

AIR FORCE TECHNICAL APPLICATIONS CENTER



LINEAGE

1035th USAF Field Activities Group organized, 7 Jul 1959

Redesignated 1035th Technical Operations Group, 26 Jun 1972

Redesignated Air Force Technical Applications Center, a direct reporting unit, on 1 October 1980

Changed from a direct reporting unit to a field operating agency effective February 5, 1991

STATIONS

Patrick AFB, FL

ASSIGNMENTS

COMMANDERS

Col. Robert A. Meisenheimer, 1981

Col Glen D. Shaffer, #1995

Col John T. Wingington III #1997

Col Harold J. Beatty, #1999

Col Roy E. Horton III, #2002

Col Craig B. Bendorf, #2004

Col Guy D. Turner, 15 Jul 2004

Col Mark W. Westergren, #2007

Col Lisa Ann H. Onaga

HONORS

Service Streamers

Campaign Streamers

Armed Forces Expeditionary Streamers

Decorations

EMBLEM

EMBLEM SIGNIFICANCE

The emblem is symbolic of the unit and the Air Force colors, ultramarine blue and golden yellow, as well as the national colors, are used in the design.

The color blue alludes to the sky, the primary theater of Air Force operations, yellow to the sun and excellence of personnel in assigned tasks.

The globe is indicative of the worldwide mission, locations, and geophysical studies accomplished.

The lightning and cloud depict study on natural phenomena.

The compass points reflect the assigned exploratory task around the world.

The rings around the globe (symbolizing electronic instrument readings) also denote unity of purpose and display electronic measurements accomplished.

The elliptical belt symbolizes study of the atmosphere.

MOTTO

NICKNAME

OPERATIONS

Air Force Technical Applications Center (AFTAC) at Patrick AFB, Fla., enters the 1980s with an increased awareness of the proliferation of atomic energy activities and the resulting threat to mankind. AFTAC was predicated on the terms of the 1963 Limited Test Ban Treaty, to monitor treaty terms, detect violations, and keep current knowledge of Sino-Soviet nuclear activity, capabilities, and achievements. AFTAC became a Direct Reporting Unit (DRU) on October 1, 1980.

AFTAC, employing some 1,350 men and women, operates worldwide. One squadron is located at McClellan AFB, Calif., a second one at Wheeler AFB, Hawaii, and the third at Lindsey AS, Germany. There are twenty subordinate detachments, four operating sites, and fifty equipment locations scattered around the world. Squadrons in Europe and Hawaii support operational facilities in their areas of responsibility.

To accomplish AFTAC's mission, the US Atomic Energy Detection System (AEDS) was established. The AEDS consists of a worldwide network of sensors and collection equipment, analysis laboratories, a depot for AEDS support, and a Headquarters staff for management and technical evaluation and reporting. While AFTAC collects geophysical data on natural and man-made events and effluents in the atmosphere, the Center's chief concern is the detection of foreign nuclear tests in three environments—subsurface, atmosphere, and space.

AFTAC's Central Laboratory at McClellan AFB, with a staff of some 150, includes people with graduate degrees in chemistry, physics, and nuclear engineering, and electronics engineers, staff

scientists, and research directors. The scientific staff is supported by skilled Air Force laboratory technicians. The Central Laboratory is an analytical facility equipped with modern instruments.

An in-house electronic maintenance capability supports the laboratory instrumentation. An electronic data-processing facility performs all data reduction. Electronic data processing provides complete computer support, including scientific code development and data reduction, as well as providing a versatile management information system.

Because the unique system and instrumentation are only applicable to the AEDS mission, the AFTAC depot at McClellan acts as a depot distribution agent for items managed by AFTAC. The depot is responsible for prepositioning assets for AEDS system activities and modifications, providing parts support for depot-level maintenance, and providing normal base-level support.

The depot is a secondary source of supply for common items required by AFTAC sites located in remote areas. Engineering personnel perform equipment and systems installations via Mobile Depot Assistance Teams, serve as system and item managers for AEDS items, and manage the AEDS Product Improvement Program. Maintenance personnel perform depot-level maintenance on AEDS equipment at McClellan and as members of the mobile teams at field locations.

