

# Leading light

**PHOTO:** More than 4,000 Spectrolab searchlights, mounted on helicopters, boats and in fixed applications, are used by law enforcement, fire and rescue, and news organizations worldwide.  
LOS ANGELES COUNTY SHERIFF'S DEPARTMENT

Spectrolab searchlights have been spotting trouble for 35 years

By Diana Eastman

**W**hen the sun goes down, these lights go up ... into the sky.

Every night, all over the world, military, police, fire, medical and news helicopter crews rely on an indispensable tool to get their jobs done: the Nightsun searchlight. Made by Boeing subsidiary Spectrolab, the high-intensity lights are credited with helping fight crime, protecting borders and saving lives.

"The Nightsun searchlight is arguably the most widely used and recognizable commercial product that most people—including Boeing employees—don't know is made by Boeing Defense, Space & Security," said Greg Campbell, vice president of Spectrolab Illumination Products.

"We're the global leader in airborne searchlight systems, with a market share of almost 100 percent."

Spectrolab, located in Sylmar, Calif., produced its first searchlights in 1969 for military use in Vietnam and they quickly caught on with police departments. Today, there are an estimated 4,000 of the company's searchlights in operation in 195 countries.

From its mount on a helicopter flying at 500 feet (150 meters), a searchlight can provide a tight spotlight about the size of two cars, or a wider view all the way up to an area covering a full city block. It gives the user, looking through binoculars, the ability to recognize and track a target a mile (1.6 kilometers) away.

Sgt. John Haughey of the Los Angeles County Sheriff's Department said the Nightsun, during crime scene searches, enables the aircrew to see details such as footprints in wet grass, shattered window glass and broken fences, helping officers track a suspect's path of travel. The department's 14-helicopter Aero Bureau also uses its Nightsuns to assist vehicle and foot pursuits as well as during search-and-rescue operations.

"With foot pursuits, we want to keep suspects under the light to keep the pressure on. They know that they are being watched



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by law enforcement and they are going to run out of steam,” said Haughey. “For vehicle pursuits, we use the searchlight to keep a light on the vehicle, and with stabilized binoculars, we can also look inside the vehicle to see what the suspect is doing.”

The Nightsun is designed to work with the aircraft’s systems. One model can switch between visible white light and infrared, which is invisible light for covert surveillance with night vision goggles. Also, when used in conjunction with a Moving Maps system, it can be programmed to “find” an address as the pilot is flying to the scene, which reduces the crew’s workload and distractions.

The brightest Nightsun, the SX-16, produces 30 million to 50 million candela (a typical 100-watt bulb produces about 120 candela), or intensity of light powerful enough at close range to bubble paint or asphalt.

At the heart of each searchlight are a xenon arc lamp, specialized optics and high-voltage electronics.

“We make our searchlights to operate in extreme environments, from the desert to the Arctic Circle, and they’re very durable,” Campbell said. “The average service life is seven to 10 years, but there are lights that are still operating after 25 years, outliving the helicopters they’re mounted on.”

The Spectrolab team works closely with customers to design improvements, and new models and enhancements are being added soon that are smaller, lighter-weight and more powerful.

In the coming year, the L.A. Sheriff’s K-9 Unit is planning to perform suspect searches using night vision goggles with the searchlight’s infrared light, Haughey said, adding:

“The Nightsun is, and has always been, a game-changer.” ■

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**PHOTOS: (Above, from left)** Technician Jose Saavedra, one of 45 Spectrolab employees on the searchlights team, works on a Nightsun’s support structure; Antonia Garibay, searchlight and solar simulator manufacturing technician, inspects searchlight circuit boards. **(Far right)** Federal Aviation Administration–certified repair technician Bruno Aguniaga focuses and tests a searchlight to get it ready to return to flight status. BOB FERGUSON/BOEING

## Lighting the way—from the Panama Canal to Hollywood

Spectrolab’s searchlights have found many uses, including:

- Nighttime photography and even deterring birds from airport runways
- Illuminating the Panama Canal to help maintain clearance between ships and the canal’s lock walls
- Combat search-and-rescue missions, such as one in Afghanistan featured in a recent History Channel program, “Helicopter Missions: The Taliban Gambit”
- Hollywood movies, including *Mission Impossible II*, *Transformers*, *Training Day* and *The Long Kiss Goodbye*

## Solar cell leader

Spectrolab first developed searchlights as an offshoot of its primary business—spacecraft solar cells—when it needed to test its products with simulators that would reproduce the intensity of light that solar cells get exposed to in the vacuum of space.

Since its founding in 1956, Spectrolab has manufactured just over 3 million solar cells for 500 satellites and interplanetary missions and is the world’s leading solar cell manufacturer. It supplies high-efficiency solar cells and panels to Boeing Space & Intelligence Systems and to all major satellite prime contractors.

Spectrolab’s products, which power the International Space Station and NASA’s Mars rovers, are the highest-performing in the industry, converting almost 30 percent of space sunlight to electricity.

A decade ago, Spectrolab brought its space expertise down to earth and began making miniature solar chips aimed at the alternative-energy market—a growth business for Boeing. Its terrestrial solar cells convert up to 40 percent of the sun’s light into electricity, using the company’s space-cell technology that captures energy from more colors of the spectrum than ordinary silicon cells, which convert only about 15 percent of sunlight to energy.

