

**NORTH AMERICAN AEROSPACE DEFENSE COMMAND**  
**And UNITED STATES NORTHERN COMMAND**  
**Biography**



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**Admiral Timothy J. Keating**  
**UNITED STATES NAVY**



Admiral Timothy J. Keating is the Commander, North American Aerospace Defense Command and United States Northern Command at Peterson Air Force Base, Colo.

Admiral Keating, a native of Dayton, Ohio, graduated from the United States Naval Academy in 1971. Following duty aboard *USS Mason* (DD 852) in the western Pacific, he completed flight training in August 1973. He was ordered to VA-82, deploying twice to the Mediterranean aboard *USS Nimitz* (CVN 68). In September 1978, he reported to VA-122, NAS Lemoore, Calif., and subsequently served with Commander, Carrier Air Wing Fifteen as Staff Landing Signal Officer, deploying to the western Pacific/Indian Ocean aboard *USS Kitty Hawk* (CV 63). From May 1982 to July 1984, as Administrative Officer, Operations Officer and Maintenance Officer with VA-94, he deployed twice to the western Pacific aboard *USS Enterprise* (CVN 65). His next assignment was Aide and Flag Lieutenant to the Commander in Chief, U.S. Pacific Command.

In May 1987, Admiral Keating assumed command of VFA-87 and deployed with CVW-8 aboard *USS Theodore Roosevelt* (CVN 71) to the North Atlantic and to the Mediterranean. After his tour with VFA-87, he was assigned to the Naval Military Personnel Command in Washington, D.C., where he served as Head of the Aviation Junior Officer Assignments Branch. He reported as Deputy Commander, Carrier Air Wing Seventeen in January 1991, participating in combat operations in support of *Operation Desert Storm* from *USS Saratoga* (CV 60).

Admiral Keating next served as a Chief of Naval Operations Fellow with the Strategic Studies Group in Newport, R.I. Following duty with the Joint Task Force Southwest Asia in Riyadh, Saudi Arabia, he deployed as Deputy Commander, Carrier Air Wing Nine aboard *USS Nimitz* (CVN 68) to the Arabian Gulf. He assumed command of CVW-9 in July 1993. In November 1994, Admiral Keating reported to NAS Fallon, Nev., as Commander, Naval Strike Warfare Center.

Admiral Keating returned to the Naval Military Personnel Command in September 1995 as Director, Aviation Officer Distribution Division. He served as the Deputy Director for Operations (Current Operations/J33), Operations Directorate, the Joint Staff, Washington, from August 1996 until June 1998. He assumed command of Carrier Group Five home ported in Yokosuka, Japan, in June 1998. In September 2000, Admiral Keating reported to OPNAV in Washington as Deputy Chief of Naval Operations for Plans, Policy and Operations (N3/N5). In February 2002, he assumed command of U.S. Naval Forces Central Command and U.S. Fifth Fleet. From October 13, 2003 to October 21, 2004, Admiral Keating served as the Director, Joint Staff. Admiral Keating assumed command of North American Aerospace Defense Command and United States Northern Command on November 5, 2004.

His awards include the Defense Distinguished Service Medal with two Oak Leaf Clusters, Distinguished Service Medal with Gold Star, Legion of Merit with three Gold Stars, Defense Meritorious Service Medal, Meritorious Service Medal with Gold Star, three Air Medals, Navy Commendation Medal with two Gold Stars and Combat "V" and various unit and campaign awards. He has over 5,000 flight hours and 1,200 arrested landings.

**(Current as of May 2005)**



# North American Aerospace Defense Command

## Biography

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### **LIEUTENANT-GENERAL E. A. Findley, CMM, MSC, CD CANADIAN FORCES**



Lieutenant-General Eric A. "Rick" Findley is Deputy Commander, North American Aerospace Defence Command (NORAD).

