**North American Aerospace Defense Command**

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The NORAD shield.

*"NORAD" redirects here. For other uses, see* [*NORAD (disambiguation)*](http://en.wikipedia.org/wiki/NORAD_%28disambiguation%29)*.*

**North American Aerospace Defense Command** (**NORAD**) is a joint organization of the [United States](http://en.wikipedia.org/wiki/United_States) and [Canada](http://en.wikipedia.org/wiki/Canada) which provides aerospace warning and aerospace control for [North America](http://en.wikipedia.org/wiki/North_America). It was founded on [May 12](http://en.wikipedia.org/wiki/May_12), [1958](http://en.wikipedia.org/wiki/1958), under the name **North American Air Defense Command**. From [1963](http://en.wikipedia.org/wiki/1963), NORAD's main technical facility has been located at [Cheyenne Mountain](http://en.wikipedia.org/wiki/Cheyenne_Mountain), [Colorado](http://en.wikipedia.org/wiki/Colorado).

While the terms "NORAD" and "Cheyenne Mountain" are often used interchangeably to describe the facility, NORAD is the name of the Command, while Cheyenne Mountain is the name of the facility. The facility is hosted by the [U.S. Air Force](http://en.wikipedia.org/wiki/U.S._Air_Force), under the command of the [721st Mission Support Group](http://en.wikipedia.org/w/index.php?title=721st_Mission_Support_Group&action=edit), part of the [21st Space Wing](http://en.wikipedia.org/wiki/21st_Space_Wing), headquartered at [Peterson Air Force Base](http://en.wikipedia.org/wiki/Peterson_Air_Force_Base).

**Organization and leadership**

NORAD consists of two main parts corresponding to its mission. [*Aerospace*](http://en.wikipedia.org/wiki/Aerospace) *warning* or *integrated tactical warning and attack assessment* (ITW/AA) covers the monitoring of man-made objects in space, and the detection, validation, and warning of attack against North America by [aircraft](http://en.wikipedia.org/wiki/Aircraft), [missiles](http://en.wikipedia.org/wiki/Missile), or space vehicles. *Aerospace control* includes providing surveillance and control of Canadian and United States airspace.

The organization is headed by a commander appointed by both the [President of the United States](http://en.wikipedia.org/wiki/President_of_the_United_States) and the [Prime Minister of Canada](http://en.wikipedia.org/wiki/Prime_Minister_of_Canada). The commander is based at [Peterson Air Force Base](http://en.wikipedia.org/wiki/Peterson_Air_Force_Base), [Colorado](http://en.wikipedia.org/wiki/Colorado) with [Cheyenne Mountain Operations Center](http://en.wikipedia.org/wiki/Cheyenne_Mountain_Operations_Center), the central collection and coordination facility for the sensor systems around the world, nearby. Three subordinate headquarters at [Elmendorf AFB](http://en.wikipedia.org/wiki/Elmendorf_Air_Force_Base), [Alaska](http://en.wikipedia.org/wiki/Alaska) (Headquarters for the Alaskan NORAD Region (ANR)), [CFB Winnipeg](http://en.wikipedia.org/w/index.php?title=Canadian_Forces_Base_Winnipeg&action=edit), [Manitoba](http://en.wikipedia.org/wiki/Manitoba) (dual Headquarters (HQ) for 1 Canadian Air Division ([1CAD](http://www.airforce.forces.gc.ca/organization2_e.asp)) and the Canadian NORAD Region (CANR)), and [Tyndall AFB](http://en.wikipedia.org/wiki/Tyndall_Air_Force_Base), [Florida](http://en.wikipedia.org/wiki/Florida) (Headquarters for First Air Force, the Continental NORAD Region (CONR) and the [Southeast Air Defense Sector](http://en.wikipedia.org/wiki/Southeast_Air_Defense_Sector) (SEADS)), receive direction from the Commander and control operations within their areas.

