

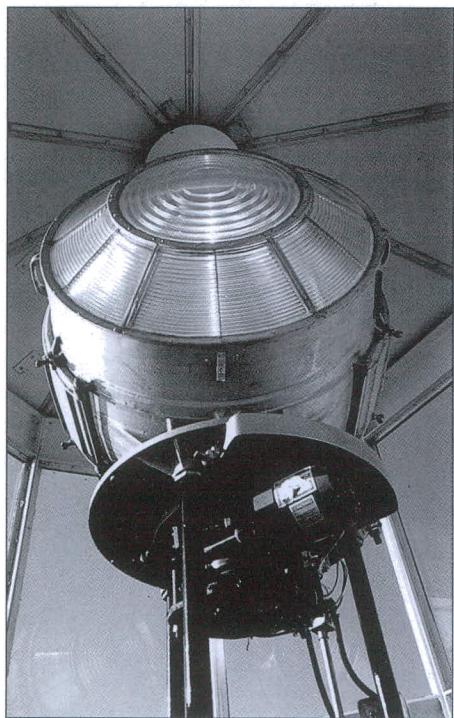
DCB-36 BEACON... FADING AWAY INTO HISTORY

By Bob Trapani, Jr.

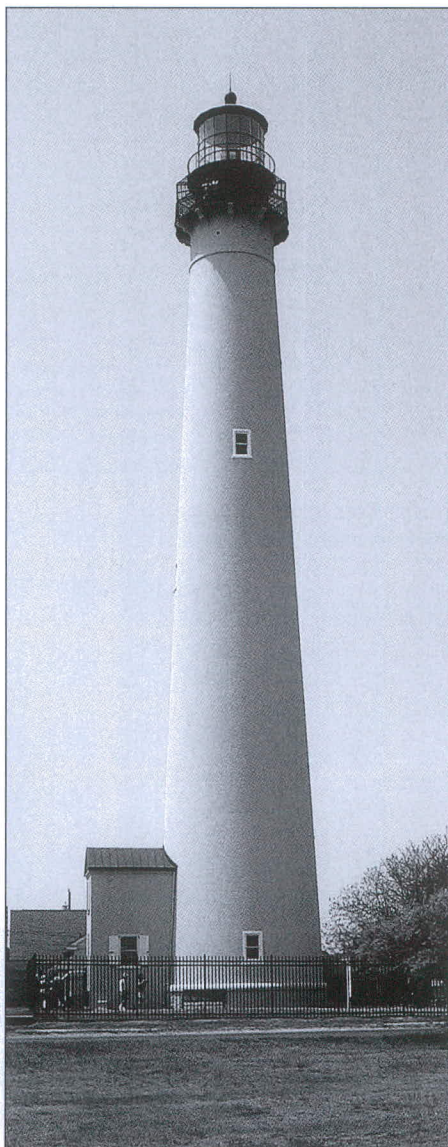
Maybe it's because this long-time beacon once took the place of so many Fresnel lenses in major lighthouses throughout North America, or maybe it's due to its less than beautiful appearance, which is devoid of all romance; but whatever the reason, the DCB-36 beacon seems to have all but disappeared into lighthouse history without so much as a whimper.

The fact that the DCB-36 (Directional Code Beacon) even graced the lanterns of so many lighthouses requiring a rotating beacon seems to have been more by chance than design.

The optic was originally designed in 1931 by the United States Lighthouse Service for aviation use, but the Service then decided that this new technology could serve a dual purpose as the next-generation replacement for the aging



A DCB-36 in a lantern room. Photo courtesy of Chris Mills.



Cape May Lighthouse, NJ, one of the last to have a DCB-36 beacon. USLHS photo.

Fresnel lens systems.

According to the June 1931 Lighthouse Service Bulletin, "A new type of revolving beacon, having two 36-inch lenses, is now available for marine work, this beacon has been developed in the airways division. Among the advantages which this beacon offers over previous types is



Harbor of Refuge, DE, Lighthouse. Photo courtesy of Mike Mahaffie.

that of two lenses. This amounts to a doubling of the light period, and makes it possible to double the number of flashes without speeding up the beacon."

