations, *Our Nation's Nuclear Warning System: Will It Work If We Need It? Hearing*, 100th Cong., 1st Sess., 26 September 1985.

arms control community as indicating *imminent* danger, was probably over-estimated. To what degree were these system failures more than another exercise? The catalog of "routine," weekly events all through the 1950s to 1980s seems much more alarming. What if a true accident occurs during a crisis or prompts or includes "cascading accidents," which the most sophisticated studies suggest would be quite dangerous?[43] The "accidents" that have happened in actual crises have been interactive ones (overflight errors) and command misjudgments. Other examples are provided in Scott Sagan's 1993 volume, *The Limits of Safety: Organizations, Accidents and Nuclear Weapons.*[44] Most likely, events pertaining to the actual crisis would dominate any sequence, and the accident would still be recognized for what it was: a true "error."

U.S. Aerial Penetrations of Soviet Airspace in the 1950s and 1960s

In 1972 a Soviet author claimed that "from 1953 through 1956, USAF aircraft violated the borders of the USSR 130 times and the airspace of the other socialist countries 211 times."[45] All these penetrations took place before U-2 flights, which began in 1956 and were followed by SR-71 flights. The U-2 and SR-71 flights must have hugely increased the numbers of violations of Soviet and East European countries' airspace. The aircraft included a wide variety of types, including a reconnaissance version of SAC's B-47 nuclear bomber, the RB-47, which apparently was used on relatively low-level and deep penetration flights.

There are disparities regarding the total number of U.S. aircraft shot down during these reconnaissance missions. Records accumulated by a U.S. Department of State staffer and declassified from the U.S. National Archives in 1993 record 31 planes as having been shot down by Soviet interceptor

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43. Bracken, *The Command and Control of Nuclear Forces*; Scott Sagan, *The Limits of Safety: Organizations, Accidents and Nuclear Weapons* (Princeton, NJ: Princeton University Press, 1993); Blair, *The Logic of Accidental Nuclear War*; Scott Sagan, "Nuclear Alerts and Crisis Management," *International Security*, Vol. 9, No. 4 (Spring 1985), pp. 99–139; and Bradley A. Thayer, "The Risk of Nuclear Inadvertence: A Review Essay," *Security Studies*, Vol. 3, No. 3 (Spring 1994), pp. 428–493, with responses by Bruce Blair, Peter Feaver, and Scott Sagan, pp. 494–520.

44. Sagan, *The Limits of Safety*.

45. A. E. Efremov, *Evropa i Yadernoe Oruzhie* [Europe and Nuclear Weapons] (Moscow: Voenizdat, 1982), p. 16, reprinted in S. A. Tyushkevich et al., *The Soviet Armed Forces: A Historical View of their Organizational Development* (Moscow: Voenizdat, 1978), translated and republished by the U.S. Air Force.

aircraft or surface-to-air missiles in 1950–1970.[46] Writing in 1994, Paul Lashmar listed 39 U.S. aircraft shot down over the USSR or in adjacent waters or over Soviet-allied states from September 1946 to July 1977.[47] Evidently, some of the overflights of the USSR from 1954 to 1958 were authorized by General Curtis Le May, the commander of SAC, without the approval of President Eisenhower.[48] In remarks made at the Czechoslovak embassy in Moscow in 1960, Khrushchev stated that on 1 July 1956 a U.S. reconnaissance plane had flown over Soviet Ukraine, 250 miles inside Soviet borders.[49] Khrushchev in his memoirs writes: "When Stalin died, we felt terribly vulnerable. . . . The Americans had the Soviet Union surrounded with military bases and kept sending reconnaissance planes deep into our territory, sometimes as far as Kiev. We expected an all-out attack any day."[50] At times the Soviet Union used false navigational beacons to lure U.S. reconnaissance aircraft that were not penetrating Soviet airspace so that they would overfly Soviet territory and could legitimately be shot down.[51]

Risky programs continued into the 1970s to obtain strategic or tactical intelligence. U.S. efforts to push Soviet air defense forces to activate (turn on) the large Pechora radars were unsuccessful until an SR-71 provoked them into doing so at some time in the 1970s. A report noting that Soviet SAM missiles had been fired at an SR-71 in 1983 added: "since its entry into service and the start of high altitude reconnaissance missions, more than 900 SAMs . . .

46. "Special Report: Secrets of the Cold War," *U.S. News and World Report*, 15 March 1993, pp. 30–56. Other reports indicate that as many as 48 or 49 U.S. or allied reconnaissance aircraft may have been shot down. Anthony Cave Brown, for example, states, "Between 1945 and 1947 [*sic*] there were more than forty cases in which American or Allied (usually British) aircraft were shot down within Soviet territory or along its borders." See Anthony Cave Brown, ed., *Dropshot: The American Plan for World War III against Russia in 1957* (London: Dial Press, 1978), p. 17. I know of no corroboration of such high numbers in such a short period of time, and "1947" should probably read "1957."

47. Paul Lashmar, "Shootdowns," *Airplane Monthly*, August 1994, pp. 6–10. See also, Michael L. Petersen, "Maybe You Had to Be There: The SIGINT on Thirteen Soviet Shootdowns of U.S. Reconnaissance Aircraft," Declassified, *Cryptologic Quarterly* (NSA/CSS), n.d.

48. Paul Lashmar, "'Stranger Than 'Strangelove': Did a Zealous Curtis Le May Try to Start World War III?" *The Washington Post*, 29 May 1994, p. C3.

49. Hanson Baldwin, "The Vulnerable Soviet: Moscow Reveals Defense Weakness in Publicizing U.S. Plane Incursions," *The New York Times*, 11 May 1960, p. 5. A small additional "trailer," "Alaska Flights Reported," reported a claim by an Alaskan state senator that aircraft presumed to be Soviet were conducting "monthly flights *over* Alaska in recent years." I have found no subsequent corroboration of this, although Soviet aircraft routinely flew *toward* Alaska in international airspace.

50. Nikita Khrushchev, *Khrushchev Remembers: The Last Testament*, trans. by Strobe Talbott (Boston: Little, Brown, 1974), p. 210. This flight may have been the very first U-2 flight, which took place on 4 July 1956.

51. John M. Carroll, *Secrets of Electronic Espionage* (New York: E. P. Dutton, 1966), pp. 167–180.

have been fired at the SR-71 but without any success."[52] Because the SR-71 did not normally fly over the USSR, the 900 SAMs were presumably fired at aircraft flying over East European member-states of the Warsaw Pact or over Cuba.

Border provocations by aircraft for the purpose of gathering ELINT were not solely a U.S. activity. In 1981, *The Economist* reported that "NATO [was] being penetrated on a regular basis" by pairs of MiG-23 aircraft that flew alongside borders and sometimes crossed over them.[53] The newsweekly noted that a MiG-25 had flown "the length of the Rhone Valley in France." (At its maximum capability, the MiG-25's flight profile was not much different from the SR-71's.) The report also claimed there had been three penetrations of U.S. airspace in 1980: a Soviet Bear reconnaissance bomber that allegedly reached Baltimore in March or April, a Backfire bomber over Alaska, and a MiG-25 flying from Cuba that reached Jacksonville, Florida, in April. These were not confirmed by U.S. authorities, although several defecting MiG pilots from Cuba flew their aircraft at *extremely* low altitudes to Florida airports undetected. One report claimed that "between January and November 1983 the U.S. recorded 77 violations of U.S. airspace by Soviet aircraft flying to and from the USSR and Cuba in efforts to identify the frequencies used by U.S. air defense radars."[54] These presumably were Soviet aircraft flying within the so-called U.S. Air Defense Identification Zone (ADIZ), which extends 200 miles from the U.S. coastline and is an entirely different matter.

