



Comanche—Critical Enabler for the Objective Force

The United States military is at an important crossroads in deciding how best to defend national interests. Do we continue with systems that served us well, or move forward with a transformation to new systems required to meet the changing environment?

Past leaders faced similar decisions. The machine gun had a major impact on how wars were fought, just as the tank did in World War II. Vietnam saw the evolution to helicopters and air assaults; and Operation Desert Storm again proved the value of armored forces working in concert with artillery and air power. Afghanistan has shown how information operations, special operations forces, precision air strikes and infantry can defeat an unconventional threat. Today, we debate transformational systems that will continue to ensure national interests are protected.

The United States is evolving its military strategy to deal with changing threats to the nation and to our allies and friends. The evolving National Military Strategy has four goals:

- Assure allies of U.S. capability to fulfill its security commitment;
- Dissuade adversaries from operations that threaten U.S./allies' interests;
- Deter aggression by deploying forward the capacity to swiftly defeat attacks;
- Decisively defeat any adversary if deterrence fails.

The Quadrennial Defense Review (QDR) Report (30 September 2001) describes a “capabilities-based” force—a focus on how an adversary might fight rather than specifically who the adversary might be, or where the war might occur. The QDR calls for a wide range of systems that provide the United States options to deal with

threats that range from terrorism to general war. These options include tactical level aerial armed reconnaissance, consisting of manned helicopters and unmanned aerial vehicles (UAVs), to serve as the “eyes” and the “guide” for precision munitions.

The U.S. Army plans to implement the new strategy with its “Objective Force.” *U.S. Army White Paper: Concepts for the Objective Force* defines this force as “full-spectrum”—organized, manned, equipped and trained to be more strategically responsive, deployable, agile, versatile, lethal, survivable and sustainable across the spectrum of conflict. This force will rely heavily on information operations to prosecute the strategy. Objective forces will develop situations out of contact with the threat, employ non-line-of sight and direct fires, and rapidly maneuver to defeat the threat at a time and place of our choosing.

New “Transformational” systems are required to fully implement this strategy. Systems that will enable Objective Force concepts include Comanche and Future Combat Systems (FCS). Comanche is now in advanced development with one prototype flying. FCS is in the early stages of development. Both systems are scheduled to start fielding in 2009.

Objective Force information operations will provide the common situational understanding to enable smaller units to see and understand the threat at greater ranges, and to enable long-range precision fires in support of strategic, operational and tactical maneuver.

Being able to operate faster than the threat force can react, and attacking the threat before he can close within effective range of our forces will enable tactical operations success. Key tenets of this concept and Comanche’s contribution to each include:



- **See First:** To detect, track and identify threat units using sensors, combined with air and ground reconnaissance units, from outside the enemy’s acquisitions ranges using low observable technology. Comanche uses organic sensors and data feeds from other sensors to provide proactive and actionable information to the commander via the “common operational picture” (COP).
- **Understand First:** To rapidly anticipate threat intentions via the COP. Comanche databases compile data from sensors and present a common operational picture to the crew, using multiple data links including beyond-line-of-sight communications to deliver this common operational picture to ground forces and/or joint forces.
- **Act First:** To take action before the threat can react. Comanche, with the “crew in the loop,” contributes to this by continually updating the “see first” through real-time observation, target acquisition, direct precision fires, and coordinating tactical air strikes and indirect precision fires.
- **Finish Decisively:** To destroy the threat’s ability to fight. Comanche maintains contact to ensure the “see first” cycle is continuous, attacks fleeting targets with direct/indirect fires, and provides real-time battle damage assessment.

Comanche is a “system of systems” that significantly transcends how one normally thinks of tactical helicopters. Comanche capabilities include:

- **Sensors:** Infrared and radar targeting sensors fused to a common cockpit display that detects targets over 200 percent farther than current systems.
- **Computer Databases:** Data gathered by Comanche sensors and imported from other sensors, e.g., UAVs, Joint Surveillance Target Attack Radar System (Joint STARS), and processed and displayed.
- **Communications:** Satellite communication (SATCOM)-provided non-line-of-sight interoperability with ground maneuver/field artillery units, special forces and tactical aircraft; Link 16-provided joint connectivity with air and naval forces.
- **Minimize Threat Radars:** The RAH-66 radar signature—35 percent smaller than OH-58D Kiowa and almost 300 percent smaller than the AH-64D Apache Longbow.
- **Minimize Threat Infrared Systems:** Cooled engine exhausts and thermal “skin,” significantly reducing infrared images, i.e., four times smaller than Apache Longbow.