Born in Ottawa, Ontario in 1950, Lieutenant-General Findley entered the Canadian Forces in 1968. Trained as a pilot, he flew with 408 Squadron, Edmonton; 444 Squadron, Lahr, Germany; 403 Squadron, Gagetown; and 427 Squadron, Petawawa. During peacekeeping operations, he commanded and flew with United Nations (UN) and Multinational Force and Observer aviation (MFO) units in the Sinai, Central America, and Haiti. The logbook reflects over 4600 flying hours, primarily in helicopters. He has commanded at the flight, squadron (427 Squadron), and wing level (7 Wing/CFB Ottawa). He has commanded two Canadian peacekeeping contingents, and served as Chief of Staff for the MFO.

Staff experience for Lieutenant-General Findley includes service as Senior Staff Officer Plans, Doctrine, and Requirements with HQ 10 Tactical Air Group; Staff Officer in the Directorate of Peacekeeping Operations and National Defence Operations Centre at National Defence Headquarters; Executive Assistant to the Deputy Chief of Defence Staff at National Defence Headquarters; Chief of Staff for Personnel, Training, and Reserves (A1) at Air Command Headquarters and 1 Canadian Air Division; Chief of Staff for Operations (A3) at 1 Canadian Air Division/Canadian NORAD Region; and Director of Combat Operations (NJ3) at HQ NORAD.

Education and training includes a Bachelor of Science in Biology, Carleton University; Canadian Forces Command and Staff College, Toronto; French Language Training, Montreal; Royal College of Defence Studies, London, UK; Combined Force Air Component Commander Course, Maxwell AFB, US.

Awards and decorations include Commander in the Order of Military Merit, Meritorious Service Cross for action taken during terrorist attacks of 11 Sep 01, Special Service Medal for duty in NATO, Peacekeeping Medals from UN missions in Central America and Haiti, the MFO medal for service in the peacekeeping mission in Egypt/Israel, the Canadian Peacekeeping Medal, and the Canadian Decoration.

Lieutenant-General Findley assumed his current position on 14 Jul 2003. He is married to the former Carla Ryan of Greenwood, Nova Scotia.

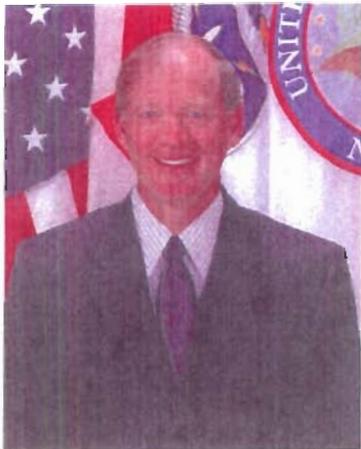
**(Current as of Jan 2005)**

# NORTH AMERICAN AEROSPACE DEFENSE COMMAND And UNITED STATES NORTHERN COMMAND Biography



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## MICHAEL B. PERINI Director of Public Affairs



Mr. Michael B. Perini is the Director of Public Affairs for Headquarters North American Aerospace Defense Command (NORAD) and U.S. Northern Command (USNORTHCOM) at Peterson AFB, Colo. In addition to advising and supporting the NORAD-USNORTHCOM commander, Mr. Perini makes available timely and accurate information so the public, government leaders and the news media may assess and understand NORAD's aerospace warning and aerospace defense missions and USNORTHCOM's homeland defense and defense support to civil authorities missions.

Mr. Perini served more than 30 years in the Air Force before retiring in the rank of colonel in 2002. Prior to his current assignment, he was director of public affairs for NORAD and U.S. Space Command (USSPACECOM) at Peterson AFB. From 2000 to June 2002, Mr. Perini wore three hats: director of public affairs for NORAD, USSPACECOM and Air Force Space Command. Mr. Perini began his military career in air traffic control, serving at Sheppard AFB, Texas, and Nakhon Phanom Royal Thai AFB, Thailand. In 1978, Mr. Perini was selected for career broadening into the public affairs career field. He served as public affairs officer at the wing, major command and Air Force levels. He also served a year on the editorial staff of Air Force Magazine in Washington, D.C., and is the former editor and publisher of Airman Magazine at Kelly AFB, Texas. Mr. Perini was the first U.S. military officer journalist to visit the Soviet Union and holds an "ABC" accreditation from the International Association of Business Communicators.