Incidents at Sea and Interactions during Naval Maneuvers

The discussion of interactions between Western (U.S., French, British, Swedish) ships and aircraft and those of the Soviet Union can be divided into four subgroups:

- interactions during anti-submarine warfare (ASW) operations, which means essentially continuously, beginning in the early 1960s;

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52. "Overflights of the USSR and USA," *Defense and Armament*, No. 24 (November 1983), p. 9. Soviet air defense forces also made numerous attempts to shoot down U-2s flying over the Soviet Union from 1956 and to May 1960.

53. "The Spies in NATO's Skies," *Foreign Report* (The Economist), No. 1664 (21 January 1981), pp. 3–5.

54. "Overflights of the USSR and USA," p. 9.

- ship-ship interactions in particular geographic regions or for specific reasons;
- interactions during naval maneuvers; and
- naval interactions during crises.

An "incident" (in the lowest of the categories for risk of escalation) need not be an actual collision, touching, scraping, "bumping," "shouldering," or purposeful ramming of ships; it also includes any approach of a ship so close to another that one of the vessels must take evasive action to avoid a crash. The number of these incidents peaked just prior to the signing of the U.S.-Soviet Agreement on the Prevention of Incidents on and over the High Seas, on 25 May 1972.[55] Some 150–170 such events had taken place in the preceding eighteen months, for a rate of one every three to four days. Negotiations on the issue began in October 1971. The peak number of incidents came precisely at the height of U.S.-Soviet détente in the early 1970s. After the signing of the agreement, the number of incidents did not go down to zero, but it decreased by two-thirds, to an annual rate of around 40 per year, or just under one event per week. The events began around 1963–1964, when Soviet ships began to be deployed in the Mediterranean. According to a U.S. Navy officer involved in the negotiations, the agreement came about because "both navies are in the same place at the same time."[56]

That, however, is an unsatisfactory explanation of why the incidents took place.[57] The number of events per year began to rise appreciably when the Soviet Union decided to challenge the U.S. "occupation" of the Sea of Japan. Later on, Soviet efforts to exclude U.S. naval vessels from their annual deployment into the Black Sea became a factor. Some of the decrease in the incident rate stemmed from a curtailment of U.S. naval patrols in the Sea of Japan

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55. Sean M. Lynn-Jones, "A Quiet Success for Arms Control: Preventing Incidents at Sea," *International Security*, Vol. 9, No. 4 (Spring 1985), pp. 154–184.

56. Author's interviews, early 1980s.

57. Lynn-Jones, "A Quiet Success for Arms Control." See also D. C. Daniel and G. D. Tarleton, "The Soviet Navy in 1984," *U.S. Naval Institute Proceedings*, Vol. 111, No. 5 (May 1985), p. 63; Harry H. Almond Jr., "Dangerous Military Activities," *U.S. Naval Institute Proceedings*, Vol. 115, No. 10 (December 1989), pp. 97–99; William Arkin, "Provocations at Sea," *Bulletin of Atomic Scientists*, Vol. 41, No. 10 (November 1985), pp. 6–7; Rick Atkinson, "Navies Keep Superpower Diplomacy Afloat," *The Washington Post*, 8 June 1984, p. A7; "Ship Scraping Eases: Navy Continues Sea Exercises," *St. Louis Post Dispatch*, 13 May 1967, p. 5; "Some Bumps in the Night," *Newsweek*, 2 April 1984, pp. 40–41; William H. Honan, "US and Russia: Now Hear This! Rules for Chicken of the Sea," *The New York Times*, 10 October 1981, p. A4; and "Soviet Sub Blamed in Collision," *The New York Times*, 15 March 1977, p. A9.

until around 1987, and the Soviet Navy did not give up its efforts to exclude U.S. naval vessels from the Black Sea until as late as 1988.[58]

On other occasions, U.S. naval vessels were the ones carrying out aggressive operations that resulted in incidents. Among these are the Hollystone submarine operations in which U.S. submarines entered harbors of the Soviet Northern and Pacific fleets for intelligence purposes.[59] Some of these missions resulted in U.S. and Soviet submarine collisions and in one case apparently nearly led to an underwater combat situation. Another was the occasion on 6 May 1972 when a Soviet Golf II–class ballistic missile submarine accompanied by a Soviet surface flotilla left Cienfuegos harbor in Cuba. This was the first time the Soviet Union had brought a ballistic missile submarine to Cuba, prompting questions about whether the Soviet Union was testing the constraints of the Kennedy-Khrushchev agreements that ended the Cuban missile crisis. The dates of the Soviet visit precisely overlapped the final weeks (3–17 May 1972) of the U.S.-Soviet negotiations on the Incidents at Sea Agreement. U.S. surveillance ships and ASW aircraft kept the Soviet submarine under extremely close surveillance after it left Cuba and forced it to the surface via sonar contacts. Soviet and U.S. surface vessels interacted vigorously, and Soviet surface vessels fired flares at low-flying U.S. ASW aircraft.[60] During the Cuban missile crisis U.S. surface vessels engaging Soviet submarines used extremely vigorous ASW procedures, including the use of light warning charges, for extended periods of time to force Soviet submarines to the surface.[61] These operations caused substantial friction between Secretary of Defense McNamara and the Chief of Naval Operations, Admiral George W. Anderson, Jr., after McNamara learned that risky interactions were taking place during the crisis.

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58. John H. Cushman, Jr., "2 Soviet Warships Reportedly Nudge U.S. Navy Vessels: Acts Called Deliberate," *The New York Times*, 13 February 1988, p. A4; George C. Wilson, "Soviets Bump U.S. Ships in Black Sea," *The Washington Post*, 13 February 1988, p. A5; Admiral Eugene J. Carroll, "Black Day on the Black Sea," *Arms Control Today*, Vo. 18, No. 4 (May 1988), pp. 14–17; Richard C. Armitage, "Asserting U.S. Rights on the Black Sea," *Arms Control Today*, Vol. 18, No. 5 (June 1988), pp. 13–14; and Richard Halloran, "2 U.S. Ships Enter Soviet Waters off Crimea to Gather Intelligence," *The New York Times*, 19 March 1986, p. A11.

59. Laurence Stern, "US Spying in Soviet Waters," *The Washington Post*, 4 January 1974, p. A5; and Seymour Hersh, "Submarines of U.S. Stage Spy Missions Inside Soviet Waters," *The New York Times*, 25 May 1975, pp. A1, A17.

60. Raymond L. Garthoff, *Détente and Confrontation: American Soviet Relations from Nixon to Reagan* (Washington, DC: Brookings Institution Press, 1985), pp. 301–302; and Captain Leslie K. Fenlon, "The Umpteenth Cuban Confrontation," *U.S. Naval Institute Proceedings*, Vol. 106, No. 7 (July 1980), pp. 40–45.

61. "Sighted Sub, Surfaced Same," *Time*, 28 June 1963, p. 18.