The [present](http://en.wikipedia.org/wiki/As_of_2005) commanding officer of NORAD is Admiral [Timothy J. Keating](http://en.wikipedia.org/wiki/Timothy_J._Keating), USN, who is also the commander of the [United States Northern Command](http://en.wikipedia.org/wiki/United_States_Northern_Command) (USNORTHCOM). The deputy commander of NORAD is Lt. General Eric "Rick" Findley, Canadian Forces Air Command. Traditionally the commanding officer of NORAD is American and the deputy commander Canadian. Both Canadian and U.S. forces have a commander for their contingents at Cheyenne Mountain. NORAD and USNORTHCOM have no direct command and control links with the [U.S. Department of Homeland Security](http://en.wikipedia.org/wiki/U.S._Department_of_Homeland_Security), but both organizations coordinate training and planning USNORTHCOM missions.

**History**

**Background and formation**

The growing perception of the threat of Soviet long-range [strategic bombers](http://en.wikipedia.org/wiki/Strategic_bomber) armed with [nuclear weapons](http://en.wikipedia.org/wiki/Nuclear_weapon) brought Canada and the US into closer cooperation for air defense. In the early [1950s](http://en.wikipedia.org/wiki/1950s) they agreed to construct a series of [radar](http://en.wikipedia.org/wiki/Radar) stations across North America to detect a Soviet attack over the pole. The first series of radars was the [Pinetree Line](http://en.wikipedia.org/wiki/Pinetree_Line), completed in [1954](http://en.wikipedia.org/wiki/1954), of 33 stations across southern Canada. However, technical defects in the system led to more radar networks being built. In [1957](http://en.wikipedia.org/wiki/1957), the [McGill Fence](http://en.wikipedia.org/wiki/McGill_Fence) was completed; it consisted of [Doppler](http://en.wikipedia.org/wiki/Doppler_effect) radar for the detection of low-flying craft. This system was roughly 300 miles north of the Pinetree Line along the 55th parallel. The third joint system was the [DEW Line](http://en.wikipedia.org/wiki/Distant_Early_Warning_Line), also completed in [1957](http://en.wikipedia.org/wiki/1957). This was a network of 57 stations along the 70th parallel. The systems gave around three hours warning of bomber attack before they could reach any major population center. Attacks across the [Pacific](http://en.wikipedia.org/wiki/Pacific_Ocean) or [Atlantic](http://en.wikipedia.org/wiki/Atlantic_Ocean) would have been detected by [AEW](http://en.wikipedia.org/wiki/AEW) aircraft, Navy ships, or offshore radar platforms. The command and control of the massive system then became a significant challenge.

Discussions and studies of joint systems had been ongoing since the early [1950s](http://en.wikipedia.org/wiki/1950s) and culminated on [August 1](http://en.wikipedia.org/wiki/August_1), [1957](http://en.wikipedia.org/wiki/1957) with the announcement by the US and Canada to establish an integrated command, the North American Air Defense Command. On [September 12](http://en.wikipedia.org/wiki/September_12), NORAD operations commenced at Ent, Colorado. A formal NORAD agreement between the two governments was signed on [May 12](http://en.wikipedia.org/wiki/May_12), [1958](http://en.wikipedia.org/wiki/1958). By the early [1960s](http://en.wikipedia.org/wiki/1960s), a quarter of a million personnel were involved in the operation of NORAD. The emergence of the [ICBM](http://en.wikipedia.org/wiki/ICBM) and [SLBM](http://en.wikipedia.org/wiki/SLBM) threat in the early [1960s](http://en.wikipedia.org/wiki/1960s) was something of a blow. In response, a space surveillance and missile warning system was constructed to provide worldwide space detection, tracking and identification. The extension of NORAD's mission into space led to a name change to the North American *Aerospace* Defense Command.

Even though all equipment in Cheyenne Mountain was put through a rigorous inspection, on at least two occasions, failure in its computer systems almost pushed the world into [World War 3](http://en.wikipedia.org/wiki/World_War_3). On [November 9](http://en.wikipedia.org/wiki/November_9), [1979](http://en.wikipedia.org/wiki/1979) a computer communications device failure caused warning messages to sporadically flash in USAF command posts around the world that a nuclear attack was taking place. A similar incident occurred on [June 2](http://en.wikipedia.org/wiki/June_2), [1980](http://en.wikipedia.org/wiki/1980) when a technician in NORAD loaded a test tape but failed to switch the system status to "test", this time causing a stream of constant false warnings to spread to two "[continuity of government](http://en.wikipedia.org/wiki/Continuity_of_government)" bunkers as well as Command Posts worldwide.