### EDUCATION:

- 1972 Bachelor of arts degree in social studies, Washington State University
- 1977 Squadron Officer School, Maxwell Air Force Base, Ala.
- 1979 Master of science degree in education, University of Southern Mississippi
- 1981 Air Command and Staff College, Maxwell Air Force Base, Ala.
- 1986 Air War College, Maxwell Air Force Base, Ala.
- 1987 Armed Forces Staff College, Norfolk, Va.

### CAREER CHRONOLOGY:

1. July 1972 - October 1974, air traffic control officer, Sheppard AFB, Texas.
2. October 1974 - July 1975, air traffic control officer, Nakhon Phanom Royal Thai AFB, Thailand.
3. July 1975 - December 1977, instructor, Air Traffic Control Officers Course, Keesler AFB, Miss.
4. December 1977 - October 1978, deputy chief and chief, Information Division, Keesler AFB, Miss.
5. October 1978 - October 1980, chief of public affairs, Hill AFB, Utah.
6. October 1980 - July 1982, chief of public affairs, 1st Tactical Fighter Wing, Langley AFB, Va.
7. July 1982 - July 1983, editorial staff, Air Force Magazine, Washington, D.C.
8. July 1983 - December 1986, deputy chief of operational forces branch, Secretary of the Air Force Office of Public Affairs, Washington, D.C.
9. January 1987 - June 1987, student, Armed Forces Staff College, Norfolk, Va.
10. July 1987 - October 1990, deputy director of public affairs, Headquarters Pacific Air Forces, Hickam AFB, Hawaii.
11. October 1990 - September 1992, editor, Airman Magazine, Headquarters Air Force News Agency,

Kelly AFB, Texas.

12. September 1992 - September 1994, chief of news operations and publisher of Airman Magazine, Headquarters Air Force News Agency, Kelly AFB, Texas.

13. September 1994 - June 1995, vice commander of the Air Force News Agency and director of Air Force Internal Information, Kelly AFB, Texas.

14. June 1995 - January 1997, deputy director of public affairs, Air Combat Command, Langley AFB, Va.

15. January 1997 - October 1998, director of public affairs, U.S. Forces Japan, Yokota Air Base, Japan.

16. October 1998 - June 2000, director of public affairs, Headquarters Air Combat Command, Langley AFB, Va.

17. July 2000 - June 2002, director of public affairs, North American Aerospace Defense Command, U.S. Space Command, and Air Force Space Command, Peterson AFB, Colo.

18. June 2002 - October 2002, director of public affairs, North American Aerospace Defense Command and U.S. Space Command, Peterson AFB, Colo.

19. October 2002 - Present, director of public affairs, North American Aerospace Defense Command and U.S. Northern Command, Peterson AFB, Colo.

#### **AWARDS AND DECORATIONS:**

Defense Superior Service Medal

Legion of Merit

Meritorious Service Medal with four oak leaf clusters

Joint Service Commendation Medal

Air Force Commendation Medal

Global War on Terrorism Service Medal

NATO Medal

Joint Meritorious Unit Award

Coast Guard Unit Commendation

National Register's Who's Who in Executives and Professionals for 2005-2006

#### **PROFESSIONAL WRITINGS:**

"Finally - The B-B," reprint in Congressional Record (U.S. Senate)

"Airlift for Near and Far," Air Force Magazine

"Telling Ours from Theirs," (North Atlantic Treaty Organization system for aerial combat) reprint article, Current News (special edition)

"Uncommon Gallantry," AEF, Air Force Association book entitled Valor

"Reserve Forces: Bottomline on Top Performers," reprint article in Air War College's Associate Programs, 17th edition