Close surveillance that frequently overlapped with harassment was a constant feature of strategic ASW. Each side sought to locate and hold the other side's SLBM-carrying submarines (SSBNs) under constant surveillance when they were out on routine patrols. On the Western side, close-range actions were carried out with attack submarines, ASW patrol aircraft, and aircraft carrier ASW groups. On the Soviet side, attack submarines (SSNs) would attempt to pick up British, French, and U.S. SSBNs as they left their harbors to go on patrol. These efforts sparked "cat and mouse" interactions, with extra attack submarines reportedly aiding the departing SSBNs when necessary.[62] SSNs and SSBNs frequently interacted under the seas, and on some occasions collided with each other.[63] These operations and the resulting potential for physical contact between the two sides' submarines did not end with the dissolution of the USSR. In March 1993 a U.S. attack submarine and a Russian SSBN collided, "the second such incident in 13 months."[64]

Another category of interaction took place regularly during naval maneuvers. Each side used the other's maneuvers, at times just to observe, at times to interfere, and at times to practice submarine, aircraft, or ASW missile attack patterns that would be used in wartime. These activities apparently led to every conceivable form of interaction:

- among surface ships;
- between submarines and surface ships;
- between bombers and reconnaissance aircraft and ships, as well as with fighter aircraft flown from aircraft carriers; and
- among interceptor aircraft.

Using the ships of the opposing side during maritime exercises, bombers practiced missile runs, and submarines their torpedoing patterns. All of this was not without consequence. In the Mediterranean alone "more than a dozen Soviet and American airmen have lost their lives . . . there have been more

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62. "How Submarines Collect Signal Intelligence," *Microwave Systems News*, No. 5 (October–November 1976), pp. 50–52.

63. One event reportedly involved a Soviet attack submarine and the USS *James Madison*, a U.S. Polaris SSBN. See Jack Anderson, "US, Soviet Subs Scrape Hulls," *The Washington Post*, 1 January 1975, p. A15; and Reuters, "US Silent on Crash of Submarines" *The Chicago Tribune*, 2 January 1975, p. 4.

64. Barton Gellman, "US and Russian Nuclear Subs Collide," *The Washington Post*, 23 March 1993, p. A5.

than 100 'hairy situations' in these kinds of interactions."[65] The United States also shot down two Libyan aircraft in 1981 during one of these events. Soviet reconnaissance aircraft and U.S. carrier interceptor aircraft flew wingtip to wingtip and at times collided. In the Mediterranean, Soviet pilots routinely flew reconnaissance missions in aircraft bearing Egyptian, Syrian, and Libyan markings. In 1968, a Soviet TU-16 reconnaissance plane made four low passes over a U.S. aircraft carrier, and it then took too sharp a turn, crashing into the Mediterranean. In June 1980, another Soviet TU-16 crashed while circling a Japanese naval vessel in the Sea of Japan in the same kind of maneuver.

Some examples of the more "integrated" of these interactions, with greater danger of miscalculations, include:

- A Soviet Victor-class SSN joined in the U.S. "Team Spirit" 1984 exercises in the Sea of Japan. U.S. ships opportunistically exercised sinking the Soviet submarine. A U.S. naval officer commented, "We practice on each other. That way we're saving the taxpayers' money."[66] In turn, the Soviet submarine successfully and without being detected took up a position directly underneath the U.S. aircraft carrier *Kitty Hawk*. But apparently it surfaced inopportunely, hitting the aircraft carrier and sustaining sufficient damage to have to return to its base on the surface, escorted by a Soviet cruiser that had also been in the vicinity.
- During the U.S. fleet exercises in the North Pacific in October 1982 (30 September and 1 October), Soviet TU-26 Backfire bombers practiced mock guided missile attacks—simulating targeting and firing their AS-4 anti-ship missiles (ASMs)—at two U.S. aircraft carriers.[67] The approach distance was not close, but the carriers could detect the missiles' electronic guidance systems locking on to the carriers. The area of the maneuvers was within the striking range of U.S. carrier-based aircraft to the Soviet Pacific Fleet's base at Petropavlovsk.
- During a North Atlantic Treaty Organization (NATO) naval exercise off the coast of Iceland in 1982, five Soviet SSNs practiced torpedo attack patterns against U.S. and other NATO vessels. Similar torpedo

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65. William Honan, "The Games Pilots Play," *The New York Times*, 23 August 1981, p. A15, reprinted as "Mediterranean Sport: Chicken of the Sea," *International Herald Tribune*, 27 August 1981, p. 4.

66. "Too Close an Encounter," *Time*, 2 April 1984, p. 30; and "Moscow's Muscle Flexing: Soviet Ships Prowl the North Atlantic in Biggest Maneuvers Ever," *Time*, 16 April 1984, pp. 6–8.

67. David Wood, "Soviet Planes Practice Mock Carrier Raid; Bombers Fly Close to U.S. Warships," *Los Angeles Times*, 9 November 1982, p. 5; and Drew Middleton, "Russia Surveys Games of U.S. Navy in Pacific," *The New York Times*, 4 October 1982, p. A11.

runs were carried out by Soviet submarines against U.S. ships in the Baltic Sea and in the Black Sea in the 1980s.

- Two years later, two U.S. aircraft carriers in the Sea of Japan prompted a reaction from more than 100 Soviet jet fighters, bombers, and reconnaissance aircraft—the opportunity for a perfect exercise.[68]
- Soviet naval vessels fired flares at low-flying reconnaissance aircraft on numerous occasions. Examples include firing at a British Vulcan aircraft flying over Soviet Ukraine in 1984 and at two Swedish Viggens in the Baltic Sea. In a September 1989 incident in the Mediterranean, a Soviet destroyer fired its 130 mm gun at a U.S. Navy P-3 reconnaissance aircraft. This incident followed the July 1989 Dangerous Military Activities Agreement and prompted the U.S. Navy to suggest establishing direct communication links between U.S. patrol aircraft and Soviet surface ships.
- In April 1984 a U.S. frigate (the USS *H.E. Holt*) was overly aggressive in shadowing the Soviet aircraft carrier *Minsk*. After an exchange of signal flag messages, with each side disregarding the other's messages, the *Minsk* fired four signal flares over the U.S. ship and four others directly at it, three of which hit the ship, with one narrowly missing the bridge and the ship's captain.[69]
- Aircraft interactions are also common, and they most often take place over international waters. Live fire was reserved for occasions in which an aircraft was over national territory. In 1987, Japanese interceptor aircraft used live fire to warn off a Soviet TU-16 Badger bomber that had not responded to radio warnings and had crossed over the island of Okinawa twice for a period of ten minutes.[70] Soviet MiG interceptors fired at a U.S. Army helicopter that had strayed into Czechoslovak territory while patrolling the West German–Czechoslovak border.[71]

One other category of activity deserves mention. By the 1970s, Warsaw Pact naval exercises in both the Baltic Sea and the North Sea were

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68. Hedrick Smith, "US Ships Meet Major Response off Soviet Coast," *The New York Times*, 19 December 1984, p. A4.

69. "Moscow's Muscle Flexing" (see note 63 supra), p. 8.

70. Margaret Shapiro, "Japanese Planes Fire to Warn Soviet Bomber; Craft Entered Airspace over Okinawa," *The Washington Post*, 10 December 1987, p. A3. Japanese aircraft had reportedly scrambled to meet approaching Soviet aircraft on some 825 occasions in the previous year (1986), but in only three other cases had Soviet aircraft actually overflown Japanese territory.

71. "Shots by MIGs Miss U.S. Copter on West German–Czech Border," *The New York Times*, 21 April 1984.

accompanied by flights of long-range bombers. In 1976 an expert on the So-
viet military, John Erickson, wrote, "Soviet air activity results in the com-
mitment of flights of strike bombers to within minutes of Danish airspace,
turning what was an abnormal alert situation into a regular occurrence and
thus straining the Danish military alert system."[72] A Danish source provided
similar information:

> A Danish military analyst has pointed out that "activities that previously warned
> of hostile action have today become part of the normal scene," making the
> distinction between a naval exercise and an isolated attack against Denmark dif-
> ficult. This, in turn, has reduced the early warning and reaction period.[73]

These kinds of incidents were most dangerous when they took place during
a crisis and a nuclear alert–related deployment. Several occurred when U.S.
and Soviet fleets were in extremely close proximity for weeks during crises
in the eastern Mediterranean. Submarines, surface ships, interceptors, and re-
connaissance aircraft all circled each other at close quarters during these in-
teractions. Ships were in close firing range at 1,500 meters, and aircraft flew
just over deck level. During these years nuclear weapons were present on all
the ships involved. At times, Soviet vessels switched on their shipboard gun
fire-control radar and trained their guns on the bridge of an adjacent U.S.
ship.

