



Attacks Against the Iranian Nuclear Program



PHOTO: MORTEZA YARAHMADI

SHAHR.IR



Dr. Majid Shahriari's car after the attack¹

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Purpose

- ❑ To inform readers of the locations of Iran's six major nuclear sites
- ❑ To inform deploying units, trainers, and scenario writers of the attacks and accidents that have plagued the Iranian nuclear program over the past 12 years
- ❑ To identify the various tactics, techniques, and procedures (TTP) used to assassinate scientists associated with the Iranian nuclear program
- ❑ To identify other methods used to damage the Iranian nuclear program over the past 12 years

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Executive Summary

- Provides a map of the location of Iran's 6 major nuclear sites
- Presents a timeline of the accidents, attacks, and assassinations associated with the Iranian nuclear programs since 2001
- Provides information on the assassination or the attempts on the lives of scientists and other negative incidents associated with the Iranian nuclear program
- Includes civilian experts' speculation about the actor or actors involved with the attempts to derail the Iranian nuclear program
- Provides additional negative events in Iran that may or may not be associated with its nuclear program



Iran's Key Nuclear Sites²



6 Major Nuclear Locations³



Iran's Key Nuclear Sites⁴

- ❑ **Arak: Heavy water plant**
 - First discovered by satellite images in December 2002
 - Reactor expected to become operational by the end of 2013

- ❑ **Bushehr: Nuclear power station**
 - Began in 1974, but abandoned in 1979 after the revolution
 - Revived in the 1990s with Russian assistance
 - In December 2007, Russia began to deliver enriched uranium to the plant
 - Contains 2 pressurized water reactors
 - In September 2010, the plant was connected to the national electrical grid
 - In October 2011, the International Atomic Energy Agency (IAEA) inspected the site; reactor operational

- ❑ **Gachin: Uranium mine**
 - In 2004, mining operations began
 - In December 2010, first domestically produced yellowcake delivered
 - Necessary because Iran is running out of yellowcake purchased from South Africa in the 1970s



Iran's Key Nuclear Sites (Continued)⁵

- ❑ **Natanz: Uranium enrichment plant**
 - In July 2004, Iran resumed uranium enrichment work
 - In September 2007, the plant contained 3,000 centrifuges
 - In 2010, Iran told the IAEA that new construction would begin in March 2011

- ❑ **Parchin: Suspected nuclear weapons development facility**
 - In 2005, a limited IAEA inspection found no proof of any nuclear weapons activity
 - In November 2011, the latest IAEA report stated the site has been used for testing high explosives, which could be used in nuclear weapons

- ❑ **Qom: Uranium enrichment plant**
 - In September 2009, Iran confirmed the existence of the facility
 - An IAEA inspection discovered that construction began earlier on the plant than what Iran previously stated
 - Iran informed the IAEA that the plant would enrich uranium up to 5%, the amount necessary for nuclear power production
 - June 2011, Iran informed the IAEA that Qom plant would begin enriching uranium up to 5% while they stopped 20% fuel enrichment at Natanz
 - In January 2012, the IAEA confirmed that 20% fuel enrichment was already in effect at Qom



Attacks Against the Iranian Nuclear Program



Location of attacks inside Iran⁶



Location of attacks outside Iran⁷



Timeline⁸

- ❑ **July 2001: COL Ali Mahmoudi Mimand, considered the father of the Iranian missile program, is found dead in his office with a bullet in his head.**
- ❑ **15 January 2007: Dr. Ardehir Hassanpour, an Iranian nuclear scientist, dies of “gas poisoning.”**
- ❑ **February 2007: BG Ali-Reza Asgari, knowledgeable about the Iranian nuclear program, disappeared while on vacation in Turkey.**
- ❑ **May/June 2009: Dr. Shahram Amiri, Iranian nuclear scientist, defected or was kidnapped while in Saudi Arabia for the Hajj.**



Timeline (Continued)⁹

- ❑ **12 January 2010: Dr. Massoud Ali Mohammadi, Iranian nuclear physicist, is killed by a bomb strapped to a motorcycle.**
- ❑ **September 2010: Stuxnet computer worm damages Iranian computer system involved in its nuclear program.**
- ❑ **12 October 2010: Mysterious explosion at an Iranian missile base in Khoramabad killed 18 people.**
- ❑ **29 November 2010: Dr. Majid Shahriari, a nuclear engineer, died after a motorcyclist attached a sticky bomb to his car.**
- ❑ **29 November 2010: Dr. Fereydoon Abbasi Davani, nuclear physicist, survived an attack just like the one that killed Shahriari.**
- ❑ **23 July 2011: Gunmen on a motorcycle killed Dariush Rezaei-Nejad, a nuclear scientist, and injured his wife.**



