

False alarms, accidents and near-disasters involving nuclear weapons

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Causes of false alarms, accidents and near disasters involving nuclear weapons

The 87 events listed since the end of the 1940s have varying potential for nuclear detonations events have varying potential for nuclear detonation, use of nuclear weapons, nuclear escalation, nuclear winter or the destruction of all life in the northern hemisphere or the entire Earth. They show technical and human failure in roughly equal proportions, about 43 to 38, causal for false alarms, accidents and near disasters. Thus, it cannot be assumed that improvements can be expected on the part of humans or technology, which is becoming increasingly complex and thus more prone to error. Even new technologies, such as A.I. (Artificial Intelligence), processing incomplete, vague and uncertain information, do not provide a way out. There are avoidable as well as unavoidable events. Failures of machinery are mainly attributable to carrier systems (air/land/sea) and sensor technology, but also to computer problems. On the human side, mishap and bad decisions are at the top of the list, followed by sloppiness and drug use. In terms of time, there is a high density of events during the (Turkish) Cuban Missile Crisis in 1962 and during the 1980s at a time of high armament (70,000 warheads). In the 1950s and 1960s, there were a number of losses of nuclear weapons by falling from aircraft, mostly into the sea, or in the form of sinking submarines. To date, at least 50 nuclear warheads and 9 nuclear reactors have been lost at sea, and these must be found, recovered and removed. There was never a nuclear chain reaction, but radioactive contamination after detonations. Many people were injured and almost 400 people died. In some cases, there was a lack of communication or access to nuclear missiles over a long period of time. Crews were unfit for duty (alcohol, etc.). The most critical event, apart from the (Turkish) Cuban Missile Crisis in 1962, was the NATO Nuclear Command Staff Exercise "ABLE ARCHER 83" prepared from 2 November 1983 and conducted from 7-11 November, and preceding activities by the Soviets. At that time, misinterpretation and group dynamics prevailed in Moscow. They felt under pressure to pre-empt the misinterpreted "NATO attack" with a decapitation strike in accordance with the "RJaN" plan. However, the spy at NATO headquarters, Rainer Wolfgang Rupp (Topas), calmed the Soviet Union with his information to the command officer Karl Rehbaum, thus having a de-escalating effect on the Soviet side and contributing to peace. Other highly critical events would be in connection with the duty officer of Base Volk Field Wisconsin on 25.10.1962, the submarine Commodore Vasily A Archipov during the Cuban Missile Crisis on 27.10. 1962, the alleged 4 live launch codes for the hydrogen bombs of the 498th Tactical Missile Group on 28.10.1962 in Okinawa, although there was no "DEFCON 1 = state of war" and the duty missile defence officer Bruce K Brown of NORAD on 09.11.1979. The most famous event is undoubtedly the night shift of the duty missile defence officer Stanislav J Petrov of SERPUKHOV-15 on 26.09.1983. Due to blackout periods, general secrecy and lack of press, an average of 2 critical events per year can be assumed.

Table of causes

The causes are broken down as follows:

		40s	50s	60s	70s	80s	90s	00s	10s	20s
Total:	87	1	17	31	9	16	1	2	8	2
Cause is concealed / is unknown (C):	6					1			3	2
Force majeure (FM):	0,5			0,5						
Human (H):	37,5									
Alcohol/Drugs/Fatigue (HAD):	4			1,5	1				1,5	
Communication (HC):	2									
<i>External (HCE):</i>				0						
<i>Internal (HCI):</i>				2			1			
Decision (HD):	6,5									
<i>Deliberate Deception (HDD):</i>				0						
<i>Confluence of Events (HDE):</i>				2		0,5		1,5		
<i>Group Dynamics (HDG):</i>				1,5				0,5		
<i>Incomplete/incorrect information (HDI):</i>				2		0,5		1,5		
<i>Misinterpretation (HDM):</i>				1			0,5			0,5
<i>Underestimation of the opponent's possibilities & abilities (HDU):</i>				0						
Misfortune (HM):	13,5		0,5	4,5	3	4		1		0,5
Psychopathy/Senility (HPS):	0									
Risk-taking (HR):	5,5	1	1	1,5	1	1				
Sloppiness (HS):	6			2,5	1	1		1		0,5
Other (HO):	0									
Engine (E):	43									
Technology breaks down (EB):	0,5			0,5						
Computer (EC):	4						1			
<i>Hardware (ECH):</i>				2			2			
<i>Software & A.I. Artificial Intelligence (ECS):</i>				1						1
Sensors (ES):	7,5		1	3,5	1	2				
Transmission (ET):	1			1						
Warhead in... (EW):	30									
<i>Aircraft (EWA):</i>				16,5		11	2,5	1	1	1
<i>Land based missile (EWL):</i>				7			6		1	
<i>Submarine or ship (EWS):</i>				6,5		2,5	2	1	1	
Other (EO):	0									