The inherent risks of these sorts of interactions was highlighted by Kurt
Gottfried and Bruce Blair:

> Maritime operations have unique features that could bear on escalation. While
> a skirmish at sea would take place in relative isolation from other forces, and is
> unlikely to lead to civilian casualties, other aspects of naval operations imperil
> stability. Communications with ships, and especially submarines, are more ten-
> uous than those with air and ground forces. Furthermore, opposing naval forces
> shadow each other and mingle as no others do. . . .
>
> Such proximity demands virtually instantaneous reactions to aggressive tac-
> tics even in peacetime, and has led to tense encounters during crisis. During the
> Yom Kippur Crisis, Soviet naval squadrons, consisting of surface and submarine
> units, maintained close contact with four U.S. carrier and amphibious groups for
> a week after the DEFCON 3 alert was over; the two fleets continually targeted
> each other for immediate attack.

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72. John Erickson, "The Northern Theatre (TVD): Soviet Capabilities and Concepts, *RUSI Journal*,
Vol. 121, No. 4 (1976), pp. 11–13.

73. Orla Møller, "Danish Security Policy," *The Atlantic Community Quarterly*, Vol. 12, No. 4 (Fall
1977), p. 329.

> This is not an isolated incident. In the Jordanian crisis of 1970, Soviet Naval crews assumed battle stations, loaded SAM launchers, and locked their fire control radars on U.S. aircraft.[74]

In the wake of the October 1973 Arab-Israeli War, U.S. and Soviet naval ships remained in close contact from 24 October to 9 November. In addition to the 1970 and 1973 engagements, U.S. and Soviet fleets in the eastern Mediterranean also interacted in close proximity in 1975–1976 and in 1982, on both occasions because of events in Lebanon.

Perhaps most serious of all—or as serious as events during crises involving nuclear alerts and forces—were interactions during U.S. or Soviet military interventions. The Soviet exercise of invasion procedures north of the Iranian border in 1980 led to the Carter administration's announcement of a nuclear threat "umbrella" for the Persian Gulf area, the establishment of REDCOM, and U.S. base agreements with Kenya, Oman, and Egypt for the use of facilities in case of conflict. On other occasions the Soviet Union practiced airlifts of multidivisional size for the transport of airborne units to Africa in extremely short time frames. In some of these cases one or the other superpower steered clear of the area in which the other was involved or limited its involvement in obvious ways. In other cases it did not. The potential dangers were emphasized by Joseph Bouchard of the U.S. Navy in his book on naval command during crises. He specifically mentions "the accidental launching of a torpedo by a Soviet destroyer during a NATO exercise in October 1983 and a torpedo inadvertently launched by a U.S. Navy frigate in December 1983."[75] One of the suggestions for explaining the sinking of the U.S. submarine *Scorpion* was that an acoustic homing torpedo onboard the submarine had accidentally been activated and launched, sinking the vessel.

Efforts by Soviet naval vessels to sideswipe and obstruct U.S. vessels' right of way began when the Soviet Union was still substantially behind in the strategic balance. Evidently, Soviet political leaders explicitly authorized this process. Except on rare occasions, Soviet field commanders, including naval commanders at sea, operated under strict orders and could not have initiated such actions on their own. Therefore, the initiative must have come from

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74. Kurt Gottfried and Bruce Blair, eds., *Crisis Stability and Nuclear War* (New York: Oxford University Press, 1987), p. 64.

75. Joseph F. Bouchard, *Command in Crisis: Four Case Studies* (New York: Columbia University Press, 1991); cited by William Burr and Thomas Blanton, "The Submarines of October: U.S. and Soviet Naval Encounters during the Cuban Missile Crisis," National Security Archive Electronic Briefing Book No. 75, 31 October 2002, pp. 4, 17, online at https://nsarchive2.gwu.edu/NSAEBB /NSAEBB75/.

above. Some practices that Soviet ships used in interfering with NATO maritime maneuvers were frequently repeated, which even more strongly suggests a conscious, predetermined policy. Examples include Soviet ships maintaining a course that violated standard navigational procedures "and at the last minute raising a signal flag that its steering was broken."[76] In interviews I carried out in the early 1980s with civilian naval analysts and U.S. Navy officials specializing in U.S.-Soviet ship interactions, I was unable to ascertain whether Western ships took actions similar to those of Soviet vessels, short of sideswiping, or what their operational orders actually were.

Paradoxically then, the Soviet military commanders who ordered these provocative and risky maneuvers must have had little or no fear of escalation, even though nuclear weapons–bearing platforms were frequently involved, such as U.S. SSNs and SSBNs, Soviet SSNs, and U.S. aircraft carriers. Because many such events took place regularly, Soviet policymakers must have been willing to put up with them. However, one has to presume that they also wanted to be assured of limitation and control and that there was some predetermined point for an absolute cutoff of the interaction in order to prevent further escalation. Yet, even though political leaders did not want incidents to lead to a full-blown confrontation, some officers on the Soviet General Staff or in the Soviet naval command may have been pushing the political limits of interactive engagement with U.S. or NATO forces. Although crucial information about Soviet history and Soviet foreign policy has been released from former Soviet archives since 1992, no information has yet been divulged about the details of Soviet policymaking on this issue.

If the discussion above offers some approximation of how U.S. and Soviet leaders approached these events under "ordinary" peacetime circumstances, it suggests a modicum of risk control. However, the degree of risk control was apparently much lower for the situations that involved greater political and military investment. Several of the most problematic U.S.-Soviet naval interactions took place in the eastern Mediterranean. James McConnell has carefully separated Soviet actions into "before and after" categories, depending on whether Israeli or Arab military operations had already occurred to upset a status quo.[77] According to McConnell, Soviet responses indicated that if Israel was not the party that initiated military action the USSR would not be

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76. Fred Hiatt, "Soviet Frigate Collides with U.S. Destroyer," *The Washington Post*, 18 November 1983, p. A4.

77. James M. McConnell, "The 'Rules of the Game': Superpower Coercive Diplomacy in the Third World," in Bradford Dismukes and James M. McConnell, eds., *Soviet Naval Diplomacy* (New York: Pergamon Press, 1979), p. 285.

disturbed if the United States went to Israel's assistance. After Israeli military action, the Soviet Union would go to the aid of its regional allies and obstruct U.S. naval operations. This may be correct, and, if so, it indicates some discriminating criteria behind Soviet decisions to interfere with U.S. forces in the field. However, crises and confrontations occurred in regions in which combat was taking place, and in some of these Soviet or U.S. military forces were actively engaged in the regional fighting. In other cases there were concomitant nuclear alerts. In those circumstances, the potential for mishaps loomed large. It is probably rather remarkable that no more serious U.S.-Soviet engagements ever took place.

Nuclear Threats: Alerts and Crisis Deployments

This final section surveys what is known about instances in which the use of nuclear weapons was considered, assessed or proposed. The section focuses in particular on two closely related subjects: occasions when the United States placed its nuclear forces on heightened "DEFCON" alert, and several problematic incidents involving Soviet warning systems or reactions to political circumstances.