Timeline (Continued)¹⁰

- 8 November 2011: The IAEA published the harshest condemnation of the Iranian nuclear program to date.**
- 12 November 2011: Explosion at a missile base near Malard killed Hassan Moghaddan, the chief of the Iranian missile program and an additional 18 other people, mostly Iranian Revolutionary Guard soldiers.**
- 28 November 2011: Mysterious explosion occurred in Isfahan, a city with three sites related to the Iranian nuclear program; the Iranian government refused to officially acknowledge any explosion.**
- 11 January 2012: Motorcyclist attacked and killed Dr. Mostafa Ahmadi Roshan, a scientist linked to the Iranian nuclear program, with a magnetic bomb.**



Colonel Ali Mahmoudi Mimand¹¹

- Biography: “Father” of the Iranian missile program**
- Date: July 2001**
- Event: Found dead in his office**
 - **Shot in the head**
- Iranian Response:**
 - **The Iranian government never arrested anyone for the crime**
- Outside Response**
 - **No country or group took responsibility for Mimand’s death**

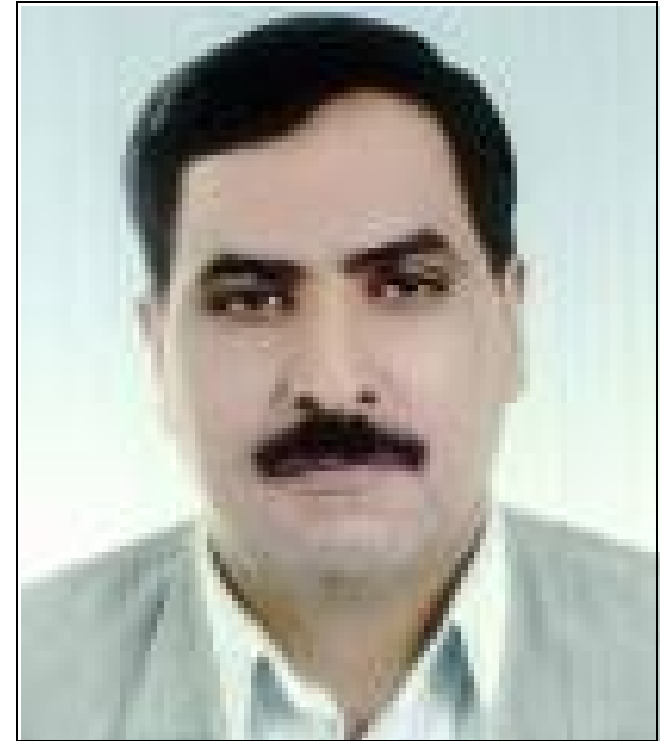


Dr. Ardehir Hassanpour¹²

- ❑ **Biography: Expert and world authority on electromagnetism**
 - 2003: Proclaimed as Iran's leading nuclear scientist in the military field
 - 2004: Awarded the Harazmi Prize, Iran's most prestigious scientific award
 - 2005: Director of the Center for Nuclear Electromagnetic Studies
 - Worked at the Isfahan plant that produces uranium-hexafluoride gas, a raw material required for uranium enrichment at the Natanz nuclear facility
- ❑ **Date: 15 January 2007 (also listed as 18 and 19 January 2007)**
- ❑ **Event: Died at the age of 44 under mysterious circumstances**
 - Iranian media stating various reasons: Gas poisoning, radioactive poisoning, smoke inhalation, or gas suffocation
 - May have stopped cooperating with the government after Mahmoud Ahmadinejad's election as President in August 2005
 - At least two other Iranian scientists have died of apparent poisoning
- ❑ **Iranian Response**
 - Did not announce his death until 21 January 2007
 - Some Iranian officers speculated that Israel's Mossad was involved
- ❑ **Outside Response**
 - Limited speculation that he was leaking information to the Western world
 - STRATFOR proclaimed that the Israeli Mossad assassinated Hassanpour

