



## *Operation Enduring Freedom* Camouflage Pattern: A Rapid Response to a Complex Need

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**T**he evolution of uniforms for America's fighting men and women has a vast and storied past. Each uniform is indelibly marked by the era in which it clothed our warriors. From the rich and lustrous blue, scarlet, and yellow coats of the Revolutionary War to the subdued, earthy patches of modern-day camouflage, the Army has continued through the years to provide clothing as a means of protecting Soldiers on the battlefield.

Wearing MultiCam, PFC Joshua E. Tomblin, SSG Kevin J. Imholt, and 1LT Thomas J. Goodman, with 3rd Platoon, Chosen Company, 12th Infantry Regiment, 4th Brigade Combat Team, patrol through the Wata Poor district, Afghanistan, Feb. 7, 2010. (U.S. Army photo by SPC Albert L. Kelley, 300th Mobile Public Affairs Detachment.)

Woven deep into the history of our warfighting uniforms is Army acquisition, which over the past 50 years has been steadfast in enabling the most effective equipping of the Nation's forces while maintaining an internal culture of constant organizational improvement. The Army acquisition system has successfully developed and rapidly fielded state-of-the-art improvements in Soldier uniforms and equipment, most recently under the auspices of Program Executive Office (PEO) Soldier.

Now another chapter in the history of uniforms is being written with the introduction of a new uniform for U.S. forces fighting in *Operation Enduring Freedom* (OEF). On Sept. 16, 2009, the Army unveiled a 4-phase plan to evaluate and decide which camouflage pattern or patterns would best serve the concealment needs of Soldiers serving in OEF. Ten and a half months later, the Army fielded the first unit with a suite of uniforms and accessories in the new OEF Camouflage Pattern (OCP), in a rapid yet rigorous process of study, analysis, planning, and procurement.

This expedited but well-researched action to purchase and field Fire Resistant Army Combat Uniforms (FR ACUs) and associated equipment

in a new camouflage pattern grew out of the Army's continuing commitment to provide Soldiers with the equipment they need to be as lethal and survivable as possible in any operating environment. Effective concealment has been of particular concern in Afghanistan, with its diverse environments of mountains, woodland, and high desert. In OEF, Soldiers often travel through multiple environments in a single mission.

The 4-phase plan included both immediate action, to provide concealment capability to two battalion-size elements in OEF, and a deliberate, thorough evaluation of camouflage alternatives for Soldiers in all regions and terrain types of Afghanistan. The end result was that in late July 2010, the Army began providing Soldiers in OEF with a camouflage pattern specifically chosen for the multiple operating environments of Afghanistan. The fielding began with a small headquarters detachment preparing to deploy to OEF and ramped up in August with two deploying brigade-size elements. In December 2010, fielding will move to Soldiers who are deployed to OEF with more than 120 days remaining in theater.

The fielding of uniforms and equipment in the OCP, known commercially as MultiCam, involves providing 23

different uniform and equipment items, including body armor, rucksacks, helmet covers, and even knee and elbow pads, for about 10,200 Soldiers in FY10 and an anticipated 74,500 Soldiers in FY11, not including spares and sustainment quantities. The cost is approximately \$174 per uniform, with a basis of issue of four per Soldier, plus an estimated \$4,208 per Soldier for associated equipment.

A process that ordinarily would take at least 12 months—to develop, purchase, and field one item—was compressed into less than 8 months for an entire suite of items, so that the Army could be responsive to what Soldiers saw as a pressing need, and also be responsible for the science underpinning the decision and its fiscal impacts.

### Phase I (Immediate Action)

In fall 2009, two battalion-size units serving in OEF received the FR ACU in a pattern other than the standard Universal Camouflage Pattern (UCP) that was chosen when the ACU was introduced in June 2004. They also received Organizational Clothing and Individual Equipment (OCIE) that blended with each pattern.

One unit (2nd Battalion, 12th Infantry Regiment) received uniforms and OCIE in the MultiCam pattern, while the other (3rd Squadron, 61st Cavalry Regiment) received uniforms in UCP-Delta (UCP-D), a variant of UCP that adds the Coyote Tan color and uses less of the lighter sand and gray colors than in the UCP.

These uniforms in alternate camouflage patterns were in addition to the Soldiers' standard-issue FR ACUs in UCP. Unit commanders were responsible for deciding which uniform would be best suited to a given mission.

The Soldiers in the two battalions would provide essential feedback on their experiences with the MultiCam,



Members of the Army's camouflage assessment team wear the six different camouflage patterns they evaluated. From left, the patterns are: AOR-2, UCP, MultiCam, Desert Brush, UCP-Delta, and Mirage. The photo was taken in Khost province, Afghanistan, close to the Pakistan border, in late October 2009. (Photo courtesy of Naval Research Laboratory, PEO Soldier, and NSRDEC.)

UCP-D, and UCP uniforms and how each blended into Afghanistan's various operational environments. But that was just one set of data that the Army planned to gather. While Soldiers already liked the MultiCam pattern, the choice of camouflage for Afghanistan could not be based on anecdotal reports of Soldiers' preferences. It had to be grounded in a carefully planned and executed process of gathering information and evaluating alternatives in theater. This action satisfied a requirement from Congress that DOD move immediately to provide Soldiers deployed to *OEF* with a camouflage pattern suited to the environments of Afghanistan.

## Phase II (Building the Science)

At the same time as the Soldiers in the two battalions were testing the two alternate camouflage patterns, an Army camouflage assessment team went to Afghanistan in October 2009 to gather photos and information with maximum operational realism.