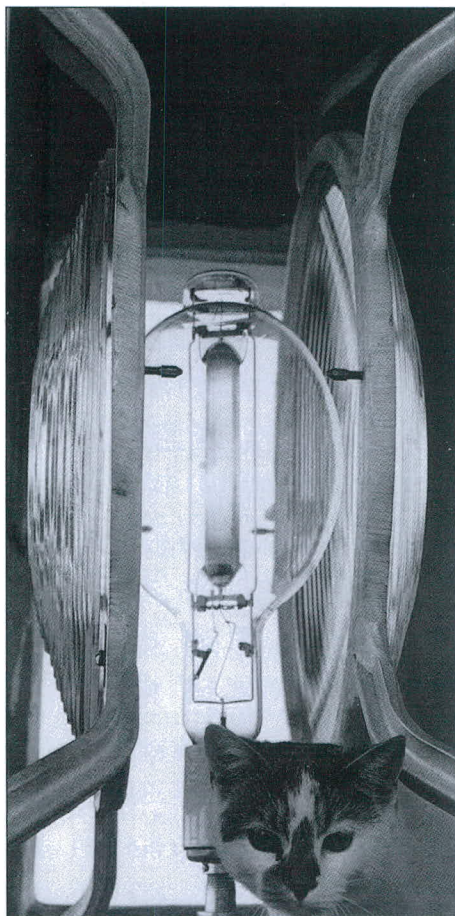
The contrast between the Fresnel lens and DCB-36 could not have been starker. Never to be granted a sentimental place in the hearts of those who loved lighthouses like the Fresnel lens was afforded, the mechanical-looking DCB-36 was simply viewed as a utilitarian optic, temporarily satisfying the government's insatiable desire for economic savings and scientific advancement.

For all the things the DCB-36 was not aesthetically, one thing is certain – the beacon was dependable. In fact, the DCB-36 performed surprisingly well in both its ability to project light to sea as an aid to navigation, and its durability to hold up under the rigors of constant use in a salt-air environment.

The beacon outlived its projected life span



Above and below – Interior view of a DCB-36 showing the 1,000-watt mercury vapor lamp, used in Canadian lighthouses, and the doublet lenses on either side. Photos courtesy of Chris Mills.



to the point that by the dawn of the 21st century, the U.S. Coast Guard was finding it increasingly difficult to obtain replacement parts for the optic's motor.

Historical records are sketchy as to when the first DCB-36 beacons were installed in lighthouses throughout America and Canada, though according to the June 1931 *Lighthouse Service Bulletin*, "These beacons are now available for use as marine aids to navigation." It appears that this process of installing DCB-36 beacons in place of Fresnel lenses began in earnest around the World War II time period.

In all, the DCB-36 has served in North American lighthouses for over 70 years – a feat that modern day technology will most likely prevent from ever occurring again as new advancements, especially in the field of light emitting diodes (LED), are constantly evolving at a record pace.

At the time of the beacon's introduction lightkeepers must have welcomed the DCB-36 due to the fact that it operated by electricity rather than fuels such as incandescent oil vapor, and there was significantly less cleaning associated with the airport beacon versus the multi-prism Fresnel lenses.

Chris Mills, a Canadian Coast Guard lighthouse keeper from 1989 to 1997, recalls that there were no special maintenance concerns with the DCB-36 beacon. "By the time I was a keeper," said Mills, "we weren't much concerned with the lights. This is mostly because the DCB-36 was designed as, or was at least suited to being, an unattended main light. In fact we were told that it was better to leave them run-

ning 24-hours a day, seven days a week."

Mills went on to note, "Three of the six DCBs I worked with had 1000-watt mercury vapor bulbs that lasted for years – literally. But I made it a point to shut down the DCB-36 beacons I worked with once a month to clean the lenses and open the side panels to clean inside and remove the dead flies. Ironically, I never once had to change a bulb, although I had to reset a two-bulb changer once at Bonilla Island, British Columbia, when the fiberglass tower vibrated so much that it caused the main bulb to flip to the standby unit."

The DCB-36 beacons in the United States were equipped with 1000-watt incandescent lamps in their latter years, which did require the keeper to replace periodically. In fact, the Coast Guard equipped many American lighthouses with an alarm bell to alert the keepers when a lamp became extinguished or the lampchanger malfunctioned.

Stephen Jones, a former keeper at Harbor of Refuge Lighthouse in Delaware Bay (1961-62), recalls his thoughts about the light that emitted from the DCB-36 beacon, which was in use during his time served on the light station.