General Ali-Reza Asgari¹³

- Biography: Iranian Deputy Defense Minister**
 - IRGC General
 - Former Cabinet Minister under Mohammad Khotami
- Date: December 2007**
- Event: Disappeared while visiting Istanbul, Turkey**
- Iranian Response**
 - Claimed that he was kidnapped by Western powers
- Outside Response**
 - Some analysts claimed Asgari defected and provided the CIA with valuable information on the Iranian nuclear arms program
 - Believed to be currently living in the West
 - May have been the source that caused Israel to launch F-15 fighter bombers to shoot 22 rockets on the al-Kibar nuclear facility in Syria



General Asgari¹⁴



Dr. Shahram Amiri¹⁵

- Biography: Malek Ashatar University Professor**
 - UN identified the university as a nuclear research facility
 - University linked to the Iranian Revolutionary Guard Corps (IRGC)

- Date: Late May or early June 2009**

- Event: Defected or was kidnapped while on the Hajj in Saudi Arabia**

- Iranian Response**
 - October 2009: The Iranian Foreign Minister accused the U.S. of complicity
 - 6 June 2010: Videotape on which Dr. Amiri claimed he was kidnapped
 - 12 July 2010: Amiri went to the Pakistani Embassy; wanted to return home
 - Possible “mole” planted by the Iranians to feed mis-information to the U.S.
 - Probably now in Iranian custody for his defection

- Outside Response**
 - 7 June 2010: Another videotape where Dr. Amiri claimed he was happily studying in the U.S.
 - 13 July 2010: Secretary of State, Hillary Clinton, stated that Amiri came to the U.S. freely and could leave any time; Amiri left the U.S. that day
 - 15 July 2010: The U.S. stated that Amiri was on the CIA payroll since 2007
 - Could have been a defector who lost his nerve
 - Possible source for the U.S. learning of the secret nuclear facility at Qom



Dr. Massoud Ali Mohammadi¹⁶

□ Biography: Tehran University Physics Professor

- Specialty was particle and theoretical physics
- Received the Khwarizmi International Award in 2008, Iran's highest award in the science field
- Supposedly involved in Iran's nuclear program
- Worked several projects with the IRGC and knew information about it
- Worked with Mohsen Fakhrizadeh-Mahabadi and Fereidoun Abbasi-Davani, two people on the UN watch list whose travels are monitored
- One of 240 university professors who signed a letter that supported the opposition candidate in the 2009 presidential election



Dr. Ali-Mohmmadi¹⁷



Mohammadi Attack¹⁸

- Date: 12 January 2010**
- Event: Remote-control bomb strapped to a motorcycle blew up near his home**
 - **Motorcycle possibly parked in the same location for three consecutive days**
 - **Killed Mohammadi, age 50, and injured two other people**
- Iranian Response:**
 - **Claimed that U.S. and Israeli agents killed Mohammadi**
 - **Media claimed the bomb was similar to others used by the Mossad**
 - **One colleague claimed that Mohammadi was possibly killed by the Iranian government because of his support for the opposition candidate in the 2009 presidential election**
 - **The government arrested, charged, and convicted “spies” for the attack in August 2011**
- Outside Response: The U.S. State Department called the accusation of its involvement in the assassination absurd**



“Stuxnet” Computer Worm¹⁹

- Computer virus**
- Date: 26 September 2010; the Islamic Republic News Agency (IRNA) confirmed worldwide rumors of the Stuxnet virus**
- Event: Designed to pass through computers until it found the ones controlling the centrifuges involved in the Iranian nuclear program**
 - **Affected at least 30,000 Iranian addresses**
 - **Exploited five different security vulnerabilities**
 - **Affected over one million Iranian computers**
- Iranian Response:**
 - **Claimed that the attack would not affect Iran’s first nuclear power station in Bushehr**
 - **IAEA stated that Iran stopped enriching uranium in early November 2010, most likely due to the virus**
 - **Assembled team led by Dr. Majid Shahriari to combat the virus**
- Outside Response:**
 - **Iran would most likely blame Israel or Germany for the virus**
 - **Analysts suggest the virus code complexity suggests creation by a nation-state and not any organized crime group or hacker**
 - **New York Times says U.S. and Israel created and launched Stuxnet**