The team included representatives from PEO Soldier; Army G-4; U.S. Army Maneuver Center of Excellence; U.S. Army Special Operations Command; the Asymmetric Warfare Group; U.S. Naval Research Laboratory; and the U.S. Army Natick Soldier Research, Development, and Engineering Center (NSRDEC).

The team went outside the wire to conduct its assessment, providing its own security so as not to distract from the warfighting mission. The assessment, which encompassed eight different environments of Afghanistan, focused on six different camouflage patterns with OCIE that blended with each pattern. The patterns were:

- UCP with UCP
- MultiCam with MultiCam
- UCP-D with UCP
- Mirage with Mirage
- Desert Brush with Coyote
- AOR-2 with Ranger Green



U.S. Army Soldiers with 2nd Platoon, Company D, 2nd Battalion, 12th Infantry Regiment, 4th Brigade Combat Team, 4th Infantry Division, move from cover to search an area near Sundray village, Afghanistan, Feb. 18, 2010. (U.S. Army photo by SSG Gary Witte.)

NSRDEC used the information and more than 1,000 color-calibrated photos to develop a photosimulation study comparing the six patterns' performance in providing concealment in various environments at various distances. The colors and distances in the photos were painstakingly calibrated against scientific standards in developing the study.

The photosimulation study was administered to about 750 Soldiers who had recently served in Afghanistan. The Soldiers' input was both objective and subjective, comparing detectability (at what range could the Soldiers detect the uniform), blendability, and rank-order blending.

The bottom line: MultiCam was never found to be unsuited to any terrain or environment and ranked highest in the photosimulation detection and blending results. UCP-D, which ranked second in the same analyses, was unsuited to certain terrains or environments.

The results of the photosimulation study, along with the surveys of Soldiers in the two Phase I battalions, provided

a body of knowledge, from a wide range of experienced Soldiers viewing objective scenarios, that helped the Army empirically measure how the various camouflage patterns in the study blended with the various environments.

## Phase III (Operation Enduring Freedom Camouflage)

Based on an analysis of the Phase I and II data, the Army evaluated whether to produce and field alternate uniforms and OCIE to selected units in specific regions of *OEF*, or to all units in *OEF*. Senior Army leaders were briefed on possible alternatives in early 2010.

In February 2010, Secretary of the Army (SecArmy) John McHugh announced that the Army would provide combat uniforms in the MultiCam pattern to all Soldiers deploying to *OEF*. The industrial capacity already existed to manufacture the uniforms; now the procurement process could begin.

More than 30 industry partners were involved in transitioning more than 30 different types of uniforms and equipment from the UCP style to the OCP style. PEO Soldier used various contract

vehicles including the Materials and Development contract, mandatory sources on the Federal Procurement List, and Full and Open Competition contracts to source and meet requirements, until Defense Logistics Agency Troop Support (DLA TS) can effectively transition existing contracts or award new contracts for sustained production of OCP items.

To manage and meet the requirements and timelines under the SecArmy's directive regarding the fielding of OCP, the PEO Soldier team conducted weekly internal Integrated Product Team meetings to synchronize technical development and procurement actions. Additionally, PEO Soldier met biweekly with DLA TS to review transition of technical packages, supply request packages, and DLA TS contracting strategies.

The first unit fielded with OCP uniforms received them by the end of July 2010, one month ahead of schedule. This effort continued through the remainder of FY10 and into FY11, with more than 10,000 Soldiers fielded through the end of the fiscal year and more than 72,000 Soldiers expected to receive the new uniforms and gear through FY11. Fielding will take place both in theater and in CONUS, further demonstrating the team's commitment to ensuring that our Soldiers have the best equipment for today's fight.

#### Phase IV (Long-Term Plan)

The Army is now implementing Phase IV of its plan for camouflage, the evaluation of long-term ACU camouflage options for all Soldiers. The U.S. Army Training and Doctrine Command has the lead to develop a performance-based requirement for future uniform and OCIE camouflage. That requirement could result in multiple camouflage patterns for the FR ACU, or a universal pattern.

On June 29, 2010, the Army released a Sources Sought notice inviting industry



PFC John D. Macintosh, a gunner with 3rd Platoon, Chosen Company, 12th Infantry Regiment, 4th Brigade Combat Team, talks with a young resident of the Wata Poor district, Afghanistan, while on patrol Feb. 7, 2010. (U.S. Army photo by SPC Albert L. Kelley, 300th Mobile Public Affairs Detachment.)

to submit candidates for a family of three different camouflage patterns (woodland, desert, and transitional) and one pattern for OCIE that blends with all three patterns. "Family" is defined as being "of the same or similar geometry with coordinating color palettes to cross the global operating environments."

This family of patterns could enable the Army, as one option, to issue the transitional (also thought of as universal) pattern to all Soldiers while issuing the woodland and desert patterns to Soldiers operating in those environments.

The evaluation methods used earlier, both photosimulation and field testing, will be applied to the candidate patterns as well, underscoring the validity and utility of the Phase II effort. The objective is to develop a new family of patterns, again based on rigorous testing and evaluation, for issuance to Soldiers within 2 years.

Camouflage alternatives represent one facet of the Army's efforts to improve the ACU, based in large part on feedback from Soldiers. The Army has made more than 26 improvements to

the ACU since it was first fielded in 2004. PEO Soldier will continue to evaluate the form, fit, and function of our Soldiers' uniforms and make improvements as needed, with invaluable feedback from Soldiers who are speaking from experience on the battlefield.

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