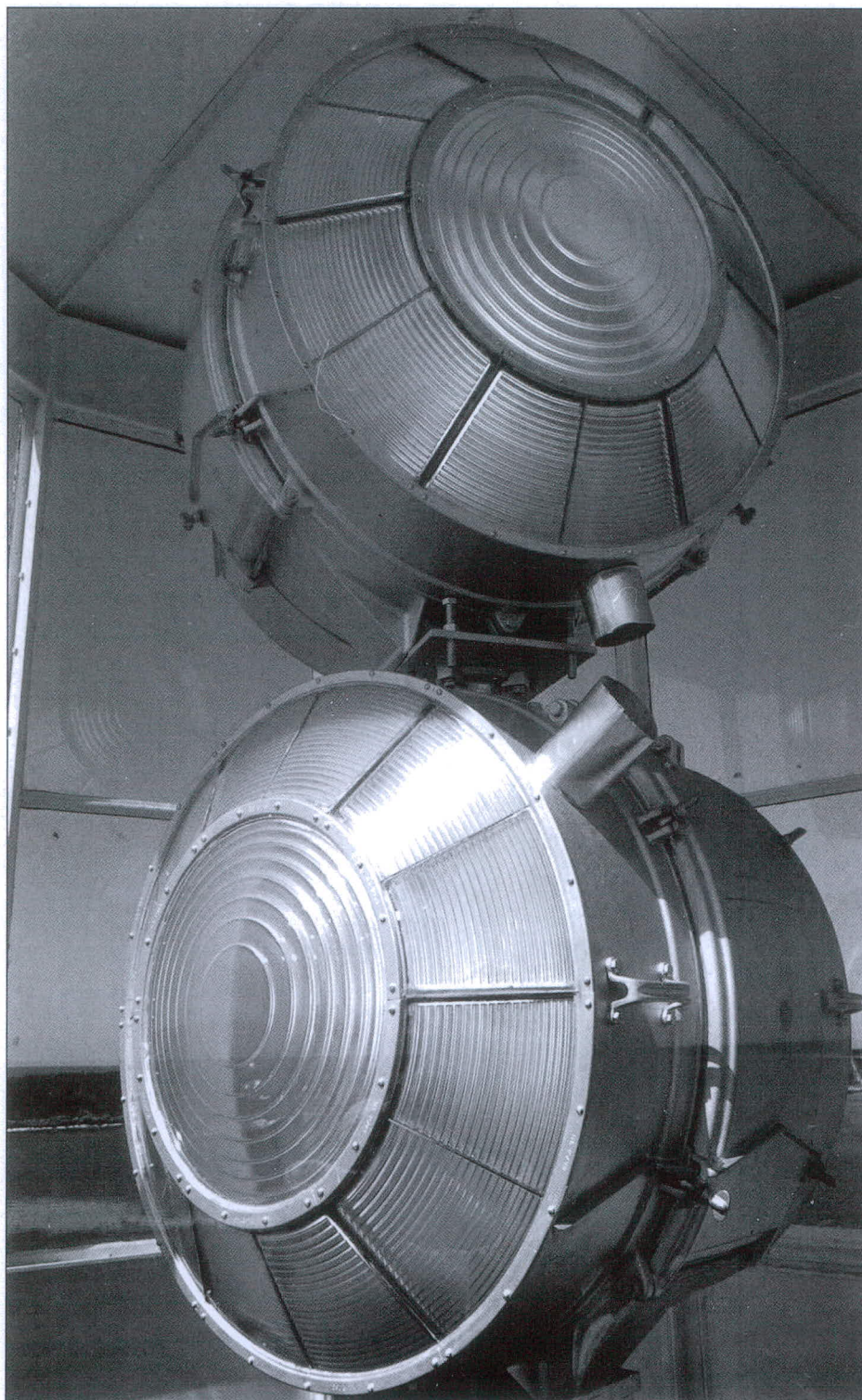
Upon waking up from a late afternoon nap on his first day assigned to the exposed off-shore sentinel, Jones noted in his classic book *Harbor of Refuge* that "The bell woke me. At first I thought it was a school bell and that snow would soon be shuddering off the roof. But out there was no schoolyard full of noisy children, but, my God – the sea."

"The beam had already taken effect. This time when I peeped out the window I saw the light moving between the sea and sky, just barely, but there it was. The sea was two big colors across the tide rip, and the sky one color over the town and another color higher up where the sun had been."

Later that same night, Jones notes, "After supper... I washed the dishes in the sink beneath the long brass spout and watched the beam grow strong against the stronger sky, like a great propeller whirling over our head."

Chris Mills also recalls the mesmerizing beam of the DCB-36, saying, "I always enjoyed watching the beams swing through the fog, especially from the ground directly below the tower, or even better, from the top of the lantern where the 'spokes' or 'fingers' of light showed up in the fog or illuminated insects, moths and dust in the night air."