Events (short presentation)

When: **Who/Where: (Code) What:**

1940 till 1949

1949-XX-YY: US/SOW: (HR) Curtis E. LeMay wants to destroy Soviet Union with nuclear first strike, Truman stops him, McNamara fires him in 1965.

1950 till 1959

195X-YY-ZZ: US: (ES) NORAD registered on radar the approach of a Soviet bomber fleet in the polar region. It was a flock of wild geese
1950-XX-YY: US: (EWA/EWS) Contamination St. Lawrence Stream. In 1950 4 more incidents. Loss of 51 warheads and 7 reactors in the sea.
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1950-02-13: US/CAN: (EWA) For technical reasons (Convair B-36B crash), the A-bomb Mark 4 had to be dropped and detonated non-nuclear. 5 dead.
1951-04-11: US/KOR/CN: (HR) Douglas McArthur repeatedly proposes to use nuclear weapons against 49 North Korean cities and China, Truman fires him in 1951.
1956-03-10: US/EUR: (EWA) A B-47 crashed into the Mediterranean Sea with 2 plutonium cores that were not found. Contamination. Casualties?
1956-07-27: US/GB: (EWA) B-47 crashed at Lakenheath and hit a depot with 3 live A-bombs. Damage, no detonation. No contamination.
1956-11-05: US/SOW: (HDE/HDI) Suez crisis: wrong, misinterpreted or exaggerated info come together and give wrong picture.
1958-01-01: US/ARC: (EWA) US forces lose A-bomb in Arctic. To date 51 warheads and 7 nuclear reactors lost at sea.
1958-01-31: US/MOR: (EWA) After a crash of a B-47 carrying a live Mark 6 in Morocco, there was only contamination of the surrounding area.
1958-02-05: US: (EWA) B-47 collides with fighter jet, Howard Richardson had to drop H-bomb Mark 15 near Savannah (Georgia). Not found.
1958-02-28: US/GB: (EWA) A B-47 crashed badly at Greenham Common, with scientists detecting elevated radioactivity. US denies.
1958-03-11: US/GB: (EWA/HM) B47 jet (training) accidental bomb release. Mark 6. crater. 6 injured. Contamination. Mars Bluff/South Carolina.
1959-11-25: US: (EWA) Plane crashed near Whidbey Island (Washington). H-bombs were not found.

1960 till 1969

1960-01-01: US: (EWL) Detonation of a BOMAG air defence missile. Nuclear warhead melts. Contamination.
1960-10-05: US: (ES) Error on radar because of moonrise
1960-10-24: SOW: (HM) Baikonur: R16 intercont. ballistic missile, wrong switch activated before launch, explosion, combustion, nitric acid, 100+ dead
1961-01-24: US: (EWA) 2 H-bombs fell accidentally on Goldsboro/North Carolina. Last of 6 switches prevented nuclear detonation
1961-03-14: US: (EWA/HAD) Yuba City/Calif., crash B-52, 4 A-bombs, decompression, lack of fuel, no contamination, 1 dead, injured
1961-11-24: US: (HDE/ET) Loss of SAC contact with NORAD & BMEWS systems due to failure of a relay station, attack was suspected.
1962-06-04: US/PAZ: (EWL) South Sea A: H warhead falls into the sea and was never found.
1962-06-20: US/PAZ: (EWL) South Sea B: H warhead detonated at an altitude of 10 kilometres. Contamination of parts of the atoll.
1962-07-26: US/PAZ: (EWL) South Sea C: Rocket with H-bomb explodes on launch pad. Contamination several kilometres.
1962-08-23: US/SOW: (HM) US bombers in Soviet no-fly zone due to navigation error. Fortunately Soviets did not react. Later correction of the route.
1962-10-XX: US/PAZ: (EWL) South Sea D: Nuclear rocket launch failure.
1962-10-14: SOW/US: (...) Cuban crisis/Caribbean crisis: Soviet missiles in Cuba as a result of American missiles in Italy, Turkey (until 1962-10-28)