Both times, the PAC properly had their planes (loaded with nuclear bombs) in the air; [SAC](http://en.wikipedia.org/wiki/Strategic_Air_Command) didn't and took the heat because they didn't follow procedure, even though the SAC Command Post knew these were obvious false alarms (probably so did PAC). Both Command Posts had recently began receiving and processing direct reports from the various [radar](http://en.wikipedia.org/wiki/Radar), [satellite](http://en.wikipedia.org/wiki/Satellite), and other missile attack detection systems, and those direct reports simply didn't match anything about the erroneous data received from NORAD.

**NORAD's Changing Accounts to the 9/11 Commission**

For more than two years after the attacks, NORAD and the Federal Aviation Administration (FAA) provided false information about the response to the 9/11 hijackings in testimony and media appearances to the [9/11 Commission](http://en.wikipedia.org/wiki/9/11_Commission) (Washington Post, August 2, 2006). NORAD and the FAA officials stated that U.S. air defenses had reacted quickly, that fighter jets had been scrambled to intercept planes in response to the last two hijackings and that fighters were prepared to shoot down United Airlines Flight 93 if it threatened Washington, D.C. For example, Maj. Gen. Larry Arnold and Col. Alan Scott told the commission that NORAD had begun tracking United 93 at 9:16 a.m., but the 9/11 Commission determined that the airliner was not even hijacked until 12 minutes later. According to later testimony, the military was not aware of the flight until after it had crashed in Pennsylvania.

The Commission was forced to use subpoenas to obtain the cooperation of the NORAD and FAA to release evidence such as audiotapes. The agencies' reluctance to release the tapes, along with e-mails, erroneous public statements and other evidence, led some of the panel's staff members and commissioners to believe that authorities sought to mislead the commission and the public about what happened on September 11. "I was shocked at how different the truth was from the way it was described," John Farmer, a former New Jersey attorney general who led the staff inquiry into events on September 11, said in a recent interview (Washington Post, August 2, 2006).

**Changes of mission**

From [1963](http://en.wikipedia.org/wiki/1963) the Air Force was reduced and sections of the now-obsolete radar system were shut down. However, there was increased effort to protect against an ICBM attack; two underground operations centers were set up, the main one inside [Cheyenne Mountain](http://en.wikipedia.org/wiki/Cheyenne_Mountain), and an alternate at [North Bay, Ontario](http://en.wikipedia.org/wiki/North_Bay%2C_Ontario). By the early [1970s](http://en.wikipedia.org/wiki/1970s), the acceptance of [mutual assured destruction](http://en.wikipedia.org/wiki/Mutual_assured_destruction) (MAD) led to a cut in the air defense budget and the repositioning of NORAD's mission to ensuring the integrity of air space during peacetime. There followed significant reductions in the air defense system until the [1980s](http://en.wikipedia.org/wiki/1980s) when following the [1979](http://en.wikipedia.org/wiki/1979) Joint US-Canada Air Defense Study ([JUSCADS](http://en.wikipedia.org/w/index.php?title=JUSCADS&action=edit)) the need for the modernization of air defenses was accepted—the DEW Line was to be replaced with an improved arctic radar line called the [North Warning System](http://en.wikipedia.org/wiki/North_Warning_System) (NWS); there was to be the deployment of [Over-the-Horizon Backscatter](http://www.globalsecurity.org/wmd/systems/an-fps-118.htm) (OTH-B) radar; the assignment of more advanced fighters to NORAD, and the greater use of Airborne Warning and Control System ([AWACS](http://en.wikipedia.org/wiki/AWACS)) aircraft from [Tinker AFB](http://en.wikipedia.org/wiki/Tinker_Air_Force_Base), OK or [Elmendorf AFB](http://en.wikipedia.org/wiki/Elmendorf_Air_Force_Base), AK. These recommendations were accepted by the governments in [1985](http://en.wikipedia.org/wiki/1985). The [United States Space Command](http://en.wikipedia.org/wiki/United_States_Space_Command) was formed in September [1985](http://en.wikipedia.org/wiki/1985) as an adjunct but not a component of NORAD.