Last year's depot fiscal management involved funds totaling more than \$11.5 million, while the current supply inventory exceeded \$7.5 million and Equipment Authorizations Inventory Documentation (EAID) assets more than \$22 million.

To improve AEDS capability, a comprehensive R&D program is underway to increase the understanding of the complex technical problems associated with the detection and identification of nuclear events underground and in space. Through the Vela Seismological Center at Alexandria, Va., an extensive seismological research program on underground events—natural and man-made—is conducted. Concurrently, the Vela Satellite Program provides basic research, e.g., background measurements and investigation of events in space. More than \$12 million in funds was allocated last year for such R&D programs.

Enhance national security: Collect and exploit worldwide technical measurements and deliver timely, accurate information to national authorities and warfighters teaming to monitor treaties, counter proliferation of weapons of mass destruction, and achieve information superiority

Become the nation's premier collector and exploiter of technical signatures ... enabling policy makers and warfighters to achieve information superiority.

Headquartered at Patrick Air Force Base on Florida's east coast, the Air Force Technical Applications Center is the sole Department of Defense agency operating and maintaining a global network of nuclear event detection sensors.

This global network is the U.S. Atomic Energy Detection System. Once the USAEDS senses a disturbance underground, underwater, in space or in the atmosphere, AFTAC's laboratories

analyze the event for nuclear identification and report the findings to national command authorities through Headquarters, Air Force.

Long range detection began soon after the end of World War II, when Gen. Dwight D. Eisenhower recognized the need to monitor nuclear programs.

In 1947, he directed the Army Air Corps to be able to "detect atomic explosions anywhere in the world."

In 1949, a sensor aboard a B-29, assigned to AFOAT-1, flying between Alaska and Japan, detected debris from the first Russian atomic test — an event the experts had predicted couldn't happen until the mid- 1950s.

Since then, the Long Range Detection Program, now operated by AFTAC, has evolved into a unique resource that monitors compliance with nuclear treaties, supports our nation's space programs and helps protect everyone during emergencies involving nuclear materials.

AFTAC's nuclear event detection mission is directly linked to its treaty monitoring mission. AFTAC monitors signatory countries' compliance with the 1963 Limited Test Ban Treaty. The treaty prohibits all nuclear testing except underground testing and prohibits the venting of nuclear debris or radiation from those tests into the atmosphere outside the country's national border.

Two other treaties AFTAC monitors are the Threshold Test Ban Treaty of 1974 and the Peaceful Nuclear Explosion Treaty of 1976.

The 1974 treaty limits the size of underground nuclear tests to 150 kilotons, while the 1976 treaty monitors the testing of nuclear devices outside of agreed treaty sites.

Based on the unit's extensive nuclear monitoring experience, AFTAC is the U.S. lead in developing the international cooperative system to monitor the Comprehensive Test Ban Treaty.

This treaty bans all nuclear testing by signatory nations. AFTAC is also the designated U.S. laboratory system responsible for supporting the U.N.'s International Atomic Energy Agency.

The center reports directly to the Deputy Air Force Chief of Staff for Air and Space Operations. In 1991, reorganization driven by downsizing within the Air Force, placed AFTAC and its subordinate units under the Air Intelligence Agency for administrative support.

These functions included assignments, awards and decorations, as well as general Air Force policy guidance for such programs as safety, security and public affairs.

The officers, noncommissioned officers, airmen and civilians who make up the AFTAC team possess a wide variety of talents which ensures timely detection, analysis and reporting of nuclear events, as well as the development and delivery of state- of-the-art systems.

AFTAC's personnel are highly trained and experienced. Of its nearly 1,000 members:
35 have doctorates in nuclear physics, chemistry or other technical fields
145 have master's degrees
142 have bachelor's degrees
193 have associate's degrees

AFTAC has one major subordinate unit, the Technical Operations Division at McClellan Air Force Base, Calif.

This complex contains the McClellan Central Laboratory, the primary nuclear debris analysis facility.

In addition, there are 10 detachments, four operating locations and more than 70 unmanned equipment locations around the world that support the mission.

Detachment 45, Air Force Technical Applications Center, is located at Buckley Air National Guard Base, just east of Denver, Colo. It is responsible for detecting and reporting atmospheric nuclear detonations.