Threats to use nuclear weapons can be grouped into four categories of "imminence": (1) routine deployments, often of systems kept at very high levels of readiness, including the strategic systems of the five nuclear powers during the Cold War, as well as theater and tactical nuclear weapons deployed near the borders of an opposing country; (2) explicit threats to use nuclear weapons (such as those made by the USSR toward France and the UK at the time of the 1956 Suez crisis), either in public statements or in diplomatic messages delivered to a head of state; (3) specific deployments of nuclear weapons during a crisis, which can take place without any change in alert status, on aircraft, aircraft carriers, or submarines; and (4) increased alert levels of part or all of a country's nuclear weapons systems, either publicly announced or carried out without public announcement.

The United States and the Soviet Union showed notable differences in national styles regarding use of nuclear weapons during crises. The United States carried out alerts, both public and secret, and crisis deployments, again both public and secret. For many years, scholars wrongly claimed that the Soviet Union had never initiated a strategic nuclear alert.[78] That is now known

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78. Desmond Ball et al., *Crisis Stability and Nuclear War* (Cambridge, MA: American Academy of Arts and Sciences; and Ithaca, NY: Cornell University Peace Studies Program, 1987).

to be incorrect. The Soviet Union did, however, make much more frequent use of verbal threats, variously described as "bluster," "saber rattling," or "nuclear blackmail," which in many instances presumably were made for propaganda effect or political benefits unrelated to the immediate crisis, as with Khrushchev's threats in 1956 when Great Britain, France, and Israel invaded the Sinai.

The United States (after 1959) maintained a system of five "Defense Readiness Conditions" or levels of readiness for its conventional and nuclear forces, shortened to the acronym "DEFCON."

DEFCON 5: normal peacetime condition
DEFCON 4: increased alert
DEFCON 3: advanced alert, war possible
DEFCON 2: full alert, war imminent
DEFCON 1: maximum alert, general war

NATO followed the same system. U.S. SAC forces were normally kept at DEFCON 4, as were NATO nuclear forces. Each level denotes specific degrees of preparation or deployment, but these vary for different regional commands. For the purpose of exercises, the five DEFCONs were given different code names to avoid any misunderstanding, particularly by Soviet intelligence systems.

On relatively few occasions U.S. global military forces were placed on DEFCON 3 or lower during a crisis with the USSR. For example, on 16 May 1960, during a test of the U.S. military alert system, U.S. global forces briefly went on DEFCON 2 alert. This event was an ill-considered administrative decision by a senior administration official, made without any consultation, and it was swiftly terminated. The only other time U.S. forces went to DEFCON 2 was from 22 October through 20 November 1962, during the Cuban missile crisis. Britain's Thor missiles and V bomber force were also placed on higher alert status, both DEFCON 2 and DEFCON 3, during that same period.[79]

On two occasions during the Cold War, U.S. forces were elevated to DEFCON 3. The first occasion was on 24 October 1973, at the end of the Arab-Israeli War. This was described as a mild form of DEFCON 3, but the U.S. Sixth Fleet maintained higher alert levels for nearly six weeks. In a review of Soviet policy during the October 1973 war, William Quandt wrote that the

79. Lewis et al., *Too Close for Comfort*, pp. 10–11.

Soviet Union could claim "that the United States had 'overreacted' [by calling a DEFCON alert], which is not an unfair characterization of the alert. Many in Washington agreed, adding only that the 'overreaction' was deliberate."[80]

The other occasion was on 8 August 1976, when a DEFCON 3 alert was part of "Operation Paul Bunyan," the U.S. and South Korean military show of force against North Korea after the so-called axe-murder incident, when North Korean troops murdered two U.S. Army officers to prevent them from cutting down a tree in the Joint Security Area of the Korean Demilitarized Zone. (The tree was blocking the line of sight of the U.S.–South Korean command.) The show of force worked in compelling the North Koreans to back down, allowing the tree to be cut down.

Another DEFCON 3 alert occurred after the Cold War, on 11 September 2001, in response to the al Qaeda–launched terrorist attacks against the United States, an event that will not be covered here.

Apparently, on other occasions during the Cold War some U.S. nuclear forces were placed on increased alert, but the details are still classified. Of almost equal significance are occasions when U.S. nuclear forces were used without any change in the DEFCON status. In an extensive study of occasions when the United States used military force from the mid-1940s through the mid-1970s, published by the Brookings Institution in 1978, the editors Barry M. Blechman and Stephen S. Kaplan and their coauthors examine the use of nuclear weapons in crises, although their major focus is on the use of conventional forces.[81] The attention they give to nuclear weapons is very circumscribed. The companion Brookings study on the Soviet Union's use of force, edited by Kaplan, is even less satisfactory, with no systematic treatment of the nuclear weapons aspect at all.[82] Blechman and Kaplan present a list of sixteen incidents in which U.S. strategic nuclear forces were involved. The number of events in this category increased as Soviet military capabilities expanded. In several other cases, the United States and the Soviet Union exchanged notes involving nuclear threats during a particular crisis, with the

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80. William B. Quandt, *Soviet Policy in the October 1973 War*, R-1864-ISA (Santa Monica, CA: RAND Corporation, May 1976), p. 34. Two Israeli authors claim that units of the U.S. Sixth Fleet were routinely maintained at DEFCON 3. See Yona Bandmann and Yishai Cordova, "The Soviet Nuclear Threat towards the Close of the Yom Kippur War," *The Jerusalem Journal of International Relations*, Vol. 5, No. 1 (1980), pp. 94–110. See also Michael O. Wheeler and Kemper V. Gay, ed., *Nuclear Weapons and the 1973 Middle East War*, Nuclear Lessons and Legacies Project Monograph No. 3 (McLean, VA: Center for National Security Negotiations, August 1996).

81. Barry M. Blechman and Stephen S. Kaplan, eds., *Force without War: United States Armed Forces as a Political Instrument* (Washington, DC: Brookings Institution Press, 1978).

82. Stephen S. Kaplan, ed., *Diplomacy of Power: Soviet Armed Forces as a Political Instrument* (Washington, DC: Brookings Institution Press, 1981).

Table 1. Incidents Involving U.S. Strategic Nuclear Forces

November 1946	U.S. aircraft shot down by Yugoslavia
February 1947	Inauguration of president of Uruguay
January 1948	Security of Berlin
April 1948	Security of Berlin
June 1948	Security of Berlin
July 1950	Korean War: Security of Europe
August 1953	Security of Japan and South Korea
May 1954	Guatemala accepts Soviet-bloc support
August 1954	China-Taiwan conflict: Tachen/Dachen
October 1956	Suez crisis
July 1958	Political crisis in Lebanon
July 1958	Political crisis in Jordan
July 1958	China-Taiwan crisis: Quemoy and Matsu
May 1959	Security of Berlin
June 1961	Security of Berlin
October 1962	Soviet emplacement of missiles in Cuba
April 1963	Withdrawal of U.S. missiles from Turkey
January 1968	*Pueblo* seized by North Korea
October 1973	Arab-Israeli War

Source: Barry M. Blechman and Stephen S. Kaplan, eds., *Force without War: United States Armed Forces as a Political Instrument* (Washington, DC: Brookings Institution Press, 1978), pp. 84–85.

United States usually simultaneously deploying nuclear weapons. The list below is adapted from the Blechman-Kaplan volume and includes only events up to 1978. Some of these are well known, such as the actions of the Eisenhower administration during the two Taiwan Strait crises in 1954 and 1958, and of the Eisenhower and Kennedy administrations during the Berlin crises of 1959 and 1961. Other incidents are not well known.