- **Comanche Weapon Systems:** “Tailorable” combinations of Hellfire missiles, 20mm “gatling gun” and rockets (e.g., up to 14 Hellfire “fire and forget” missiles, 500 rounds 20mm or 38 rockets). Open architecture allows Comanche to integrate future weapon systems designed for the Objective Force.
- **Deployment:** Self-deployable up to 800 nautical miles; deployable over water aboard naval vessels; and deployable on air transport (C-5 and/or C-17) aircraft and ready for combat operations four hours after arrival.

Comanche will make a significant contribution to sustainment operations:

- Operations tempo: Sustained rate of 6 hours/day vs. 2.5 hours today.
- Reduced logistics footprint:
 - Comanche will require two vs. current three levels of maintenance;
 - Comanche, compared to Apache Longbow, will have 48 percent fewer deployed maintenance personnel, an 84 percent decrease in special tools and equipment, and a 69 percent reduction in maintenance man-hours per flight hour.
- Rearm/refuel: Comanche can be rearmed and refueled by three soldiers in 20 minutes.

Comanche represents about 50 percent savings in lifecycle operation and support (O&S) costs:*		
Aircraft	Aircraft with Radar	Estimated Flying Hour Costs
RAH-66 \$ 7.9 billion	\$ 8.1 billion	\$ 1,815
AH-64D \$14.8 billion	\$16.8 billion	\$ 3,900
* Aircraft flying 240 hours per year; 900 aircraft fleet; life cycle = 20 years.		

Notional Military Scenarios:

- **Operation Anaconda, Afghanistan**
 - **Scenario:** U.S. forces identify a terrorist base camp in the mountains of Afghanistan. The threat is well entrenched in caves/fortified positions. A ground combat force must rely on airmobile assault for access.
 - **Concept of Operation:** U.S. forces employ UAVs, Comanche and other intelligence, surveillance and reconnaissance (ISR) assets to

develop the situation. Air strikes support the insertion of the infantry airmobile assault. Supporting fires include tactical aircraft, Apache Longbow helicopters and mortars.

- **Comanche Operations:** Two air cavalry troops (20 Comanches), along with crews and three days of supplies, are loaded on five C-17 aircraft in Germany. Within 24 hours, the aircraft are off-loaded in Afghanistan; four hours later, Comanche is ready for combat operations.

Comanche has the power to operate above 10,000 feet; however, a forward area refueling point (FARP) permits more time on station.

Comanche conducts reconnaissance in the objective area to help the Commander “see first” and develop the common relevant operational picture (CROP). UAVs operate under control of Comanche crews to extend surveillance time, and pilots redirect UAV orbits/receive real-time UAV video into the Comanche Target Threat Manager database. Comanche uses its sensors to take video of potential landing zones and threat activity, and to pinpoint location of caves/fortifications. Collected data is presented to pilots as a common picture and can be provided to other members of the combined-arms team

Comanche, networked to other sensors, provides security for the air assault, engages threat forces in the landing zone, provides direct fire support to crews of downed helicopters, calls in air strikes, and continually updates the CROP for the commander.

As the fight progresses, Comanche conducts reconnaissance of routes leading into/out of the objective area, engages threat forces attempting to flee the area, calls Apache direct fires, directs air strikes, provides real-time battle damage assessment, redirects UAV coverage areas, and provides infantry units real-time updates. Communications include Enhanced Position Location Reporting System (EPLRS) to ground forces, Link 16 to joint fighters and bombers, and SATCOM to higher headquarters.

With on-board navigation and sensors, Comanche can continue these operations during the day or at night, and under reduced visibility conditions, using advanced second-generation forward looking infrared (FLIR), digital terrain maps and Global Position System (GPS).