The detachment operates the primary leg of the U.S. Nuclear Detonation Detection System and the Integrated Correlation and Display System. ICADS processes data from both the Defense Support Program and Global Positioning System satellite constellations.

The detachment monitors Safeguard (d) of the Limited Test Ban Treaty and it participates in the Space Command's Integrated Tactical Warning and Attack Assessment missions.

Det. 45 provides superior analysis and timely assessment of nuclear event data to National Command Authorities.

The mission of Det. 45 is to continually collect, evaluate, and report satellite sensor data as it relates to nuclear event monitoring. The detachment also performs special data collections, including: providing space environment data to Air Force Global Weather, nuclear event notification to NASA, nuclear discrimination for intense infrared signals, fuel air explosives and natural phenomena.

The detachment is a tenant unit of the 821st Support Group, also at Buckley Air National Guard Base, Colo.

The detachment operates hand in hand with 2nd Space Warning Squadron personnel to ensure an optimum system configuration for data collection. The detachment resides within a secure compound where two on-duty operators continually monitor for nuclear event data. These two operators are responsible not only for event detection and evaluation, they also monitor satellite state of health and system operations, reporting any anomalies to the appropriate authorities.

Det. 45 traces its roots to February 1972 when prototype equipment was installed by Sandia

National Laboratories at Buckley Air National Guard Base, Colo. The site was originally manned by one Sandia representative working eight hours a day.

In 1973, the 1035th Technical Operations Group signed a memorandum of agreement with the Department of Energy defining responsibilities for support and operations. Following this agreement, two Air Force personnel were sent to join the Sandia representative and Operating Location AO was formed.

For the next 12 years, OLA provided satellite data to Headquarters AFTAC when power outages, hurricanes and technical problems rendered the Atomic Energy Detection Center inoperable. The OL assisted with early orbit testing for seven satellites.

In 1984, Air Staff directed OLA be upgraded to detachment strength to support operations 24-hours-a-day. The detachment was officially activated Oct. 8, 1985, by AFTAC Commander Richard O'Lear.

Det. 45 crews interfaced with crews and supported combat mission accomplishment whenever the need arose. Subsequently, Det. 45 was AFTAC's first unit with a direct combat support role.

Today, Det. 45 continues to support both AFTAC and the Air Force Space Command in varied mission roles to include nuclear treaty monitoring and integrated tactical warning and attack assessment.

With the advancement made in detecting nuclear events, sites like the Belbasi Seismic Research Station were created. It was the first active American Forces installation in Turkey, and since opening the doors in 1951, their mission has not changed.

Belbasi Seismic Research Station, Detachment 301, is tasked with monitoring international nuclear treaties and providing comprehensive reporting of seismic events fulfilling national-level requirements as part of the U.S. Atomic Energy Detection System in Europe.

They maintain detection and processing equipment to ensure accurate, timely and reliable seismic data collected in Turkey is transmitted to the Atomic Energy Detection Center, located at Patrick Air Force Base, Fla. Data is also provided to the Turkish government through the Earthquake Research Department.

The detachment is locally referred to as Belbasi or BSRS. It is located eight miles south of Ankara, Turkey's capital, which boasts more than five million residents. The compound covers 11 acres and is classified as a Defense and Economic Cooperative Agreement installation.

A total of 31 Turkish and American forces are stationed there. The U.S. Air Force contingent numbers 11 people; the commander, superintendent, six maintainers and three support personnel. The Turkish commander leads a team of three noncommissioned officers and 16 guards to provide security. Administrative, nonmission support is provided from Incirlik Air Base, Turkey,

and Ramstein Air Base, Germany.

Turkey is a tremendously diverse country with one foot in Europe and the other in the Middle East, boasting a very unusual mix of influences. Ancient ruins abound throughout the country, recalling the ancient Greek, Roman and Ottoman empires. The cuisine is delicious; Iskender on arrival is a must and shopping opportunities are abundant for gold, leather and much more.

The weather there is nearly identical to Denver, Colo. Both cities are at the same latitude and similar elevation. Summers are delightful with day after day of sunny, fair weather, low humidity and temperatures around 80 to 90 degrees. Winter usually arrives in late November, covering the area with a blanket of snow.