I have left the table as in the original, although it is now clear that the three episodes listed for the Berlin crisis of 1948 were intended for political effect. The U.S. bomber aircraft that were deployed were not equipped to deliver nuclear weapons, and no nuclear weapons of any sort were moved to U.S. bases in Britain at that time. At least one other entry in the list is anomalous. The 1947 SAC bomber flight at the time of the inauguration

of the Uruguayan president was purely a diplomatic gesture. The 1954 flight of bombers to Nicaragua was related to the overthrow of Jacobo Árbenz Guzmán's government in neighboring Guatemala following its acceptance of Soviet-bloc support. The list is also highly circumscribed. The criteria for inclusion of events excludes the deployment of nuclear strike forces on aircraft carriers as not being "strategic." If those had been included, the list would likely be three or four times as long.

There is an even larger number of events in which contingency planning and consideration of nuclear weapons use took place in various U.S. government agencies; for example, during the Korean War, during the events surrounding "Project Vulture" when French forces were surrounded at Dien Bien Phu, and during the Laotian crisis of April 1961. These incidents lie beyond the scope of this article.

Soviet Alerts

A great deal of misinformation about the Soviet side of the equation has long existed in the literature. Arkady Shevchenko, upon being asked whether "the Soviet Union [had] ever gone on nuclear alert," replied, "I don't think that the Soviet Union in my time ever went on the real nuclear alert. There was no situation when they really needed to do that, in the '70s or even early '80s."[83] In a commentary on the Soviet invasion of Czechoslovakia in 1968, *New York Times* correspondent Benjamin Welles wrote, "At no time, however, did either the Soviet Union and its Warsaw Pact allies or the United States and its NATO allies move toward their nuclear triggers—the true touchstone of world crisis."[84] In the late 1970s, the former U.S. State Department official George Kennan offered a bizarrely implausible remark about Soviet nuclear threats: "The Russians . . . for all their sins, and I don't think anyone knows them better than I do, have not threatened people with nuclear weapons. . . . I don't detect any real intention on their part of using these weapons."[85] Even as highly initiated an observer as Richard Betts, writing in 1987 and relying on U.S. intelligence sources, claimed that the Soviet Union had not placed any of

83. Transcript of interview with Arkady Shevchenko, CBS Television, Walter Cronkite, for documentary production *Hiroshima*, 1985.

84. Benjamin Welles, "A Bit of High Noon on the Diplomatic Front," *The New York Times*, 8 December 1968, p. 16.

85. George F. Kennan, quoted in Kenneth W. Thompson, "The Coming of the Third World War: A Review Essay," *Political Science Quarterly*, Vol. 94, No. 4 (Winter 1979–1980), p. 67.

its strategic nuclear forces on alert at the time of the Cuban missile crisis. He depicted Khrushchev's official pronouncement to the contrary in December 1962 as little more than self-serving propaganda.

All of these commentators were mistaken. We now know that the Soviet analog to the U.S. DEFCON alert system consisted of four levels of readiness for nuclear forces: constant, increased (*vyshaya*), military threat, and full or "maximum."[86] As Bruce Blair explains:

> At increased alert (the level usually declared during past crises), the bombers would be loaded with nuclear weapons [and nuclear warheads would be mated with missiles] and the mobile ICBMs in garrison would be primed for launch on warning. If a military threat were declared, the mobile ICBMs would leave their shelters and travel to preset hide or launch sites. At full alert, the mobile ICBMs achieve a launch reaction time of 2.5 minutes.[87]

Blair notes that "Soviet nuclear alerting activity in 1960, 1962, 1968 and 1973 apparently went unnoticed by Western intelligence," and even in the early 1990s prominent Western authors continued to believe that the Soviet Union had never raised alert levels for its strategic nuclear systems.[88] The erroneousness of these beliefs is now evident from information that has become available about numerous instances of heightened Soviet nuclear alert levels or instances in which alerts were considered in response to false warning. Here I present an extremely brief review of this matter, highlighting one such incident (in October 1962) for particular scrutiny. Some of the Soviet increases in heightened strategic readiness came in response to changes in U.S. DEFCON status, whereas others came at Moscow's own initiative. Of the latter group, several stemmed from either personal misjudgments or technical malfunctions.

The first, highly provisional, Soviet "alert" came in response to the U.S. DEFCON change during the Paris summit in May 1960. The Soviet long-range bomber force was the USSR's only strategic nuclear delivery system at the time (in distinction from tactical nuclear weapons), but the bombers were unarmed in peacetime. They were given a "preliminary command" to return to their bases from training flights in case it proved necessary to load them with their weapons. Because the U.S. alert was quickly canceled, the Soviet

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86. Blair, *The Logic of Accidental Nuclear War*, p. 25.

87. Bruce Blair, *Global Zero Alert for Nuclear Forces* (Washington, DC: Brookings Institution Press, 1995), p. 48.

88. Blair, *The Logic of Accidental Nuclear War*, p. 179.

bombers were never loaded.[89] Blair reports a more serious Soviet alert during the October–November 1961 Berlin crisis. The Soviet Union reportedly raised the alert level of its strategic missile forces, long-range bomber force, air defense forces, and tactical aviation.[90]

Because the Cuban missile crisis posed the greatest risk of a nuclear conflict during the Cold War, I have chosen to focus here on that crisis to illustrate Soviet nuclear alerting practices. For reasons of space, I will not deal with subsequent Soviet nuclear alerts (in 1968, 1973, 1982, etc.). Important works by Blair, Pavel Podvig, David Hoffman, Gordon Barrass, and others have discussed the later alerts and provide a complement to the analysis here.[91]

The particulars of the Soviet nuclear missiles and warheads that were deployed in Cuba in 1962 were outlined by Army General Anatolii Gribkov at a seminar hosted by the Woodrow Wilson International Center for Scholars in April 1994.[92] In 1962, General Gribkov had been the planning officer and then implementation officer for Operation *Anadyr* (the secret deployment of Soviet medium-range nuclear missiles in Cuba) on the Soviet General Staff. At the 1994 seminar he publicly acknowledged that the number of Soviet nuclear weapons in Cuba in 1962 was greater than he had indicated at a conference in Havana in 1992 and in his 1994 co-authored book. He said that the declassification of relevant documents by April 1994 allowed him to report the higher numbers.

The decision in 1962 to undertake the risky deployment of missiles in Cuba was made by Khrushchev and only a few of his closest political aides (Anastas Mikoyan, Frol Kozlov) and military advisers (Defense Minister Rodion Malinovskii and the commander of the USSR's Strategic Missile Forces, Marshal Sergei Biryuzov). But Khrushchev had to obtain the approval of the Communist Party's Presidium (the name then used for the Politburo) before

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89. Ibid., p. 23.

90. Blair, *Global Zero Alert for Nuclear Forces*, p. 18, quoting Bruce Menning, "The Berlin Crisis from the Perspective of the Soviet General Staff," in William W. Epley, *International Cold War Military Records and History: Proceedings* (Washington, DC: U.S. Department of Defense, 1996), pp. 48–62.

91. Blair, *The Logic of Accidental Nuclear War*; Blair, *Global Zero Alert for Nuclear Forces*; David E. Hoffman, *The Dead Hand: The Untold Story of the Cold War Arms Race and Its Dangerous Legacy* (New York: Doubleday, 2009); Pavel Podvig, "History and Current Status of the Russian Early Warning System," *Science and Global Security*, Vol. 8, No. 4 (October 2002), pp. 21–60; Gordon S. Barrass, *The Great Cold War: A Journey through the Hall of Mirrors* (Stanford, CA: Stanford University Press, 2009); and the illuminating memoir by Vitaly Leonidovich Kataev, *A Memoir of the Missile Age: One Man's Journey* (Stanford, CA: Hoover Institution Press, 2015).

