



Haul aboard!

SkyHook offers heavy-lift, short-range transportation in remote areas

By Marc Sklar

You're a roughneck working an oil rig in a remote region of the world—like the Canadian Arctic or Alaska. Conventional land and water transportation does not exist and is not economically or environmentally feasible to construct. Given the rough terrain and harsh environment, how do you move in vital equipment and transport out cargo to get your work done?

Just over the horizon you spot a large, oblong aircraft. It's moving slower than a plane. As it nears, you see it combines aerostatic lift, through a large helium-filled envelope, with the features of a helicopter.

This strange-looking aircraft approaches at 60 knots (70 miles per hour, or 110 kilometers per hour), driven by four helicopter rotor systems and ducted propellers, and then descends gradually. Hovering over a small landing patch, slings attached to the underside of the aircraft deliver oversized drilling equipment.

The piloted aircraft is then reloaded with whatever product or cargo needs to be hauled out, ascends slowly and flies off.

Up to 40 tons (36 metric tons) of cargo will be transported a few hundred miles away in a matter of hours—not days—even operating in severe weather.

For loggers, miners, oil companies, pipeline builders and other industries that operate in harsh and remote areas, this is more than an imagined scenario. Boeing Phantom Works has teamed up with Canadian company SkyHook International to develop the SkyHook HLV (Heavy Lift Vehicle)—a neutrally buoyant hybrid aircraft that will transport heavy loads in remote regions regardless of the season, and requires no landing strip. Its ability to lift, transport and place freight allows it to move cargo between any road, railway, depot, ship or barge and where no infrastructure exists.

GRAPHIC: At 410 feet (137 meters) long, 205 feet (62 meters) wide and 141 feet (43 meters) high, the Skyhook HLV (Heavy Lift Vehicle)—developed by Boeing Phantom Works and Canada-based Skyhook International—will combine the best features of an airship and a helicopter. CHUCK SCHROEDER/BOEING

“[SkyHook] promises to have a payload capacity unmatched by even the world’s largest in-service helicopter ...”

– Ken Laubsch, Boeing program manager for SkyHook HLV

“SkyHook will make it easier to get cargo into and out of remote locations faster and without the environmental impact of roads,” said Pat Donnelly, director of Phantom Works’ Advanced Rotorcraft Systems.

One example of potential beneficiaries is mines and other extractive industries located near the Arctic Circle in Canada’s Northwest Territories.

Each year, thousands of trucks deliver crucial supplies over hundreds of miles of seasonal ice roads from bases in cities like Yellowknife. Within a limited period, about eight weeks, all logistics must be arranged and a full year’s worth of equipment, materials and fuel must be shipped to the mines and other facilities. In a mild winter, the ice-road season can be even shorter. SkyHook could make a huge difference by allowing supplies to be shipped year-round. That would allow facilities to keep a smaller inventory of supplies on hand, knowing they can be replenished at any time.

Under the agreement with SkyHook International, Boeing is designing and will fabricate a production SkyHook HLV prototype at its Rotorcraft Systems facility in Ridley Park, Pa. The new aircraft will enter commercial service after it is certified by Transport Canada and the U.S. Federal Aviation Administration. The first SkyHook HLV aircraft is scheduled to fly in 2014.

SkyHook will own, operate and license the aircraft worldwide. Last month, the overall configuration for SkyHook was finalized. The program also met the configuration freeze milestone last month, meaning the aircraft’s overall performance and layout have been established.

At 410 feet (137 meters) long, 205 feet (62 meters) wide and 141 feet (43 meters) high, the aircraft will combine the best features of an airship and a helicopter. Lighter-than-air helium neutralizes the aircraft’s weight. Four helicopter rotors generate the power needed to lift payloads up to 40 tons (36 metric tons). Ducted propellers are used to maneuver and propel the aircraft

at maximum payload horizontally up to 200 nautical miles (230 miles, or 370 kilometers) without refueling.

How does SkyHook compare with heavy-lift rotorcraft? “Since the lift generated by SkyHook’s four rotors is dedicated solely to lifting the payload, the aircraft promises to have a payload capacity unmatched by even the world’s largest in-service helicopter—the Russian Mil Mi-26 with its 18-ton (16-metric-ton) lift capability,” said Ken Laubsch, Boeing’s program manager for SkyHook HLV and subject-matter expert in Lighter Than Air technology. Boeing’s CH-47 Chinook helicopter can lift up to 13 tons (11.8 metric tons). SkyHook also is expected to be more economical than traditional helicopters since it does not expend fuel lifting the weight of the aircraft itself.

Both Boeing and SkyHook International say the aircraft will reduce environmental impact compared to other transportation methods. For example, it will require a small payload delivery area, and there’s no need for extensive road or rail lines, reducing the disturbance of soil, terrain, permafrost and vegetation in pristine areas. Less construction in these areas also leaves the natural migratory patterns of animals undisturbed (ditches and roads produce barriers for some species). Skyhook will generate approximately as much noise as other helicopters in commercial service. However, it will follow current aviation practices in avoiding noise-sensitive areas such as wildlife migration routes, bird sanctuaries and wildlife reserves.

“The SkyHook HLV technology is like nothing that has ever existed. We anticipate that the operational capability of this aircraft will allow SkyHook’s customers to radically change the way they resupply and operate in remote regions, especially the north,” said Rob Mayfield, director of SkyHook. “In the oil and gas industry, there are significant pressures on cost, speed, safety and environmental impact, and the SkyHook HLV technology represents solutions to each of these challenges in various applications.” ■

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PHOTO: Members of the SkyHook team in Ridley Park, Pa., are developing a heavy-lift aircraft that promises to greatly improve the movement of heavy items to remote areas. The team includes (from left) Sean Kim, Colleen Olivo, Christopher Felker, Dennis Borgstrom, Bob Thomas and Phil Lang. FRED TROILO/BOEING





Going strong

Boeing Defence UK reflects Integrated Defense Systems' strategy for international growth

By Madonna Walsh

Photos by Peter Ashby-Hayter/Bristol Photographers, UK

A key strategy for expanding Boeing's defense business internationally has been to build a deeper and broader presence in local markets across the globe. It's not just about selling products to countries, anymore. It's about putting roots down in those countries, strengthening local relationships and presenting a single face to the customer.

One example of where this strategy is working well is the United Kingdom. About a year ago, Boeing consolidated and aligned its defense operations there into a single wholly owned subsidiary, Boeing Defence UK Ltd. Following are just a few of the new organization's achievements.

- **Increased rotorcraft support** – In January, Boeing Defence UK Ltd announced the establishment of a new operation—Boeing UK Rotorcraft Support—to focus on Boeing's rotorcraft support business in the United Kingdom. The new unit brought together all of Boeing's rotorcraft support activities for the UK Ministry of Defence (MOD), anchored by the highly successful Apache and Chinook support programs.
- **Enhanced network capability** – The Portal, a decision-support capability at QinetiQ's Cody Technology Park site in Farnborough, opened in 2007. Since then, it has allowed UK customers to explore and understand implications of



PHOTOS: (TOP) Future Logistic Integration Systems' capture team in Bristol, United Kingdom, draws on strengths across Boeing in its effort to win a 10-year, \$1.6 billion (£1 billion) UK contract. **(LEFT)** Boeing Defence UK's Dave Robson (center), UK Chinook Through Life Customer Support field service representative, talks with employees from partner Vector Aerospace.