UNIT LOGO

The logo consists of an oval field, divided into four quadrants by a representation of a seismic signal. The American and Turkish flags represent the cooperative and international efforts at Belbasi. The atomic symbol in the upper right signifies the nuclear treaty monitoring capabilities through the U.S. Atomic Energy Detection System. The depiction of the world in the lower left signifies the worldwide scope of operations supported by Belbasi.

Detachment 460 is located at Eielson Air Force Base, 726 miles southeast of Fairbanks in the heart of the Alaskan interior.

Hosted by the 354th Fighter Wing, Det. 460 is the largest and most varied detachment of its type in the command.

Operationally, Det. 460 is controlled by the Air Force Technical Applications Center and administratively, it is directed by the 692nd Intelligence Group, Hickam Air Force Base, Hawaii.

Its overall mission is to conduct nuclear treaty monitoring through seismic and atmospheric data collection and/or analysis for national command authorities and to conduct information warfare operations for U.S. and allied warfighters.

Supporting the most comprehensive seismic facility in the United States Atomic Energy Detection System, Det. 460 maintains a network of gaseous and particulate air sampling units and seismic arrays stretching from above the Arctic Circle to Canada and the farthest Aleutian Island of Attu.

In addition, the unit mission includes an Information Warfare element which conducts telecommunications monitoring and communications exploitation training.

Det. 460 has a long and distinguished history in the service of the United States Atomic Energy Detection System. Its roots are actually derived from several AFOAT-1 and AFTAC detachments which were scattered across the "Last Frontier."

During the 1950's, there were six detachments and approximately 200 personnel in Alaska. Air

sampling operations conducted in Alaska in the late 1940's provided the first confirmation that the Russians had exploded an atomic bomb.

Daily "surveillance" sampling flights were flown from Eielson for the next 25 years using WB-50, WB47E, WC-130 and WC-135 aircraft. Also during the 1950's, a field laboratory and an air operations section, Team 202-Western Field Operations, were established at what was then known as "Mile 26," and additional ground system sites were established throughout the state.

Years following, the unit was renamed Detachment 202 and played a key role in operations against Russian atmospheric tests conducted in the late 1950's and early 1960's.

The mid-1960's brought an expansion of Det. 202's mission and deactivation of four other detachments in Alaska. Det. 202 began to conduct daily missions flown from Alaska to Europe and into the Far East.

In support of these air operations, the detachment maintained and operated an analytical radiological laboratory and aircraft sample recovery facility for the next 30 years. With nuclear response expertise, Det. 202 was also responsible for six geographically separated ground-based atmospheric sampling units.

During the 1970's, a ground site operation was consolidated with Detachment 202's operations. The detachment was renamed Detachment 460 in 1976, with operations remaining constant until 1992 when an Information Warfare mission was incorporated. Laboratory operations were terminated in 1996, following an era of exciting international progress in gaining signatories on worldwide nuclear treaties.

Det. 460 maintains 45 seismic sites in seven arrays across Alaska. The farthest site is located 9,000 miles away. Each site location provides a valuable geological view of the worldwide seismic activity, but also presents unique challenges in transportation and personal protection.

The geological data gathered is the largest single combined data feed to the USAEDS. This data is also shared with the University of Alaska at Fairbanks, a close relationship extending even beyond the seismic mission boundaries.

Det. 460 seismic technicians also maintain six geographically separated ground-based atmospheric sampling units. Two automatic cryogenic rectifiers collect gaseous samples; ground filter units collect particulate samples. They also conduct very limited support of TC-135 operations.

The Information Warfare Securities office primarily supports the 354th FW and Pacific Air Force's Aerial Combat Exercise COPE THUNDER. Providing CET and Communications Security/Operations Security information, the detachment's people train aircrews and support personnel on wartime threats and countermeasures.

The operational environment presents unique challenges. Snowfall begins in early October and remains until the end of May. The temperature during this time varies from above 40 to negative

65 degrees Fahrenheit, offering multiple challenges to personal protection.

Long underwear, parkas and mukluks are daily necessities. With daylight declining through Dec. 21, the detachment has approximately 30 minutes of daylight in the deep winter.