- 1962-10-24: US/SOW: (ES) Soviet satellite explodes during Cuban Missile Crisis and is considered an attack.
- 1962-10-25: US: (HS) Bear set off nuclear alarm due to wiring failure. Officer off duty Base Volk Field Wisconsin stopped bomber launches.
- 1962-10-26: US/SOW: (HM) American F102A fighter jets with nuclear missiles inadvertently penetrated Soviet airspace. No escalation.
- 1962-10-26: US: (HCI) Surveillance located missile launched by Cuba, but detonated by US itself over Florida, lack of communication.
- 1962-10-26: US: (HS) Skipped procedures, easily accessible codes and ready-to-launch Minuteman-1 missiles at Malmstrom Air Force Base.
- 1962-10-27: SOV/US: (HDI/HR) V. Archipov prevents nuclear sinking of US Atlantic fleet by short-circuiting action of a submarine captain.
- 1962-10-27: US/CUBA: (HDG) Shooting down of an American U-2 spy plane over Cuba. Near escalation to nuclear war. Negotiations. De-escalation.
- 1962-10-27: US/SOW: (HR) U-2 spy plane penetrated 480 km into Soviet airspace, 2 nuclear-armed F-102A US fighters escort it home.
- 1962-10-28: US: (HDE) false report "An atomic bomb is dropped on Tampa/Florida", cause: satellite on the horizon & simultaneous military exercise.
- 1962-10-28: US: (HDI) False message warning centre Laredo to NORAD: "2 missiles over Georgia", cause: satellites were mistaken for missiles.
- 1962-10-28: US/JP: (HM) Suspected: 4 live launch codes for the H-bombs of the 498th Tactical Missile Group in Okinawa, although no "DEFCON 1".
- 1962-11-XX: US/PAZ: (EWL) South Sea IV: H-atom rocket launch failure.
- 1965-11-09: US: (ES/ET) Power failure northeastern USA. Sensors indicated nuclear explosion as cause. Circuit failure.
- 1965-12-05: US/VIE/JP: (EWA/HM) Aircraft crashed into the sea with **H-BOMB (!)** from USS "Ticonderoga" [from **VIETNAM (!)** to **JAPAN (!)**]. Not found.
- 1966-01-17: SPA/US: (FM/EWA) Palomares/Costa Cálida, B-52, turbulence, tanker explosion, 4 H-bombs found, 11 dead, contamination ground.
- 1967-05-23: US: (ES) Strong solar flare, coronal mass ejection, jammed several NORAD radars, Soviets accused, near counterattack.
- 1968-01-21: GRÖ/US: (EB/HS) Thule/Greenland, fire, B-52 crashed, 1 of 4 H-bombs missing, 2 dead, contamination, sick, **END OF BOMBER READINESS**
- 1968-04-11: US/SOW: (EWS) Hawaii-I: Soviet submarine K-129 sank. Unclear. 3
- 1968-05-22: US/ATL: (EWS) South of Azores: Nuclear submarine USS "Scorpion" sank with 2 Mark-45 nuclear torpedoes. 99 dead. Torpedo detonation?
- 1969-04-15: US/NKOR: (HAD) Attack order on North Korea with B61 bomb and F-4 by drunken Nixon after EC-121 (early warning aircraft) shoot-down.
- 1970 till 1979**
- 1970-02-22: DEU: (HM) Boetingen/Germany: Maintenance work, warhead fell down, was damaged and a piece of the rocket tip broke off.
- 1971-02-20: US: (HM) NORAD: Teletype erroneously sent "nuclear emergency" alert information to all radio and television stations.
- 1973-10-09: US/SOW: (HR) -24: Yom Kippur War (Arab-Israeli War): Israel wanted to use nuclear weapons, mechanic activated his base's alarm system.
- 1974-XX-XX: DEU: (HM) Laarbruch/Germany: An atomic bomb of type WE 177 fell down while being loaded into an aircraft.
- 1974-08-01: US: (HAD) US President Nixon was "cold-called" by the Secretary of Defence on nuclear issues because of depression, alcohol, drugs.
- 1975-11-22: US/SIZ: (EWS) Sicily: USS Kennedy/USS Belknap collided, major damage, fire and explosions only 10m from nuclear weapons. 8 dead.
- 1977-XX-XX: ???: (EWA) Engine fire of a CH-47 helicopter carrying nuclear weapons caused it to crash.
- 1979-10-03: ???: (ES) Radar detecting submarine-launched missile, detected missile body in low orbit, caused false alarm and hit report.
- 1979-11-09: US: (HS) NORAD. Simulated Soviet massive attack due to training tape mistaken for real attack but ignored by Bruce K Brown.
- 1980 till 1989**
- 1980-03-15: SOV/US: (ES) Kuril Islands: US sensors indicate expected impact on USA of 1 of 4 Soviet submarine training missiles due to trajectory.
- 1980-06-03: US: (ECH) Chip-I, Faulty chip shows Soviet attack. NORAD Cheyenne Mountain / Colorado, "2222" instead of "0000" missiles underway.
- 1980-06-06: US: (ECH) Chip-II, Faulty chip shows Soviet attack. NORAD Cheyenne Mountain / Colorado, "2222" instead of "0000" missiles underway.
- 1980-09-15: US: (EWA) Grand Forks: Parked B-52 bomber burned, wind prevented spread to high explosive of nuclear weapons.
- 1980-09-18: US: (HM) Missile explosion during maintenance: warhead 30m away, no radioactivity, Sgt. David Lee Livingston and colleague dead. Injured.