- **Peace Enforcement**

- **Scenario:** Terrorists are attacking oil moving from the Caspian Sea area via a pipeline from Azerbaijan to Turkey and on into Europe. The terrorists, operating out of a “nongoverned area” have increased attacks within Azerbaijan, and local military forces have been unable to curtail them. Azerbaijan asks NATO to restore order, and NATO agrees to deploy a force. The United States agrees to provide the early-entry force, with NATO providing follow-on forces.
- **Concept of Operation:** The United States commits ISR assets (UAVs and airborne sensors), commences deployment of an Interim Brigade Combat Team (IBCT) stationed in Germany, and orders two air cavalry troops (20 Comanches), along with twelve UH-60 utility helicopters—two of which are Army Airborne Command and Control Systems (A²C²S)—and five CH-47 Chinook cargo helicopters to self-deploy from Germany to Azerbaijan.
- **Comanche Operations:** Comanche self-deploys with three refueling stops and arrives in about 36 hours.

While en route, Comanche crews receive updated intelligence reports from deployed UAVs and airborne sensors, and from the Joint Task Force (JTF) headquarters via SATCOM.

The air cavalry troops conduct persistent surveillance of the terrorist stronghold. Comanche takes control of UAVs to extend the surveillance area and directs each UAV to conduct specific surveillance tasks. Comanche crews conduct reconnaissance of other areas and continue to receive a direct video feed from the UAVs and off-board sensor updates from other ISR assets. Key to this mission will be the Comanche’s ability to tie into the Integrated Broadcast Service intelligence feeds to gain information from other assets within the area of operations. This will provide the RAH-66 Comanche crew with unprecedented situational awareness and will link the ground force commander to additional intelligence information. The RAH-66 crews can either send high priority spot reports to the commander or store individual reports in databases for subsequent call-up on the tactical situation display page. This constantly updated “common operational picture” can be transmitted to other units in the area of operation.

Comanche crews could engage fleeting terrorist targets such as moving vehicles. Comanche crews could also work directly with the IBCT headquarters or transmit data to IBCT companies in the area of operations.

- **War in Southwest Asia**

- **Scenario:** A nation in the region is threatening peace and stability by continuing to develop weapons of mass destruction (WMD), support terrorist organizations, and pose threats to others. The aggressor conducts a surprise attack and seizes an oil field and port facilities. Countries seek military assistance; the UN and NATO, including the United States, agree to provide military forces for a regime change.
- **Concept of Operation:** Military forces move into the aggressor nation from the north and from the south. NATO forces, operating from Central Europe bases, secure the northern portion; a U.S.-led coalition secures the southern portion. An air campaign will be followed by a ground campaign.
- **Comanche Operations:** Germany-based Comanche aircraft self-deploy to forward operating locations. Continental United States (CONUS)-based Comanches assigned to the lead division move, along with their crews and three days of supplies, on four C-5 aircraft directly to a friendly nation adjacent to the southern area of operations. Follow-on Army division Comanches move by sealift or C-5. Two air cavalry troops (20 Comanches) travel on a U.S. aircraft carrier.

Comanche, working with UAV and other airborne sensors, establishes an ISR screen forward of

arriving units. Comanche receives off-board sensor data to integrate with Comanche sensors. Comanche provides integrated situational updates to the JTF.

When hostilities commence, Comanche penetrates threat airspace undetected, identifies targets with its long-range sensors before the targets can detect Comanche, and engages with Hellfire “fire and forget” missiles. Comanche crews also directly update aircrews via Link 16, and provide real-time battle damage assessment via SATCOM or UAV data relays.

Comanche supports the land operation by working closely with Special Forces teams and combined-arms maneuver units, calling direct and indirect precision fires on observed targets and continually updating situational assessments.

NOTE: None of these notional scenarios is meant to suggest that Comanche alone can win tomorrow’s fights. Each highlights Comanche role as a part of the joint/Army force.

Summary

Comanche is more than “just another helicopter.” It is the first component of the Army transition to the Objective Force. Comanche, a system of systems, will be a significant node in the larger “system of systems” known as “Future Combat Systems” (FCS), and will be a significant contributor to the Army’s new approach to warfighting. Comanche will also lower operational and support costs, while providing a significantly higher number of operational hours each warfighting day. Comanche is the lead system in the Army’s transition to the Objective Force.