

At a Glance

What is it?

- Laser-Based Helo Landing Aids (LBHLA) will enhance helicopter pilot situational awareness in visually degraded environments (VDE).
- Helicopters are extremely susceptible to brownout in dusty landing zones (LZs), where the pilot can lose sight of the ground or obstructions while hovering.
- LBHLA will provide the pilot with a very accurate, real-time laser generated image of the LZ, plus height-above-ground, drift rate/direction over the ground and relative wind.

How does it work?

- The LBHLA program will utilize a Class 1M eye-safe, dust-penetrating (DUSPEN) Light Detection and Ranging (LIDAR) transceiver to generate true 3D real-time images in and around the landing zone.
- The DUSPEN LIDAR approach is capable of penetrating heavy particulate clouds (e.g., dust, rain, fog, snow) generated by the helicopter rotor downwash during landing, or due to weather, ground vehicles, or concurrent helicopter operations.

What will it accomplish?

- The LBHLA effort will increase the ability of war fighters to conduct vital helicopter operations in visually challenging environments, both day and night.

Point of Contact

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The Laser-Based Helicopter Landing Aids (LBHLA) Future Naval Capability (FNC) Product is one of two technologies within the Helicopter Low-Level Operations (HELO) Enabling Capability that is focusing on solving the problems associated with helicopter brownout. LBHLA was a FY09 FNC new-start program designed to develop the technologies for real-time landing zone (LZ) imaging and obstacle detection. The current phase of the program is focused on system component integration and flight test. The final flight demonstration will provide real-time LZ imagery, thus enabling a pilot to detect obstacles and uneven terrain that would threaten the aircraft while landing in visually degraded environments (VDE). The objective is a system that is compact, lightweight and rugged.

The capability need for the LBHLA program is to provide significantly improved landing capabilities and increased survivability for current and future assault and heavy lift rotary wing aircraft that are deployed from the sea base to operate in austere, forward areas. This program will support and improve the safety and efficiency of landings into unprepared LZs by:

- Mitigating risks associated with landing in unimproved zones with no visual ground reference;
- Allowing aircrew the capacity to land vertically from low altitude hover with zero external visual cues;
- Providing symbology to the pilots to facilitate a safe landing, and to enable precision hover capability for hookup and delivery of sling loads, day or night, in zero visibility conditions; and
- Providing surface feature mapping for added situational awareness, understanding and obstacle detection in dusty LZs or where visual cues are unavailable.

Research Challenges and Opportunities:

The LBHLA program will open opportunities for laser research and technology development in four key areas:

- Non-mechanical laser steering or scanning methods
- Advanced rapid scanning receiver technologies
- Advanced techniques for sensing through dust and other obscuring
- Miniaturized, lightweight and ruggedized laser components