"Because I can remember the traditional Fresnel lenses quite well," Mills went on to say,



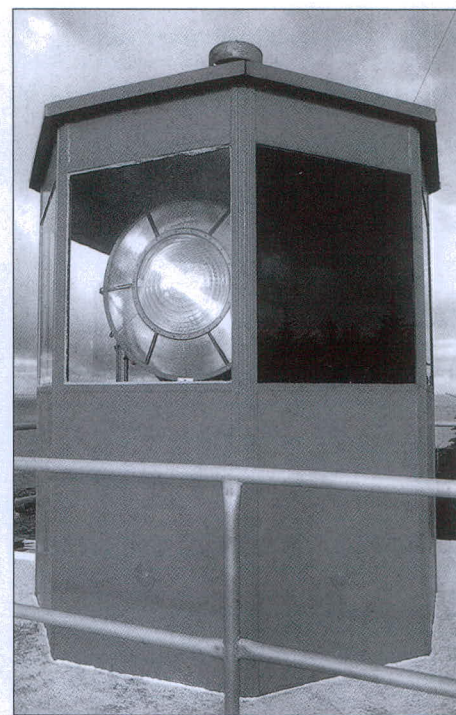
In some cases the DCB-36 was arranged in a double drum to provide more flashes per rotation or a differential characteristic. Photo courtesy of Chris Mills.

"I always think of the DCB as having inferior optical quality. This is based in fact, as the Pyrex lenses in the DCB-36 are molded and not precision ground as they are in the traditional classical lenses."

"I notice even today with the soon-to-be-replaced DCB-36 on Sambro Island, Nova Scotia, that even when you're a couple of miles from the light, the glow from the light never

entirely disappears, partly because of the light that 'spills' from the convex lens panels on each end of the unit. I don't remember this happening with the first order Fresnel lens at Langara Point in British Columbia, with its precision lenses, which were designed to harness, magnify and direct light so effectively."

The DCB-36 beacons not only produced unique "seascapes of light," they also gener-



McInnes Island Lighthouse, British Columbia. A simple but effective arrangement. Photo courtesy of Chris Mills.

ated a healthy dose of noise that emitted from its motor and carriage or chariot. The noise was not only ceaseless; it was of the annoying type for keepers, especially ones new to the job.

Stephen Jones was stationed at Harbor of Refuge Lighthouse during Delaware's "Storm of the Century" that occurred in early March 1962. At the height of the northeaster and with the light tower under complete assault by the wind and seas to the point that the force of the waves was effectively rearranging the furniture inside the 66-foot iron sentinel, the keepers were still required to perform periodic checks on the beacon.

The raging din outside, however, could not drown out the noise of the DCB-36 once the keeper's reached the lantern. "We climbed on up and checked the main light," said Jones, "which was still bravely squeaking. It was odd, but that sound which had so unnerved me when I'd first heard it in the summer, a sound like a strangling seagull, now comforted me."

Mills concurs with Jones' sentiments about the raucous DCB-36, saying without hesitation that the beacon was "Noisy! The DCB lights I worked with made a loud, grinding sound as they turned."

As time marches on and renders the DCB-36 all but obsolete, something interesting is occurring. A beacon that lacks both beauty



The DCB-36 has faded into history, a sad end to seventy years of service. Photo courtesy of Chris Mills.

and romance is now strangely becoming an endearing aspect of North America's lighthouse heritage in its own right as its days of usefulness slip away on history's ebbing tides.

"It's funny that I now regard the DCB-36 in a nostalgic way – now that there are so few left in the Maritimes," says Chris Mills. "I am aware of only 3 that remain in service out of a total of 14 in use during the 1970s and 80s. To me, they're closer to the old Fresnel lenses than the new acrylic models, and I still recall the thrill of seeing the revolving 'eye' of the DCBs burst into brilliance as I descended in a helicopter or observed them from a distance."

The burst of brilliance that Chris Mills refers to is now gone – soon to be recalled only by the former keepers themselves who watched over the DCB-36 beacons and the mariners old enough to remember the power of its sweeping "eye" that safely guided them along their way – a time not so long ago when the DCB-36 was considered a premier light in North America's lighthouses.

DCB-36 Facts

Technical information obtained from the (U.S.) Lighthouse Service Bulletin (1931) and U.S. Coast Guard (1964) and Canadian Coast Guard aids to navigation (ATON) manuals. Special thanks to Chris Mills for providing the information from the Canadian Coast Guard ATON manual.