At the end of the [Cold War](http://en.wikipedia.org/wiki/Cold_War) NORAD reassessed its mission. To avoid cutbacks, from [1989](http://en.wikipedia.org/wiki/1989) NORAD operations expanded to cover counter-drug operations—such as tracking small-engine aircraft. But the DEW line sites were still replaced, in a scaled-back fashion by the [North Warning System](http://en.wikipedia.org/wiki/North_Warning_System) radars between [1986](http://en.wikipedia.org/wiki/1986) and [1995](http://en.wikipedia.org/wiki/1995). The Cheyenne Mountain site was also upgraded. However none of the proposed OTH-B radars are currently in operation.

After the events of [September 11](http://en.wikipedia.org/wiki/September_11_attacks), [2001](http://en.wikipedia.org/wiki/2001), the NORAD mission evolved to include monitoring of all aircraft flying in the interior of the United States. NORAD oversees [Operation Noble Eagle](http://en.wikipedia.org/wiki/Operation_Noble_Eagle) using fighter aircraft [Combat Air Patrols](http://en.wikipedia.org/wiki/Combat_Air_Patrol) (CAP) under command of [First Air Force](http://en.wikipedia.org/wiki/First_Air_Force) and [Airborne Warning and Control System](http://en.wikipedia.org/wiki/Airborne_Warning_and_Control_System) (AWACS) [E-3 Sentry](http://en.wikipedia.org/wiki/E-3_Sentry) aircraft under command of the 552nd Air Control Wing.

On July 28 2006, military officials announced that Norad’s day-to-day operations would be consolidated, for purposes of efficiency, in an ordinary building at [Peterson Air Force Base](http://en.wikipedia.org/wiki/Peterson_Air_Force_Base) in nearby [Colorado Springs](http://en.wikipedia.org/wiki/Colorado_Springs%2C_Colorado). The mountain will be kept only as a backup in "warm standby," though fully operational and staffed with support personnel — a place of secure retreat should the need again arise. NORAD officials stated that the same surveillance work can be continued without the security the facility provides. They emphasized that they are no longer concerned about a halt to their operations from an intercontinental nuclear attack.

**Commanders**

* [Timothy J. Keating](http://en.wikipedia.org/wiki/Timothy_J._Keating), [USN](http://en.wikipedia.org/wiki/United_States_Navy) ([5 November](http://en.wikipedia.org/wiki/November_5) [2004](http://en.wikipedia.org/wiki/2004) – [Present](http://en.wikipedia.org/wiki/As_of_2004))
* [Ralph E. "Ed" Eberhart](http://en.wikipedia.org/wiki/Ralph_E._Eberhart), [USAF](http://en.wikipedia.org/wiki/United_States_Air_Force) ([22 February](http://en.wikipedia.org/wiki/February_22) [2000](http://en.wikipedia.org/wiki/2000) – [5 November](http://en.wikipedia.org/wiki/November_5) [2004](http://en.wikipedia.org/wiki/2004))
* [Richard B. Myers](http://en.wikipedia.org/wiki/Richard_B._Myers), USAF ([14 August](http://en.wikipedia.org/wiki/August_14) [1998](http://en.wikipedia.org/wiki/1998) – [22 February](http://en.wikipedia.org/wiki/February_22) [2000](http://en.wikipedia.org/wiki/2000))
* [Howell M. Estes III](http://en.wikipedia.org/w/index.php?title=Howell_M._Estes_III&action=edit), USAF (August 1996 – [14 August](http://en.wikipedia.org/wiki/August_14) [1998](http://en.wikipedia.org/wiki/1998))
* [Joseph W. Ashy](http://en.wikipedia.org/wiki/Joseph_W._Ashy), USAF (1994 – August 1996)

**NORAD in popular culture**

Fictional set of NORAD command room from the 1983 movie [WarGames](http://en.wikipedia.org/wiki/WarGames). At the time of its creation, it was the most expensive single set ever constructed, costing $1 million [USD](http://en.wikipedia.org/wiki/USD).