"Faces of the Former Soviet Union," Airman Magazine

"Criteria for Today's Leaders", Airman Magazine/Early Bird Supplement

"Top Personnel Officials Revalidate OES," Airman Magazine

#### **PROFESSIONAL MEMBERSHIPS AND ASSOCIATIONS:**

Air Force Association

Air Force Public Affairs Alumni Association

American Legion

Community Council, Colorado Festival of World Theatre

International Association of Business Communicators, Accredited Member

Military Officers Association of America

National Homeland Defense Foundation

National Space Science & Technology Institute Board of Advisors

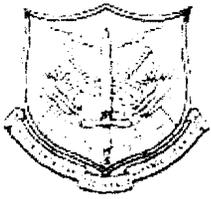
Pikes Peak Regional Medical Center Foundation, Public Relations Committee

Pikes Peak Round Table

2003-2004 Teller County Regional Animal Shelter Board Member

Woodland Park Chamber of Commerce

(Current as of March 2005)



## NORTH AMERICAN AEROSPACE DEFENSE COMMAND

### OUR VISION

*North American Aerospace Defense Command provides comprehensive, integrated aerospace defense of North America.*

### OUR CORE, NON-NEGOTIABLE RESPONSIBILITIES

- Deter, detect, and defeat aerospace threats to North America
- Provide timely, accurate integrated tactical warning and attack assessment
- Perform Operation NOBLE EAGLE missions

### PRINCIPAL MEANS TO FULFILL RESPONSIBILITIES AND IMPLEMENT VISION

- Develop and advocate for capabilities to provide persistent, wide-area surveillance of the aerospace domain, respond in a timely manner to any air threat, provide integrated command and control, and precisely and decisively engage threats when necessary
- Maintain flexible, executable, and regularly-exercised plans for the aerospace defense of North America
- Be a model for bi-national cooperation in defense planning, execution, training, information management, and technological innovation
- Improve teaming relationships with civilian and military organizations in the United States and Canada to ensure operations are well-coordinated; develop a fully integrated operational picture
- Provide sound military advice to the U.S. and Canadian governments on aerospace warning and aerospace control issues affecting both nations
- Develop programs and processes to improve bi-national information sharing
- Consider the possible range of U.S. and Canadian military operations and develop insightful recommendations on what command structure - bi-national, military-to-military, or unilateral - will be most effective for accomplishing each mission
- Assist in the development of bi-national documents such as the NORAD Agreement and Basic Security Document
- Communicate with the citizens of our nations; provide timely and accurate information about our roles and responsibilities
- Maintain a positive, bias-free work environment that takes care of people, maximizes their contributions, and encourages them to grow personally and professionally

TIMOTHY J. KEATING  
Admiral, USN  
Commander





## NORTH AMERICAN AEROSPACE DEFENSE COMMAND

### Key Points

- Strengthening aerospace warning and control of the United States and Canadian airspace and approaches
- Providing relevant Integrated Tactical Warning and Attack Assessment (ITWAA) for the United States and Canada through Cheyenne Mountain Operations Center, as relevant today as it was during the Cold War
- Defending North America from internal air threats and supporting homeland defense operations with a layered air defense
- Ongoing renewal of the NORAD agreement -- NORAD is a model for bi-national cooperation in defense planning, execution, training, information management and technological innovation
- Continuing to fly irregular air patrol sorties over the United States and Canada under Operation Noble Eagle -- since Sept. 11, 2001, NORAD has flown more than 40,000 sorties and diverted irregular air patrols or scrambled fighters in response to more than 2,000 air events





## North American Aerospace Defense Command [www.norad.mil](http://www.norad.mil)

The North American Aerospace Defense Command (NORAD) is a bi-national United States and Canadian organization charged with the missions of aerospace warning and aerospace control for North America. Aerospace warning includes the monitoring of man-made objects in space, and the detection, validation, and warning of attack against North America whether by aircraft, missiles, or space vehicles, utilizing mutual support arrangements with other commands. Aerospace control includes ensuring air sovereignty and air defense of the airspace of Canada and the United States.