92. General Anatoli Gribkov, presentation, Woodrow Wilson Center for Scholars, Washington, DC, 4 April 1994. See also Bill Keller, "Warheads Were Deployed in Cuba in '62, Soviets Say," *The New York Times*, 29 January 1989, pp. A1, A12.

proceeding. When the Presidium was informed about the matter on 21 May 1962, no immediate decision was taken. Khrushchev had to lobby over the next few days to persuade all his colleagues to endorse the decision on 24 May.[93] Soviet Foreign Minister Gromyko was informed, but neither Soviet Ambassador Anatolii Dobrynin in Washington nor Soviet Ambassador Valerian Zorin at the UN was told. According to Gribkov, all Soviet military forces around the world were put on "full alert, strategic alert" during the October crisis.[94] However, most Soviet military commanders were not informed about the Soviet missile deployment to Cuba, and when Marshal Andrei Grechko ordered Warsaw Pact forces to go on full alert, they were given a false reason for doing so: alleged U.S. maneuvers in NATO. The Soviet Union did not consult with or even inform its East European allies about the Soviet deployment of nuclear weapons to Cuba.[95]

Even though U.S. intelligence officials did not detect the shipment of nuclear munitions, we now know that the Soviet Union had brought to Cuba all of the nuclear warheads it had planned to bring, a total of 158, including some with yields as high as one megaton.[96] Thirty-six warheads were for the USSR's R-12 missile (U.S. designation SS-4), with a range of 2,500 kilometers. The two regiments of cruise missiles with ranges of 100–180 kilometers totaled 80 launchers and nuclear warheads for naval and army use. Six warheads were designated for the USSR's Ilyushin medium bombers, with yields of five to six kilotons each. Soviet forces also were equipped with Luna (Frog) missiles, with six launchers and twelve warheads, each two kilotons in yield.

All these Soviet nuclear warheads were subsequently removed from Cuba, unbeknownst to U.S. officials, who had not been aware that any warheads were there in the first place.[97] On 7 November, after all medium-range

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93. The decision-making can be traced in the declassified notes of Soviet Presidium meetings taken by Vladimir Malin, the head of the party's General Department. See Mark Kramer's translations of the relevant ones, "Notes from Sessions of the CPSU Presidium Pertaining to the Installation of Soviet Nuclear Missiles in Cuba, May–December 1962," *Cold War International History Project Bulletin*, No. 17/18 (Fall 2012), pp. 303–315.

94. Gribkov presentation (see note 89 supra).

95. Mark Kramer, "Warsaw Pact Nuclear Operations and the 'Lessons' of the Cuban Missile Crisis," *Cold War International History Project Bulletin*, Nos. 8–9 (Winter 1996–1997), pp. 334–343.

96. Benoit Pelopidas has recently cited a slightly higher figure for Soviet warhead deployments: "According to former Soviet military leaders, at the height of the crisis, Soviet forces in Cuba possessed 162 nuclear warheads including at least 90 tactical warheads." See Benoît Pelopidas, "A Bet Portrayed as a Certainty: Reassessing the Added Deterrent Value of Nuclear Weapons," in George P. Schultz and James Goodby, eds., *The War That Must Never Be Fought: Dilemmas of Nuclear Deterrence* (Stanford, CA: Hoover Institution, 2015), pp. 5–55.

97. As late as October 1986, in a letter to the author, Raymond Garthoff, who was a U.S. State Department intelligence analyst during the Cuban missile crisis, still maintained that speculation about

missiles discussed by Kennedy and Khrushchev had been removed, nuclear warheads for the cruise missiles, the Frog missiles, and the bombers were still in Cuba. The local Soviet commander in Cuba asked Moscow what he should do with them. Soviet leaders replied by asking him what he thought should be done with them, and he responded that the warheads should be removed. Accordingly, they were secretly removed on 20 November.[98]

In 1987, Soviet sources claimed that the shootdown of a U-2 reconnaissance plane over Cuba during the missile crisis was the act of a local Soviet commander who had not been given authority to take such action.[99] That appears not to have been the case. In an exchange of letters between Khrushchev and Fidel Castro, Castro took responsibility for having authorized Cuban air defense forces to shoot down the plane, but he insisted that "the decision to shoot down the American spy plane had been made with the agreement of the Soviet military advisers in Cuba."[100]

Revelations came to light in the 1990s not only about the deployment and removal of the Soviet warheads but also about the authority for using the tactical nuclear warheads. In early October 1962, a written order was transmitted by the Soviet Ministry of Defense to General Issa Pliev, the commander of Soviet forces in Cuba:

> Only in the event of a landing of the opponent's forces on the island of Cuba and if there is a concentration of enemy ships with landing forces near the coast of Cuba in its territorial waters . . . and there is no possibility to receive directives from the USSR Ministry of Defense are you personally allowed as an exception to take the decision to employ tactical nuclear Luna missiles as a means of local war for the destruction of the opponent on land and on the coast with the aim of achieving a full crushing defeat of troops on the territory of Cuba and defending the Cuban revolution.[101]

the presence of Soviet nuclear warheads in Cuba in 1962 was "erroneous." He added: "No one believed there were or would be tactical nuclear weapons with the protective units. Accordingly, that subject was never raised with the Soviet Union."

98. Lieutenant-Colonel Anatolii Dokuchaev, "100-dnevnyi yadernyi kruiz," *Krasnaya zvezda* (Moscow), 6 November 1992, p. 2.

99. Raymond L. Garthoff, "Cuba: Even Dicier Than We Knew: Details of the Missile Crisis," *Newsweek*, 26 October 1987, p. 34.

100. Jean-Edern Hallier, "Castro, Khrushchev Letters Hint of Nuclear War," *Le Monde*, reprinted in *The Cleveland Plain Dealer*, 2 December 1990.

101. Quoted in Mark Kramer, "Tactical Nuclear Weapons, Soviet Command Authority, and the Cuban Missile Crisis," *International History Review*, Vol. 15, No. 4 (October 1993), pp. 740–751. The document is stored in the larger "Anadyr" collection, File 6, at the former Soviet General Staff Archive in Moscow. Copies of the whole file are available at the Cold War Studies Archive at Harvard University.

This arrangement had been decided by Khrushchev and other members of the Soviet Defense Council in July 1962, but when Defense Minister Malinovskii was asked to put it on paper for Pliev, he had replied, "It's not necessary; he knows what he's doing." Pliev was given only oral orders when he left for Cuba. When the written order was sent in early October, it was signed by General Matvei Zakharov, chief of the Soviet General Staff, but not by Malinovskii.[102] The tentative delegation to Pliev of the authority to use nuclear weapons on Cuban soil was intended as a safeguard in case U.S. troops invaded Cuba and disrupted Pliev's communication links with Moscow. Sergei Khrushchev has insisted that his father was unaware of the predelegation order, but the evidence suggests that in fact Khrushchev was the one who approved it.[103] If that is the case, the Soviet leader reversed himself after the crisis began. On 22 October, the day of Kennedy's televised speech, a new order was sent to Pliev that countermanded the earlier order: "Any use of nuclear weapons," it emphasized, "is categorically forbidden" without the prior consent of leaders in Moscow. This new order was reaffirmed in two stern transmissions to Pliev on 26 and 27 October, the latter of which stressed: "The use of nuclear weapons carried by medium-range missiles, tactical cruise missiles, 'Luna' missiles, and aircraft is categorically forbidden without permission from Moscow."[104]

According to oral histories by former Soviet naval officers, six Soviet submarines that were accompanying the Soviet freighters as they approached the U.S. naval quarantine line each carried a nuclear torpedo, and two more advanced Soviet submarines that were deployed as the crisis unfolded each carried two nuclear torpedoes. The former Soviet naval officers claim that the six Soviet submarines carrying nuclear torpedoes were deployed under orders from the Soviet Ministry of Defense designating the contingencies under which they could use their nuclear weapons. For at least four of these submarines, these orders reportedly were countermanded by Khrushchev, who forbade the submarines to use their nuclear torpedoes except under his specific order.[105] Although oral history has to be treated with great caution, the

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102. Kramer, "Tactical Nuclear Weapons, Soviet Command Authority, and the Cuban Missile Crisis," pp. 746–747.