- 1981-02-23: DEU: (C) Explosion of a Pershing II missile. Sechselberg, Baden-Württemberg.
- 1982-11-02: DEU: (HS) Waldprechtsweier: US missile transporter (Pershing Ia missile) brakes fail, several cars crushed, 1 dead.
- 1983-09-26: SOW: (ES) Stanislav J Petrov ignored 5 missile attacks, Serpukhov-15, false alarms, day/night boundary interference IR sensors of satellites.
- 1983-11-2/7/11: US/SOW: (HDG/HDM) Soviet Union considers NATO staff nuclear exercise "Able Archer 83" as an attack, plans nuclear first strike after "RJaN".
- 1984-XX-XX: US: (EC) Computer error, Minuteman missile tried to launch by mistake, armoured vehicle on silo prevented it.
- 1984-XX-XX: GB: (HM) Bruggen: A WE 177 nuclear bomb fell down while being loaded into an aircraft, temporary closure of the base.
- 1985-01-11: DEU: (EWL) Heilbronn-I: Electrostatic discharge, fire, explosion of a Pershing-II missile, parts flew 120 m, 3 dead, 16 seriously injured.
- 1986-06-30: ???: (HM) Accident with a Pershing missile. The nuclear warhead fell from the missile onto the ground.
- 1986-10-03: US/SOW: (HR) Collision US/USSR nuclear submarine, fire 2 missiles, near meltdown, boat sunk, Matr. Sergei Preminin and 7 others dead.
- 1987-05-05: DEU: (HM) Heilbronn-II: Pershing missile landed one in a ditch after a traffic accident.
- 1989-04-07: SOW: (EWS) North Sea: nuclear submarine K-278 "Komsomolets", fire, at 1700 m, 2 nuclear torpedoes, reactor, 42 dead, slightly contaminated.
- 1990 till 1999**
- 1995-01-25: NOR/RUS: (HCI) Norweg.-US research missile Black-Brant XII mistaken for intercontin. ballistic missile, exploded, Pres. Yeltsin on "nuclear case".
- 2000 till 2009**
- 2005-03-01: DEU: (HM) Büchel/Nordhorn, 1 practice bomb lost: Pilot released the bomb 900 metres too early. Missed drop.
- 2007-08-29: US: (HS) Minot Air Force Base/North Dakota: 6 misguided nuclear missiles secondarily missing, B-52 unguarded at night (until 30.8.).
- 2010 till 2019**
- 2010-10-23: US: (ECS) 1 hr loss of control over 50 Minuteman III intercontinental ballistic missiles, high alert, improperly installed computer smart card.
- 2013-01-01: US: (HS/HAD) 1 year command totally out of control: hacking defence, unfit for duty, ecstasy, speed, alcohol, women, fraud.
- 2014-01-16: DEU: (C) Büchel, Tornado without nuclear weapons crashed on night approach in flight path.
- 2014-03-01: DEU: (EWA) Büchel/Nordhorn, 3 practice bombs lost: technical malfunction caused misdrop
- 2016-03-18: US: (HAD) Over 3 months of substance abuse, 19 soldiers, 150 nuclear missiles, 90th Missile Wing at F. E. Warren Air Force Base.
- 2016-06-19: WORLD: (...) Rising risk: cyber, tensions USA-CHI/RUS, China "hair-trigger alert".
- 2016-06-20: WORLD: (...) Unknown incidents, nuclear deterrence unsuitable, more dead than saved with nuclear war risk greater than zero.
- 2017-02-14: DEU/US: (C) US-Spangdahlem/Eifel: Test message missile warning with shelter, on all "live" screens. After 8 min all-clear.
- 2018-01-13: NKOR/US: (HM/HDM) Hawaii-II: 'Warning' intercontinental ballistic missile, wrong button pressed, advance nuclear threats North Korea.
- 2019-08-08: RUS: (C) Arkhangelsk, test area/sea, explosion rocket stage?, hypersonic nuclear missile Zirkon? 5 dead? 3 injured? DMH/radioactivity?
- 2020 till 2029**
- 2020-12-12: DEU/US: (C) Ramstein conceals cause over false alarm linked to 4 Russian practice missiles in Sea of Okhotsk (Pacific)
- 2021-01-07: US: (...) Perry calls for abolition of president's sole decision-making power over nuclear weapons after Washington riots.
- 2021-03-02: DEU: (C) Büchel/Nordhorn, 2 practice bombs lost: cause still under investigation.
- XXXX-XX-XX: (...) Accidents involving nuclear weapons: To date, at least 50 nuclear warheads and 9 nuclear reactors have been lost at sea.

