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Joint Non-Lethal Weapons Program



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Improved Flash-Bang Grenade Team Wins Air Force Science Award

By Jennifer Bowen
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(Left to right) 1st Lt. Allan Nagy, computer engineer; 1st Lt. Katharine Sheldon, human effects lead; Gen. Carrol H. Chandler, Vice Chief of Staff of the U.S. Air Force; Lt. Gen. Mark D. Shackelford, Military Deputy for the Assistant Secretary of the Air Force for Acquisition; Dr. Robert Thomas, principal research physicist; Dr. Werner J.A. Dahm, U.S. Air Force Chief Scientist; and 1st Lt. Dave Wooddell, mathematician, during the presentation of the Air Force 2009 STEM Award for Outstanding Scientist Team.
U.S. Air Force photo by Mike Kaplan

As part of the Department of Defense effort to outfit warfighters with non-lethal escalation-of-force capabilities, a U.S. Air Force team has been studying the human effects of the Improved Flash-Bang Grenade (IFBG). In recognition of its work, the Air Force team recently won the Air Force 2009 Science, Technology, Engineering and Mathematics (STEM) Award

for Outstanding Scientist Team. The Air Force chose the IFBG team for its efforts that led to the development of a safer and more effective flash-bang grenade.

The IFBG, a non-lethal weapon, creates a loud bang and a large, bright, long-duration flash to temporarily incapacitate targeted individuals. The IFBG incorporates improved safety to the user and non-combatants in the target area, as well as reduced environmental impacts and a longer-duration incapacitation than previous flash-bang grenades. The IFBG is currently in the engineering and manufacturing development phase of the acquisition process.

The Department of Defense defines non-lethal weapons as "weapons, devices and munitions that are explicitly designed and primarily employed to incapacitate targeted personnel or materiel immediately, while minimizing fatalities, permanent injury to personnel and undesired damage to property in the target area or environment. Non-lethal weapons are intended to have reversible effects on personnel and materiel."

Non-lethal weapons provide warfighters with escalation-of-force options when lethal force is not the best first response. Specifically, IFBG capabilities will enable U.S. forces to more effectively support missions such as hostage rescue, room clearing and other operations in complex urban terrain.

According to the award citation, the team determined the human effects necessary to increase mission effectiveness by analyzing flash-bang grenade injury data, writing software to analyze flash effects and determining sound exposure limits. The team's research resulted in critical design and performance specifications for IFBG prototypes that meet U.S. military needs.

The 12-member IFBG team includes military, government and contractor personnel from the Air Force Research Laboratory (AFRL), 711th Human Performance Wing, Human Effectiveness Directorate, Directed Energy Bioeffects Division and the Human Effects Center of Excellence. The Joint Non-Lethal Weapons Program sponsors the IFBG program.

"The analysis effort for the IFBG program was one of the most rewarding yet challenging efforts I have been part of in nearly 14 years of Air Force service," said award recipient 1st Lieutenant David Wooddell, IFBG modeling lead and mathematician at AFRL's Optical Radiation Branch. "It was great to be directly involved with and to impact a program

that is helping put a safer tool in the hands of those who need it most in future military operations."

During a ceremony at the U.S. Air Force Academy in Colorado Springs, Colo., on Sept. 23, General Carrol H. Chandler, Vice Chief of Staff of the U.S. Air Force; Lieutenant General Mark D. Shackelford, Military Deputy for the Assistant Secretary of the Air Force for Acquisition; and Dr. Werner J.A. Dahm, U.S. Air Force Chief Scientist, presented the award to four IFBG team members who accepted it on behalf of the entire team.

This latest honor comes on the heels of two other awards the IFBG team recently won. In January, the team received the Air Force Research Laboratory's top technology transition award for 2008. In May, the team received the Air Force Materiel Command 2009 Science, Engineering and Technical Management Award for Best Scientist Team.

Through its human effects research, the IFBG team has led the way for improved grenade safety for targeted individuals and operators, increasing warfighters' capabilities to conduct the full spectrum of military operations.