103. Dokuchaev, "100-dnevnyi yadernyi kruiz," p. 2.

104. Kramer, "Tactical Nuclear Weapons, Soviet Command Authority, and the Cuban Missile Crisis," p. 747.

105. William Burr and Thomas S. Blanton, eds., *The Submarines of October: U.S. and Soviet Naval Encounters during the Cuban Missile Crisis*, National Security Archive Briefing Book 75, 31 October

basic outline of the story is consistent with what we have learned about Soviet command authority during the crisis.

The new evidence from Moscow about Soviet nuclear alerting practices during the Cuban missile crisis has been complemented and reinforced by newly released U.S. signals intelligence from the crisis. Declassified U.S. National Security Agency documents obtained in 2008 by the National Security Archive, a non-governmental research organization, show that

> Soviet forces went on high alert three times during September and October 1962. The first was on 11 September 1962, when for ten days "Soviet forces went into their highest readiness stage since the beginning of the Cold War," perhaps because the Soviets believed that U.S. intelligence had learned about the missile deployments. Especially telling is that also on 11 September, the Kremlin publicized its apprehension that President Kennedy's request to Congress for stand-by authority to call up reserves foreshadowed an attack on Cuba, which the Soviets said was grounds for war. Another alert of a more "precautionary, preliminary" nature began on 15 October, perhaps also because Khrushchev supposed that the missiles had been discovered. Finally, after Kennedy's speech, Soviet forces went on an "extraordinarily high state of alert," with the emphasis on air defense forces. Significantly, "offensive forces avoided assuming the highest readiness stage, as if to insure that Kennedy understood that the USSR would not launch first.[106]

A former Soviet intelligence officer told Blair that after the United States went to DEFCON 2, "which involved extensive preparations for an immediate large-scale nuclear strike, the Soviet Union increased the combat readiness of its strategic land-based missile and aviation forces. . . . This meant raising the alert level by one notch, going from *constant* to *increased* readiness, which put the missiles in a configuration to be launched within two to four hours after receiving the order to fire. The missiles were not fueled or raised to the vertical fire position but all were loaded with high-yield nuclear warheads."[107]

2002, available online at http://nsarchive.gwu.edu/NSAEBB/NSAEBB75/; and Michael Dobbs, *One Minute to Midnight: Kennedy, Khrushchev, and Castro on the Brink of Nuclear War* (New York: Alfred A. Knopf, 2008). See also Svetlana Savranskaya, "New Sources on the Role of Soviet Submarines in the Cuban Missile Crisis," *Journal of Strategic Studies*, Vol. 28, No. 2 (January 2005), pp. 233–259.

106. "National Security Agency Releases History of Cold War Intelligence Activities," National Security Archive Electronic Briefing Book No. 260, 14 November 2008, available online at http://nsarchive.gwu.edu/NSAEBB/NSAEBB260/.

107. Blair, *The Logic of Accidental Nuclear War*, p. 24; emphasis in original.

Concluding Observations

The Burr-Kimball volume that inspired this essay covers two major issues. The first is Nixon's and Kissinger's efforts to end the U.S. war in Vietnam under conditions favorable to the United States through resort to the "madman diplomacy" of the book's subtitle. This approach entailed the use of a "Nuclear Readiness Test" that mimicked at least part of a U.S. DEFCON alert. The second issue is posed as a question: How dangerous was that "Nuclear Readiness Test" in terms of provoking a U.S.-Soviet military confrontation that might have led to the use of nuclear weapons? The information gathered in this survey article is incomplete, but it provides a context in which that risk can be assessed. The Nixon-Kissinger "Nuclear Readiness Test," or "Secret Alert of 1969," was insignificant in comparison to the multitude of U.S.-Soviet military interactions during the Cold War involving nuclear forces.

A sizable literature that cannot be reviewed here concerns the alleged caution and care with which the United States and the Soviet Union handled nuclear weapons and avoided circumstances and interactions that could lead to their use. Such arguments need major reconsideration. Many years ago, Bernard Brodie argued that there had been no such thing as an "accidental war in 300 years," and he challenged the notion that any large-scale conflict in the future could result from an "accident."[108] He did not think that nuclear weapons would make such an event any more likely than it had been before.

Nuclear weapons accidents have nearly always been true accidents. U.S. alert failures during the Cold War were caused variously by failures in technological components and on other occasions by human carelessness. However, the other U.S. and Soviet practices recorded here were in nearly all cases official policies. The actions taken were planned and deliberate and were not "accidents." An added complication comes from the increased deployment of weapons systems that can carry either a nuclear warhead or a conventional one, blurring the distinction between the two.[109] Even in 1962, many

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108. Bernard Brodie, "On Clarifying the Objectives of Arms Control," ACIS Working Paper No. 1, University of California Los Angeles, ca. 1957. Brodie says, "By 'accidental war' I mean not only one which neither side wanted but also one where neither side realized until war was actually upon it that the policy it was pursuing would make that war unavoidable. It is of such a definition that I can find no historical example this side of the Thirty Years War, which was also not accidental." The same point is made in Richard Ned Lebow's excellent historical review, *Between Peace and War: The Nature of International Crises* (Baltimore: Johns Hopkins University Press, 1981).

109. Pavel Podvig, "Blurring the Line between Nuclear and Non-Nuclear Weapons: Increasing the Risk of Accidental Nuclear War," *Bulletin of the Atomic Scientists*, Vol. 72, No. 3 (March 2016),

of the Soviet tactical missiles could have carried either nuclear or conventional warheads. The prevalence of these sorts of dual-capable systems increased markedly in subsequent decades.

Benoît Pelopides quotes Dean Acheson's conclusion that the peaceful outcome of the Cuban missile crisis was attributable to "plain dumb luck."[110] Pelopides's own work uses "luck" as a central construct in regard to U.S.-Soviet nuclear interactions, and the suggestion has been made by others as well.[111] "Luck" is a term one rarely finds in an academic study, but there is no doubt that both the United States and the Soviet Union took enormous risks in their operation of nuclear weapons systems throughout the Cold War, and we and the world have indeed been fortunate that the outcomes did not result in disaster.

Acknowledgments

pp. 145–159; James M. Acton, *Silver Bullet? Asking the Right Questions about Conventional Prompt Global Strike* (Washington, DC: Carnegie Endowment for International Peace, 2013); and Pavel Podvig, "Russia and the Prompt Global Strike," PONARS Policy Memo No. 417, Center for Strategic and International Studies, Washington, DC, 8 December 2006, https://www.csis.org/analysis/ponars -policy-memo-417-russia-and-prompt-global-strike-plan.

110. Pelopides, "A Bet Portrayed as a Certainty," p. 17.

111. Ibid.