To accomplish these critically important missions, NORAD continually adjusted its structure to meet the demands of a changing world. The commander is appointed by, and is responsible to, both the President of the United States and the Prime Minister of Canada. The commander maintains his headquarters at Peterson Air Force Base, Colo., and a command and control center a short distance away at Cheyenne Mountain Air Station. Cheyenne Mountain serves as a central collection and coordination facility for a worldwide system of sensors designed to provide the commander and the leadership of Canada and the U.S. with an accurate picture of any aerospace threat. Three subordinate region headquarters at Elmendorf AFB, Alaska, Canadian Forces Base, Winnipeg, Manitoba, and Tyndall AFB, Florida, receive direction from the commander and control air operations within their respective areas of responsibility.

To accomplish the aerospace warning mission, the commander of NORAD is responsible for providing integrated tactical warning and attack assessment (ITW/AA) of an aerospace attack on North America to the governments of Canada and the United States. This is done using information made available by the ITW/AA system. Portions of that system are under the operational control of the commander NORAD and other portions are operated by commands supporting NORAD.

NORAD's aerospace control mission includes detecting and responding to any air-breathing threat to North America. To accomplish this mission, NORAD utilizes a network of ground-based radars and fighters to detect, intercept and if necessary engage any air-breathing threat to the continent. These fighters consist of U.S. F-15s and F-16s and Canadian CF-18s. As a part of its aerospace control mission, NORAD assists in the detection and monitoring of aircraft suspected of illegal drug trafficking. This information is passed to civilian law enforcement agencies to help combat the flow of illegal drugs into North America.

Through outstanding cooperation and cohesiveness, NORAD has proven itself effective in its roles of watching, warning, and responding. By adapting to the changing world, NORAD will continue to play an important role in the defense of Canada and the U.S. The events of September 11, 2001 provide evidence of NORAD's responsiveness and continued relevance to North American security. By quickly adapting its traditionally outward-looking focus to meet new threats posed by terrorists to the interior of the continent, NORAD provides a potent military response capability to civil authorities to counter domestic airspace threats.

Though future homeland defense/security organizations are still being formulated by the national leadership of both Canada and the U.S., NORAD's proven abilities and unique capabilities will be a vital part of homeland security and defense.



## NORAD History

The North American Aerospace Defense Command (NORAD) is a bi-national military organization formally established in 1958 by Canada and the United States to monitor and defend North American airspace.

Using data from satellites and ground base radar, NORAD monitors, validates and warns of attack against North America by aircraft, missiles or space vehicles. NORAD also provides surveillance and control of the airspace of Canada and the United States.

The NORAD Agreement was first signed by the governments of Canada and the United States on May 12, 1958, and has been renewed for varying periods since that time. Although there have been eight NORAD renewals since 1958, the basic text of the Agreement has been revised substantially only three times -- in 1975, 1981 and 1996.

The Commander-in-Chief of NORAD is appointed by, and is responsible to, both the Prime Minister of Canada and the President of the United States. Headquarters NORAD is located at Peterson Air Force Base, Colorado Springs, Colorado. NORAD command and control is exercised through the Cheyenne Mountain Operations Center, located a short distance away.

Cheyenne Mountain serves as a central collection and coordination facility for a worldwide system of sensors designed to provide NORAD with an accurate picture of any aerospace threat.



## NORAD Agreement

Canada and the United States are friends, allies and partners in defense. Currently, there are more than 80 treaty-level defense agreements between the two countries and more than 250 memoranda of understanding between their respective defense departments.

The common defense of the North American continent traces its history back to 1940 when Canadian Prime Minister Mackenzie King and U.S. President Franklin Roosevelt met to discuss the war in Europe and mutual defense concerns.

In September 1957, the two nations agreed to create the "North American Air Defense Command" (NORAD) headquartered in Colorado Springs, Colo. as a bi-national command, centralizing operational control of continental air defenses against the threat of Soviet bombers. On May 12, 1958, the agreement between the Canadian and U.S. governments that established NORAD was formalized. The agreement included 11 principles governing the organization and operation of NORAD and called for a renewal of the agreement in 10 years.