During the summer, Alaska becomes the "land of the midnight sun." Gaining daylight until June 21, midnight looks like 1 p.m. in the continental United States. The mosquitoes, casually referred to as the state bird, are ever-present.

The unique challenges at Detachment 460 create an environment of opportunities. The detachment looks forward to meeting each one head-on with the motto that symbolizes their Information Warfare mission: "In God we trust. All others we monitor, jam, or deceive."

Leading the way in providing a full spectrum of information utilizing state-of-the-art systems with the highest capability, reliability, and maintainability in the world. Benchmarking the resources necessary to accomplish the mission while providing the highest quality of life for our people.

The mission of Detachment 452 is to provide the highest quality data collection and reporting for monitoring nuclear treaties on a continuous basis to the Air Force Technical Applications Center and the Korea Institute of Geology, Mining and Materials through commitment to excellence and teamwork.

Det. 452 operates the U.S. Air Force's second-largest seismic array as part of a world-wide seismic monitoring network. The detachment assists AFTAC in monitoring compliance with the 1963 Safeguard (d) Limited Test Ban Treaty, 1974 Threshold Test Ban Treaty and the 1976 Peaceful Nuclear Explosions Treaty.

To perform the detachment's mission, two seismic arrays are laid out over a 600-square-mile area in north central South Korea. A short period array consisting of 19 instruments detects vertical particle motion used for wave energy measurements.

It also provides the azimuthal direction to the seismic wavefront's source. A long period array made up of six seismic instruments measures both vertical and horizontal earth particle motions, and provides data for event discrimination and wave energy measurements. Both systems are used to refine seismic magnitude calculations.

In addition to the arrays, the unit operates one broadband instrument to measure vertical and horizontal ground motion through a wider frequency range.

Currently, the detachment is operated by a commander, superintendent, maintenance chief with

five technicians, and one-deep positions for supply, vehicle maintenance, and information /personnel management. Manning is expected to decrease in the future. Assignments average one year and are unaccompanied.

The detachment was established in 1966 near Chunchon, about 40 miles north of today's location.

The "array," three surface instruments, was operated from make-shift trailers and data was recorded by pen and ink helicorders. When a more permanent installation was required in 1968, land was purchased near Wonju, adjoining Camp Long.

The short period array was installed in 1972, the long period array in 1977. The detachment operated 24 hours per day with 35 Air Force personnel. Data was recorded on 16 millimeter film from devolocorders and analyzed using a metric rule.

In 1991, with seismic technological advances, data analysis responsibility shifted from the detachment to the AFTAC headquarters. In July 1995, this trend towards automation continued with the installation of the AFTAC Distributed Subsurface Network at detachments worldwide. Data is now transmitted directly into the AFTAC Operations Center, where AFTAC operators analyze it using state- of-the-art workstations. Detachment 452's contributions to nuclear explosion monitoring include the following:

- 1984 - Last large Russian underground explosion
- 1988 - Great Russian earthquake in Armenia
- 1989 - San Francisco earthquake 1994 - Los Angeles earthquake
- 1994 - Undersea earthquakes near Japan
- 1995 - Chinese underground nuclear explosion

Additionally, the detachment has served as a test bed for new systems development, from TRIAX long period instruments in the 1970's to today's ADSN. Ten major system modifications were installed, refined, and proven at Det. 452 prior to implementation worldwide.

UNIT LOGO

The detachment unit logo was founded many years ago by the detachment personnel. The radio tower and mountain top are indicative of the work they do every day. The atom symbol represents their ties to the US Atomic Energy Detection System. The red and blue background (the Yin/Yang-type symbol) represents Korea itself.

"Wizards" was a name bestowed upon them by their old headquarters, because they were always able to complete the mission, as if by magic, no matter the problems encountered. The waves on the sides represent seismic signals.

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Air Force Technical Applications Center

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LOCATION

Brevard County, where Patrick Air Force Base and Cape Canaveral Air Station are located, is well known as Florida's Space Coast. Located 10 miles northeast of Melbourne and three miles south of Cocoa Beach on a barrier island. Patrick is about a one- and- one-half hour drive away from Walt Disney World, Sea World and other Orlando attractions. It is bounded on the west by the Banana River and on the east by the Atlantic Ocean.