Explosion-Khorramabad²⁰

- Date: 12 October 2010**
- Event: Explosion at IRGC base near Khorramabad**
- Iranian Response**
 - **Claimed it was at an ammunition depot**
 - **Admitted that it killed at least 18 people**
- Outside Response**
 - **Western analysts believed that the base housed an underground stockpile of Shahab-3 ballistic missiles—the missile on which Iran wants to place a nuclear warhead**
 - **French newspaper reported that the Israelis caused the explosion**



Dr. Majid Shahriari²¹

- ❑ **Biography: At age 35, managed a major project for Atomic Energy Organization of Iran (AEOI)**
 - Project may have involved neutron particles
 - Taught at the Supreme National Defense University operated by the Iranian Army
 - Published dozens of reports and peer-reviewed articles on nuclear research
 - Co-author of at least five articles with the AEOI chief
 - Worked closely with the IRGC to develop a nuclear warhead
 - Headed the team combating the Stuxnet computer virus



Shahriari photo used on many Muslim websites²²



Shahriari Attack²³

- Date: 29 November 2010; 0740 hours local time**
- Event: Two motorcycles approached Shahriari's car in Tehran traffic**
 - One rider placed a magnetic bomb on the door (window) where Shahriari sat
 - The second rider on the cycle fired shots at Shahriari as they drove off
 - Bomb blew up killing Shahriari while wounding his wife and driver
 - Conflicting report says the bomb exploded by remote detonation just as Shahriari sat down in the vehicle
- Iranian Response**
 - Accused the U.S. and Israel's Mossad of the attack
 - Vowed that the attack would not deter the Iranian nuclear program
- Outside Response**
 - Attack was the day after leaked State Department documents indicated that Arab leaders urged the U.S. to attack Iran's nuclear program



Dr. Fereydoon Abbasi Davani²⁴

- Biography: Nuclear laser expert**
 - Linked to Iran's secret nuclear activities in 2007
 - On the UN's travel ban and asset freeze list
 - Close ties to the IRGC; member since 1979
 - One of the few specialists that can separate isotopes

- Date: 29 November 2010; before 0800 hours local time**

- Event: Attack within 15 minutes of the attack on Shahrani**
 - Two motorcycles with two riders each approached Abbasi's car in Tehran traffic
 - Rider placed a magnetic bomb on the door nearest Abbasi and sped away
 - Abbasi stopped the car and got out along with his wife; got seven feet away
 - Some reports indicate that the passenger on one motorcycle fired shots
 - Both were slightly injured in the attack

- Iranian Response**
 - Accused the U.S. and Israel's Mossad of the attack
 - On 13 February 2011, Abbasi appointed to the head of the AEOI; a non-traditional appointment as his expertise is in weapons not civilian uses for nuclear research

- Outside Response: U.S. denied involvement in the attack**

Dariush Rezaei-Nejad²⁵

- **Biography: 35-year old nuclear scientist**
 - Initially, the Iranian foreign minister claimed he was a PhD candidate and not involved in any nuclear research
 - Attended Malek-e Ashtar University, operated by the IRGC and the Iranian Ministry of Defense
 - Supposedly, he worked for the AEOI
 - Work possibly involving nuclear detonators or neutron transport
 - Later, the Iranian Fars News Agency stated that his work focused on the design of electric on/off keys, essential for nuclear weapons development



Nejad²⁶



Nejad Attack²⁷

- Date: 23 July 2011, 1630 hours local time**
- Event: Nejad entered his garage with his wife in Tehran**
 - Two men on motorcycles approached and called out his name
 - When he turned around, the motorcyclists fired five shots; Nejad was killed while his wife received wounds from the gunfire
 - Neighbor saw insurance card indicating armed forces coverage
- Iranian Response**
 - Accused the CIA, Mossad, and Great Britain's MI-6 for the attack
 - Iranian media stopped referring to Nejad as a nuclear scientist/expert and made him out to be a university electronics graduate student
 - Iran admitted that Nejad was involved in the country's nuclear program
 - Erroneous reports stated that it happened outside a daycare center
- Outside Response:**
 - U.S. denied killing Nejad
 - Germany's *Der Spiegel* reported it was a Mossad operation