The first renewal of the agreement came in March 1968. The NORAD Agreement has been reviewed, revised, renewed or extended several times since then: May 1973; May 1975; May 1980; March 1981 (when the name was changed to "North American Aerospace Defense Command"); March 1986; April 1991; March 1996 and June 2000.

The March 1996 renewal redefined NORAD's missions as aerospace warning and aerospace control for North America. The new agreement included a consultative mechanism for issues concerning aerospace defense cooperation and, a provision for the review and management of environmental practices related to NORAD operations. As part of its aerospace control mission, NORAD also assists civil authorities in the detection and monitoring of aircraft suspected of illegal drug trafficking. The June 2000 renewal which became effective on May 12, 2001 extended the NORAD Agreement for another five years.

A strength of the NORAD Agreement and a testimony to the close cooperation between Canada and the United States, is the on-going adaptation of NORAD's mission and capabilities to meet the challenges posed by ever-changing threats. The events of September 11, 2001 provide evidence of NORAD responsive capabilities and continued relevance to North America.



## **Cheyenne Mountain Operations Center**

The operational unit at Cheyenne Mountain Air Force Station (CMAFS) is commonly referred to as the Cheyenne Mountain Operations Center. CMOC contains elements from North American Aerospace Defense Command, U.S. Strategic Command and Air Force Space Command.

Several operational centers make up the CMOC: Command Center, Air Warning Center, Missile Warning Center, Space Control Center, Combined Intelligence Watch, Weather Support Unit and Systems Center.

### **History**

- In 1956, the idea of a hardened command and control center was conceptualized as a defense against Soviet bombers. After the Soviet launch of Sputnik in 1957, the concept of CMOC focused more on early warning and the ballistic missile threat.
- Cheyenne Mountain was selected based on three key criteria: geographically centered in North America, area of low seismic activity, and already established military presence in Colorado Springs.
- Excavation and construction for the complex began in June 1961 and took four years and seven months to complete.
- Initial Operational Capability or "IOC" was achieved Jan. 1, 1966. The Cheyenne Mountain Complex became completely operational April 20, 1966.
- The Army Corps of Engineers supervised the excavation and construction. They used 1.5 million pounds of dynamite to excavate approximately 700,000 tons of granite.
- The project was completed at a cost of \$142 million. According to a GAO report released in the 1990s, duplicating this facility today with all of its missions would cost more than \$18 billion.

### **Industrial Area**

- The actual operations complex is a series of 15 buildings, 12 of which are three stories tall. Each building has its own tunnel and functions independently of the remaining structures.
- The entire operations complex is mounted on 1,319 springs, each weighing 1,000 pounds. They allow the complex to sway up to 12 inches horizontally in any direction. This insulates the complex in case there's an earthquake or nuclear explosion.

- The complex operates on a three-level power system. The primary source is commercial, the secondary is a series of six 2,800-horsepower Enterprise (in-line eight) diesel engines, and the final is a series of interconnected batteries (approximately 3,500), which is referred to as the “un-interruptable power system.
- The Cheyenne Mountain complex is about 7,100 feet above sea level at its highest point. Cheyenne Mountain is approximately 9,565 feet.
- There are 110,000 rock bolts that reinforce the tunnel structure. They are from 6 to 32 feet in length and function like molly bolts, which give the mountain the illusion that there is someone inside pushing outward on the walls preventing implosion or cave-in.
- Cheyenne Mountain has four water reservoirs with a six-million gallon capacity. CMOC's primary water supply is from a natural spring that supplies 30 to 120 thousand gallons per day; the complex uses 10 to 15 thousand gallons per day.
- There are three blast doors. The two main doors are 25 tons, 3½-foot-thick baffled steel. It takes about 30 seconds to close the doors automatically. Two people can push the door closed and pump lock-bolts into place in about five minutes if the automatic mechanism fails.