- The DCB-36, an aviation rotating beacon, was manufactured by Crouse-Hinds
- The beacon was a double-ended rotating optical system that used an incandescent lamp (in the United States) to produce two narrow beams of light 180 degrees apart. The beams revolved at a predetermined speed of 1, 2, 3, 4, 5, 6, 10 or 12 R.P.M. as selected. The standard speed was 6 R.P.M.
- The standard installation (six revolutions per minute) produced a flash of white light of 1,200,000 candlepower every five seconds of 0.17-second duration, though this length of flash was not recommended for marine aids. The U.S. Lighthouse service noted that "simple back gearing could be supplied to provide three or two revolutions per minute if desired, giving a flash of 0.34-second duration every ten seconds, or a flash of 0.5-second duration every 15 seconds. Still longer flashes can be produced by the use of frosted bulb electric lamps,

but with a considerable decrease in candlepower."

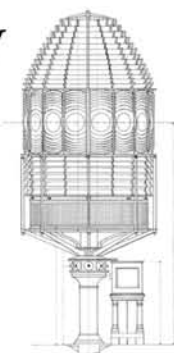
- The optical system consisted of a lamp mounted in an automatic lamp changing mechanism and two sets of Fresnel type doublet lens assemblies to provide two beams. The lens assemblies were mounted in a cast aluminum drum.
- Each lens combination was comprised of 18-inch inner doublet and 36-inch outer lens assembly (including a 20-inch "bull's-eye" and 12 two-piece surrounding sectors).
- Color could be introduced into the beams by using green or red inner lenses (the Fresnel type doublet lens) in lieu of clear lenses.
- The factory setting of the DCB-36 beam was two degrees above the horizontal (for aviation use). As used by the United States Coast Guard in lighthouses, the light beam was adjusted so that the beams projected horizontally.
- The DCB-36 was also available with a double drum, which produced four beams of light (stacking one unit atop another and positioning them in different directions to produce the desired flashing characteristics).
- The electric lamp serving as the light source was mounted at the optical center of the lens system by a lampchanger. The 1964

USCG ATON manual noted that either 30- or 120-volt, C-13 mogul bipost lamps could be used. The lampchanger carried two lamps and, when the operating lamp failed, the standby lamp was automatically brought into the correct position and power applied to it. At the same time, the "lamp out" alarm indicator was lighted to advise lighthouse keepers that a lamp had failed.

- The unit, including its drive mechanism, was designed so that it could be mounted outdoors in an exposed location.
- The component parts of the turntable and mounting assembly were mounted on a cast aluminum bed plate which was supported by three adjustable legs. The main shaft of the turntable was supported by two sealed bearings. A 1/6 hp motor was connected to the main shaft through a clutch by means of a worm and gear which together caused the turntable to revolve at 6 rpm. Beacons having other speeds required special inter-connecting gear assemblies.
- Today, HALI-BRITE, a Crosby, Minnesota company that has been manufacturing airfield equipment since 1979, refurbishes DCB-36 beacons, now referred to by the firm as a "36" Refurbished Airport Rotating Beacon L-802A." <www.halibrite.com>.



Join the U.S. Lighthouse Society Today or Give the Gift of Membership!



Restoration & Preservation



Thomas Point Shoal Lighthouse, MD

The U.S. Lighthouse Society has donated to many lighthouse preservation projects throughout the U.S. Most recently we were honored by being presented with the Preserve America Stewardship Award from The White House for our restoration work at Thomas Point Shoal Lighthouse.

*To learn more visit
www.uslhs.org
or
call Headquarters at
415-362-7255*

Help Support Our Important Mission!

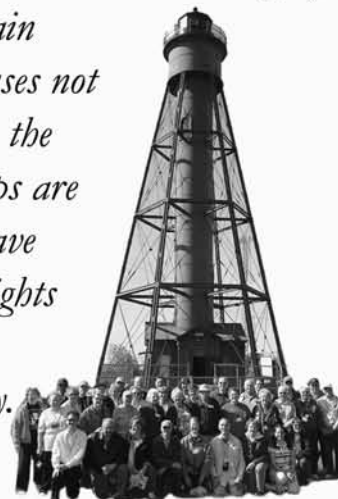
Education



The Keeper's Log magazine is the only one of it's kind and has been published quarterly since 1984.

Receive this award-winning publication as a benefit of membership.

The Society organizes domestic and international lighthouse tours. Many of our excursions gain access to lighthouses not normally open to the public. These trips are a great way to have fun, see lots of lights and learn about lighthouse history.



Tinicum Lighthouse, NJ