* NORAD comes to public attention at [Christmas](http://en.wikipedia.org/wiki/Christmas), when it "tracks" [Santa Claus](http://en.wikipedia.org/wiki/Santa_Claus) on his journey around the world delivering toys for the world's children. 2005 marked the 50th time of NORAD tracking Santa. This tradition started in 1955 when a local [Sears](http://en.wikipedia.org/wiki/Sears) store in Colorado misprinted the phone number and children who thought they were calling Santa called NORAD instead. The NORAD Christmas patrol was referenced in the book *Stuffed Animals* by Michael Fry and T Lewis, the fourth [*Over the Hedge*](http://en.wikipedia.org/wiki/Over_the_Hedge) book. [[3]](http://www.hilltoptimes.com/story.asp?edition=34&storyid=746)
* NORAD is also featured in [Tom Clancy](http://en.wikipedia.org/wiki/Tom_Clancy)'s novel [The Sum of All Fears](http://en.wikipedia.org/wiki/The_Sum_of_All_Fears) and its associated film.
* The [Command & Conquer: Red Alert 2](http://en.wikipedia.org/wiki/Command_%26_Conquer%3A_Red_Alert_2) [computer game](http://en.wikipedia.org/wiki/Computer_game) features an in-game video of a call to NORAD from the President.
* A future version of NORAD is depicted in the computer game [*The Journeyman Project*](http://en.wikipedia.org/wiki/The_Journeyman_Project). In one mission, the player must travel to a deep-sea NORAD base in the year 2112 and stop a nuclear launch on Gorbastan.
* Cheyenne Mountain was one of the settings of the [1983](http://en.wikipedia.org/wiki/1983) [motion picture](http://en.wikipedia.org/wiki/Motion_picture) [*WarGames*](http://en.wikipedia.org/wiki/WarGames), starring [Matthew Broderick](http://en.wikipedia.org/wiki/Matthew_Broderick) as a teenager who hacked NORAD's main computer and almost started a [nuclear war](http://en.wikipedia.org/wiki/Nuclear_war) (more precisely referred to as "global thermonuclear war" in the movie). [Barry Corbin](http://en.wikipedia.org/wiki/Barry_Corbin) played a fictional NORAD commanding officer, General Jack Beringer.
* Although not shown, NORAD was mentioned in [*Terminator 2: Judgment Day*](http://en.wikipedia.org/wiki/Terminator_2%3A_Judgment_Day) as the main setting for [Skynet](http://en.wikipedia.org/wiki/Skynet), the military supercomputer that wages a [nuclear war](http://en.wikipedia.org/wiki/Nuclear_war) with mankind. It is featured In Terminator 3.
* Cheyenne Mountain is featured prominently in the television show [*Stargate SG-1*](http://en.wikipedia.org/wiki/Stargate_SG-1), as it is the location for the fictional [Stargate Command](http://en.wikipedia.org/wiki/Stargate_Command). NORAD is mentioned occasionally as being above the Stargate, housed in sub-level 28. In the episode "[A Matter of Time](http://en.wikipedia.org/wiki/A_Matter_of_Time_%28Stargate_SG-1%29)", the nearest secure phone above Stargate Command is at "NORAD, main level", which appears to be sub-level 2.
* In addition to being destroyed in the movie [*Independence Day*](http://en.wikipedia.org/wiki/Independence_Day_%28movie%29) (though not shown), Cheyenne Mountain also figured prominently in the film [*Deep Impact*](http://en.wikipedia.org/wiki/Deep_Impact_%28movie%29)*,* serving as the place of final refuge from the asteroid which strikes at the end of the film.
* In the novel [*The Moon is a Harsh Mistress*](http://en.wikipedia.org/wiki/The_Moon_is_a_Harsh_Mistress) by [Robert A. Heinlein](http://en.wikipedia.org/wiki/Robert_A._Heinlein), Cheyenne Mountain receives heavy bombardment from the lunar rebels to the point where the following dialogue takes place:
	+ "Man, I think we should stop hitting Cheyenne Mountain."
	+ "Why?"
	+ "It's not there anymore."
* In the videogame [*StarCraft*](http://en.wikipedia.org/wiki/StarCraft), the Terran Confederate flagship is known as the *NORAD II*.

**See also**

* [JTF-CNO](http://en.wikipedia.org/wiki/JTF-CNO)
* [NORAD Santa tracking program](http://en.wikipedia.org/wiki/NORAD_Santa_tracking_program)