Introduction to the topic

How are nuclear weapons accidents defined?

The US Department of Energy defines a nuclear weapons accident as:

"an unexpected event involving nuclear weapons or nuclear components from which any of the following results:

- the accidental or unauthorised launch, detonation, or deployment of a nuclear-capable weapon system by U.S. forces or U.S.-supported allied forces
- an accidental or unauthorised or unexplained nuclear detonation
- a non-nuclear detonation or burning of a nuclear weapon or nuclear component
- radioactive contamination
- dropping of a nuclear weapon or nuclear component
- a public hazard, real or assumed."

To classify the magnitude of the accident, ministry officials were given a list of password keys for internal communications:

- Nucflash: an accidental or unauthorised use of nuclear weapons that could lead to nuclear war between the US and USSR (now Russia).
- Broken Arrow: largest probable accident involving a nuclear weapon, warhead or nuclear components.
- Bent Spear: a major accident involving a nuclear weapon, warhead, nuclear components or a vehicle loaded with nuclear weapons.
- Empty Quiver: The seizure, theft or loss of a US nuclear weapon.
- Dull Sword: An incident involving a nuclear weapon.
- Faded Giant: An incident or radiological accident associated with a nuclear weapon.

Definition of an incident (US Department of Energy):

"An unexpected event involving a nuclear weapon, nuclear facility, or nuclear components that could result in any of the following situations.