Explosion-Malard²⁸

- ❑ **Date: 12 November 2011**
- ❑ **Event: Explosion (possibly two blasts) occurred at the Bid Ganeh IRGC Missile Base, approximately 25-30 miles west of Tehran near Malard**
 - **General Hassan Moghaddan, the senior IRGC missile force commander killed**
 - **Rattled windows 30 miles away**
 - **16 other IRGC members killed and another 15 wounded (death numbers range from 17-30 and wounded from 15-16)**
- ❑ **Iranian Response:**
 - **Iran called it an ammunition depot accident during “routine” operations**
 - **Moghaddan’s brother claimed it was during a missile test; later retracted**
 - **Iran only allowed six paramedics onto the IRGC base to treat the wounded**
- ❑ **Outside Response:**
 - **The Mujahedin-e Khalq (MKO), a dissident group said it was a missile base**
 - **Accident possibly occurred when trying to change the Shahab-3’s warhead to accept a nuclear payload, capable of reaching Israel**
 - **No explanation for Moghaddan’s presence if everything was “routine”**
 - **U.S. analyst said it was a Mossad mission in conjunction with the MKO**
 - **Satellite photo shows extensive damage to the missile site**



General Moghaddan²⁹



Explosion-Isfahan³⁰

- Date: 28 November 2011; 1440 hours local time**
- Event: Huge explosion takes place in Isfahan, a city that houses three nuclear facilities**
- Iranian Response:**
 - **Isfahan provincial governor said it took place during military exercises at a military airbase**
 - **Another “official” report said it was a fireball at a gas station**
 - **Fars, an IRGC-linked news site, took down the initial report off the website that contained a picture from a previous explosion**
 - **Mehr, a semi-official news agency, said that nothing happened in Isfahan**
- Outside Response**
 - **The next day, Hezbollah forces in Lebanon fired four 122-mm Katyusha rockets into Israel, the first attack like it in over 2 years**
 - **Former Israeli general says explosions at the nuclear sites were not accidents**

Dr. Mostafa Ahmadi Roshan³¹

- ❑ **Biography: 32-year old deputy director of the Natanz nuclear enrichment facility**
 - Graduate of the Sharif University of Technology in Tehran
 - Chemist by trade
 - Possibly built polymeric layers for gas separation
 - Supposedly in charge of purchasing supplies and equipment
 - Also taught at a technical university



Iranians protesting the death of their nuclear scientists including Roshan³²



Roshan Attack³³

- Date: 11 January 2012; 0820 hours local time**
- Event: Two riders on one motorcycle placed a magnetic bomb on the car during rush hour traffic while Roshan was on the way to the university where he lectured**
 - **Similar to the attacks 14 months ago that killed Shahriari and wounded Abbasi**
 - **Roshan killed; driver/bodyguard died later; one other passenger wounded**
- Iranian Response**
 - **Placed blame on Israel and the U.S.**
- Outside Response**
 - **Israel did not take credit, but expressed no sympathy for the Iranians**
 - **U.S. condemned bomb attack on Roshan and stated that the U.S. had no role in the attack**
 - **Analysts believed the Mossad was the most likely candidate for the attack**
 - **U.S. Journalist stated it was a joint Mossad/MKO mission**



Other Attacks (not all acknowledged)³⁴

- February 2000: Iran received flawed nuclear blueprints
- Plane crashes:
 - December 2002: 44 people, mostly aeronautical engineers, headed to Isfahan, the site of a nuclear research facility
 - February 2003: 302 people, but the IRGC cordoned the area off from view
 - January 2006: IRGC general and 10 other IRGC officers
 - February 2006/March 2007: three or four planes carrying IRGC nuclear security force personnel
- April 2006: Two transformers exploded at the Natanz enrichment facility that damage 50 centrifuges nearby
- January 2007: Iran learned that European-purchased centrifuge parts for its nuclear projects did not work
- February 2007: Car bomb killed 18 IRGC members riding a bus
- November 2008: Iran discovered parts purchased for its nuclear projects were defective
- October 2009: Twin bombings killed five IRGC commanders
- 1 September 2011: Duqu computer virus found; similar to Stuxnet



Analyst Assessment

- ❑ The Iranian nuclear program has suffered a number of setbacks due to faulty parts and equipment, key personnel defections or assassinations, explosions—accidental or the result of sabotage, and possibly the execution of dissident scientists by the Iranians.
- ❑ Government officials from Israel, the U.S., and other Western countries usually do not acknowledge their participation in most of the activities directed against the Iranian nuclear program.
- ❑ Western analysts (along with the Iranian government) often believe that the Mossad or the CIA is behind most of the attacks against the Iranian nuclear program.
- ❑ Publically, the U.S. expresses sympathy upon the death of any Iranian scientist associated with the Iranian nuclear program.
- ❑ On 20 December 2011, Secretary of Defense Leon Panetta stated that Iran could possess a nuclear weapon in a year or less. If true, this could cause other problems:³⁵
 - Reduces the estimate for Iran to obtain nuclear weapons by 75%.
 - Saudi Arabia and Turkey will both develop their own nuclear weapons.



