

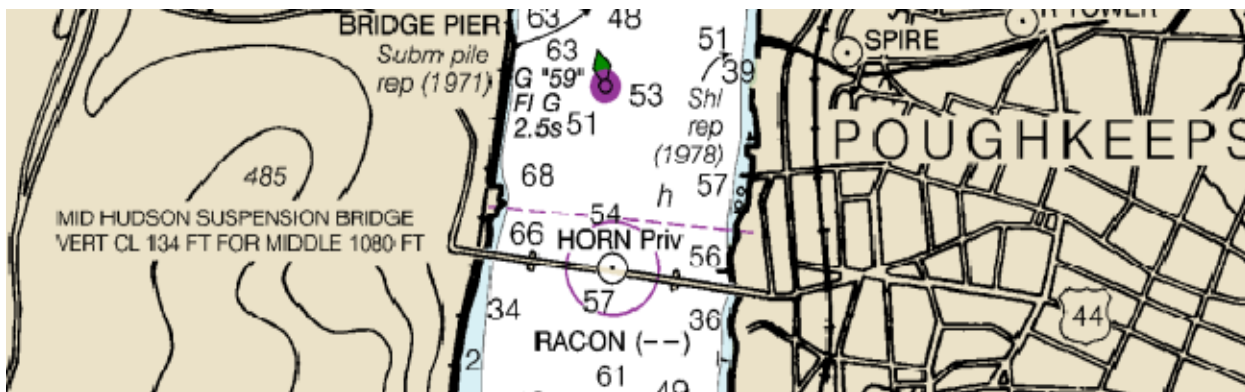
## Radar Beacons John Collins Div 4 SO-PE

**RAdar beaCONs (RACON)** are radar transponders that, when triggered by an X-band radar, produce a coded response from its location, which is portrayed radially as a series of dots and dashes on the triggering radar. Although RACONS may be used on both laterally significant and non-laterally significant aids to navigation, their signal should just be used for identification purposes only.

RACONS are used in the U.S. for the following purposes:

- to identify aids to navigation, both seaborne (e.g. buoys) and land-based (e.g. lighthouses)
- to identify landfall or positions on inconspicuous coastlines
- to indicate navigable spans under bridges
- to identify offshore oil platforms and similar structures
- to identify and warn of environmentally-sensitive areas (such as coral reefs)

An example of a RACON on a bridge is shown below from Chart 12347.



RACONS have a typical output of 600 milliwatts and are considered a short range aid to navigation. Reception varies from a nominal range of 6 to 8 nautical miles when mounted on a buoy to as much as 17 nautical miles for a RACON mounted on a fixed structure. It must be understood that these nominal ranges are dependent upon many factors.

The beginning of the RACON presentation occurs about 50 yards beyond the RACON position and will persist for a number of revolutions of the radar antenna (depending on its rotation rate). Distance to the RACON can be measured to the point at which the RACON flash begins, but the figure obtained will be greater than the vessel's distance from the RACON. This is due to the slight response delay in the RACON apparatus.

Radar operators may notice some broadening or spoking of the RACON presentation when their vessel approaches closely to the source of the RACON. This effect can be minimized by adjusting the IF gain or sweep gain control of the radar. If desired, the RACON presentation can be virtually eliminated by operation of the FTC (fast time constant) controls of the radar.

In order to conserve battery power, RACONS installed on buoys in the U.S. are programmed to operate 50% of the time. These RACONS are normally active for 20 seconds, and then off for the next 20 seconds. RACONS installed on shore, where battery life is not a factor, are normally programmed to operate 75% of the time. RACONS are usually not programmed with a duty cycle greater than 75%, in order to ensure that the response never completely masks an important radar target.

The list of Coast Guard District One RACONS is shown below.

LLN	MAINE	Response	
45/7480	Portland Lighted Buoy P	M	(-- --)
1860	Turtle Island Ledge Light	B	(-- . . .)
	<b>MASSACHUSETTS</b>		
410/10676	Boston Lighted Buoy B	B	(-- . . .)
630/15985	Buzzards Bay Entrance Light	B	(-- . . .)
16080	Cleveland East Ledge Light	C	(-- . -- .)
10680	Boston North Channel Buoy NC	N	(-- .)
	<b>Rhode Island</b>		
17675	Narragansett Bay Entrance Buoy	B	(-- . . .)
17910	Newport-Pell Bridge	N	(-- .)
18785	Mt Hope Bay Bridge	MH	(-- -- . . . .)
650	Southwest Ledge Whistle Buoy 2	B	(-- . . .)
19825	Valiant Rock Buoy 11	B	(-- . . .)
	<b>Long Island Sound</b>		
21440	Execution Rocks Light	X	(-- . . --)
	<b>New York</b>		
34785	Ambrose Channel Buoy A	N	(-- .)
34961	St George Ferry	S	(. . .)
35085	Sandy Hook Scotland Buoy S	M	(-- --)
35135	Sandy Hook Range Front Light	C	(-- . -- .)
37265	Kill Van Kull Junction Buoy KV	K	(-- . --)
37695	Tappan Zee Bridge	Z	(-- -- . .)
38050	Newburgh-Beacon Bridge	N	(-- .)
38100	Mid Hudson Bridge	M	(-- --)
38315	Kingston Bridge	K	(-- . --)
38525	Rip Van Winkle Bridge	X	(-- . . --)

Lights and sound signals on oil wells, wind farms and other offshore structures in navigable waters are private aids to navigation and are generally not listed in the Light List unless they are equipped with a RACON. Where space allows, the structures are shown on the appropriate nautical charts. Information concerning the location and characteristics of those structures which display lights and sound signals not located in obstruction areas are published in Local and/or weekly Notices to Mariners.