Brevard County, 72 miles long and 18 miles wide, is centrally located on Florida's east coast. Twenty-three communities are situated within its borders. Its population is more than 413,900 people. Five residential areas are plentiful in the vicinity of both Patrick and the Cape. The Space Coast's climate is moderately warm throughout the year, although freezing temperatures are not unknown, especially during December and January. Humidity is often a topic of discussion, and some people say it takes a couple of years in Brevard to get used to it, especially during summer. The list of recreational activities includes fishing in almost every way possible, surfing outside the main gate at Patrick, boating, skiing, swimming, kite flying, nature study, and an abundance of good eating.

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The compass points reflect the assigned exploratory task around the world. The rings around the globe (symbolizing electronic instrument readings) also denote unity of purpose and display electronic measurements accomplished. The elliptical belt symbolizes study of the atmosphere. Left, Staff Sgts. Devin Sappington and Theodore Josue, both Special Equipment Operators, see what it is like in the cockpit of the WC- 135. 7 7 Page 8 9 35

DETACHMENT 45

Air Force Technical Applications Center

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FACILITIES

The detachment is a tenant unit of the 821st Support Group, also at Buckley Air National Guard Base, Colo. The detachment operates hand in hand with 2nd Space Warning Squadron personnel to ensure an optimum system configuration for data collection. The detachment resides within a secure compound where two on-duty operators continually monitor for nuclear event data. These two operators are responsible not only for event detection and evaluation, they also monitor satellite state of health and system operations, reporting any anomalies to the appropriate authorities.

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DETACHMENT 460

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Years following, the unit was renamed Detachment 202 and played a key role in operations against Russian atmospheric tests conducted in the late 1950's and early 1960's. The mid- 1960's brought an expansion of Det. 202's mission and deactivation of four other detachments in Alaska. Det. 202 began to conduct daily missions flown from Alaska to Europe and into the Far East. In support of these air operations, the detachment maintained and operated an analytical radiological laboratory and aircraft sample recovery facility for the next 30 years. With nuclear response expertise, Det. 202 was also responsible for six geographically separated ground- based atmospheric sampling units. During the 1970's, a ground site operation was consolidated with Detachment 202's operations. The detachment was renamed Detachment 460 in 1976, with operations remaining constant until 1992 when an Information Warfare mission was incorporated. Laboratory operations were terminated in 1996, following an era of exciting international progress in gaining signatories on worldwide nuclear treaties. Det. 460 maintains 45 seismic sites in seven arrays across Alaska. The farthest site is located 9,000 miles away. Each site location provides a valuable geological view of the world-wide seismic activity, but also presents unique challenges in transportation and personal protection.

The geological data gathered is the largest single combined data feed to the USAEDS. This data is also shared with the University of Alaska at Fairbanks, a close relationship extending even beyond the seismic mission boundaries. Det. 460 seismic technicians also maintain six geographically separated ground- based atmospheric sampling units. Two automatic cryogenic rectifiers collect gaseous samples; ground filter units collect particulate samples. They also conduct very limited support of TC-135 operations.

The Information Warfare Securities office primarily supports the 354th FW and Pacific Air Force's Aerial Combat Exercise COPE THUNDER. Providing CET and Communications Security/ Operations Security information, the detachment's people train aircrews and support personnel on wartime threats and countermeasures.

The operational environment presents unique challenges. Snowfall begins in early October and remains until the end of May. The temperature during this time varies from above 40 to negative 65 degrees Fahrenheit, offering multiple challenges to personal protection.

Long underwear, parkas and mukluks are daily necessities. With daylight declining through Dec. 21, the detachment has approximately 30 minutes of daylight in the deep winter.

During the summer, Alaska becomes the "land of the midnight sun." Gaining daylight until June 21, midnight looks like 1 p. m. in the continental United States. The mosquitoes, casually referred to as the state bird, are ever- present. The unique challenges at Detachment 460 create an environment of opportunities. The detachment looks forward to meeting each one head-on

with the motto that symbolizes their Information Warfare mission: "In God we trust. All others we monitor, jam, or deceive."

Air Force Order of Battle

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Sources

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