Variable Implications

(Using PMESII-PT OE Variables)

Political:

- Israel will not allow Iran to obtain a nuclear weapon and will do almost anything to ensure its own security.
- The U.S. will not allow Iran to obtain a nuclear weapon and will work with Israel, the Western world, and Middle Eastern nations to prevent Iran from obtaining a nuclear weapon.
- If Iran obtains a nuclear weapon, Saudi Arabia and Turkey will also develop their own nuclear weapons, which could begin a Middle East nuclear arms race.

Military:

- The IRGC will continue its current role in Iran's pursuit of nuclear weapons.
- The IRGC will continue to work on its missile forces to increase range and to make its missiles capable of a nuclear warhead.



Variable Implications

(Using PMESII-PT OE Variables)

Economic:

- Iran's possession of a nuclear weapon could hold the world hostage if the country threatens to use it at the strategic Strait of Hormuz, the world's lifeline to Middle Eastern oil.
- Iran will continue to put a significant portion of its GNP into its nuclear program as it believes it has earned or deserves nuclear weapons.

Social:

- The Iranian people's self-esteem is based on their belief that they are a superior people; that belief makes them feel that their country has a right to nuclear weapons.
- As long as the nuclear program does not cause governmental subsidies to drop, the Iranian people will continue to support the nuclear program.



Variable Implications

(Using PMESII-PT OE Variables)

Information:

- Iran will say anything about the setbacks in its nuclear program if it makes the Western world look bad.
- Iran will continue to blame the U.S., Israel, and the Western world for any negative incident in its nuclear program whether the cause was external or internal to their country.

Infrastructure:

- Iran will continue to build the infrastructure necessary to support its nuclear programs; newer sites will probably be built underground in an attempt to prevent the IAEA or the U.S. from finding them.
- Nuclear program infrastructure is difficult to hide, so the Western world should eventually find any new sites that Iran decides to build.



Variable Implications

(Using PMESII-PT OE Variables)

Physical Environment:

- A nuclear accident could cause extensive damage to the environment.
- To avoid causing an environmental disaster, any attack by an outside force on nuclear infrastructure would need to be carried out before nuclear material was present in the building.

Time:

- The Secretary of Defense stated that Iran could have a nuclear weapon in less than a year unless something is done to halt its progress.
- Other analysts believe that Iran is closer to four years away from the completion of a nuclear weapon.
- Whatever the time frame, Israel and the Western world will not allow Iran to obtain a nuclear weapon.



Training Implications

- When Special Operations Forces are involved with training at one of the dirt CTCs, they could be given a mission to conduct a deep reconnaissance of a suspected nuclear site.**
- The CTCs could develop a scenario involving a nuclear accident or the discharge of radiation due to the bombing of a nuclear site.**
- The CTCs could develop a scenario where NBC units must reconnoiter a suspected enemy nuclear site in their AOR.**



OEA Team Threat Report



POCs

OEA Team
913-684-7920 (COMM)
552-7920 (DSN)

TRADOC G-2 Intelligence Support Activity (TRISA)
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OEA Team Threat Report



AKO

<https://www.us.army.mil/suite/portal/index.jsp>
(<https://www.us.army.mil/suite/folder/11318389>)

Threat Products: AKO "Easy-Link"

Contemporary Operational Environment and Threat Integration Directorate

The screenshot shows the AKO Army Knowledge Online portal. On the left is a login form with fields for Username and Password, and a Login button circled in red (1). Below it is a CAC Login section. The main content area shows a file explorer view of the TRISA-CTID folder. A red box highlights the 'Files' tab (2). A search bar is visible, and a search result for 'TRISA-CTID' is circled in red (4). A red arrow points from the search bar to the search result. A third red box highlights the search bar area (3).

1. Login
2. "Click" Files
3. Search to:
TRADOC G2
TRISA-CTID
4. "Click" & Find !