- An increase in the risk of explosion or radioactive contamination.
- Errors during assembly, testing, loading or transport of equipment, or the malfunction of equipment or materials, which could result in the inadvertent operation of all or any part of the sequence to arm or detonate the weapon, or significantly alter its explosive power.
- Force majeure, adverse environmental or other conditions resulting in damage to the weapon, equipment or components." 19)

Naval accidents

The history of the navy is extremely marked by secrecy and lies. Neither the US nor the Russian Navy want the truth about the incredibly bad accident record to come out. Nevertheless, Greenpeace and Bellona have been able to uncover quite a bit: at least 1,200 serious accidents up to 1989, about one every fortnight. They included shipwrecks, collisions of ships or with submarines, collisions with icebergs, explosions and fires. They have happened on the open sea, in coastal waters, in shipyards and in ports all over the world. Many people have lost their lives. As a result of these accidents, more than 50 nuclear warheads and nine nuclear power plants are on the seabed. This paper also deals with naval accidents in which nuclear weapons were probably involved or lost. However, there are plenty of accidents on nuclear-powered submarines where the real killer was the reactor. There are also deliberate sinkings of nuclear submarines where the reactors were not removed beforehand. These incidents have been documented in great detail by the Norwegian Bellona Foundation with the help of the former captain of the Russian Northern Fleet and former employee of the Russian Ministry of Defence Alexandr Nikitin. Nikitin was charged with treason and espionage as a result of this work, but was acquitted after several trials. 21)

The USA is missing 17 nuclear bombs. At least

A-bomb now discovered off Canada is not an isolated case. For the USA alone, 700 incidents are estimated. How many nuclear weapons other powers have "lost" nobody knows. The object that Canadian diver Sean Smyrichinsky has now discovered off the coast of British Columbia is said to look like a four-metre "sliced bagel". There is much to suggest that it is the remnant of a nuclear bomb of the then newest type Mark 4 that has been missing for 66 years. The list of accidents involving such weapons is long. The USA alone is missing at least eight fully explosive bombs. There are also nine more that were not loaded with the fissile material plutonium, but contained other radioactive substances - mostly depleted uranium. The term "broken arrow" has come to be used worldwide for such incidents. In the USA, this code word refers to an incident involving nuclear weapons of any kind. The numbers given vary greatly, however, because there are very different definitions: Is a nuclear weapon without plutonium, i.e. which cannot trigger a chain reaction, a nuclear weapon at all? What about weapons that - nuclear loaded or not - were demonstrably destroyed in the crash of an aircraft? Are radioactive charges that were lost without the elaborate technology to trigger nuclear fission counted or not? Moreover, there are reasonably reliable figures only for one nuclear power, the USA. For the Soviet Union, only little information exists, mostly on the sinking of nuclear submarines. How many Red Army aircraft lost nuclear weapons is completely unknown. Estimates for the USA alone assume a total of up to 700 incidents in which up to 1250 nuclear weapons were involved. However, this statistic explicitly includes unloaded nuclear weapons and all incidents at nuclear weapons factories. In the first decade and a half of the nuclear weapons era, US nuclear weapons were always constructed in such a way that the plutonium core could be easily inserted and removed. This was to reduce the risk of an accidental nuclear explosion, for example in the event of a plane crash. However, plutonium atoms can not only be split with a devastating release of energy, but also emit lethal doses of radioactivity in any case. Moreover, even a few micrograms are highly toxic. 32)

Plutonium core

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Permissive Action Link

A Permissive Action Link (PAL) is an access control security device for nuclear weapons. Its purpose is to prevent unauthorized arming or detonation of the nuclear weapon. The United States Department of Defense definition is: A device included in or attached to a nuclear weapon system to preclude arming and/or launching until the insertion of a prescribed discrete code or combination. It may include equipment and cabling external to the weapon or weapon system to activate components within the weapon or weapon system. The earliest PALs were little more than locks introduced into the control and firing systems of a nuclear weapon, that would inhibit either the detonation, or the removal of safety features of the weapon. More recent innovations have included encrypted firing parameters, which must be decrypted to properly detonate the warhead, plus anti-tamper systems which intentionally mis-detonate the weapon, destroying it without giving rise to a nuclear explosion.....68)