Rotating Beacons

For an installation requiring a major light, Tideland offers powerful rotating beacons. (These were developed by modifying the proven MaxLumina lantern.) With the advantage of MaxLumina optics, these rotating beacons produce unprecedented luminous intensities using low wattage marine lamps that reduce power requirements.

In the past the mariner was dependent, almost entirely, on his own facilities of sight and hearing to assist his navigation. Obviously modern technology is an important factor in today's navigation. Electronic position fixing devices such as Loran and others have been in use for many years. This started a trend allowing lighthouse authorities to reduce the range requirements of conventional aids systems coverage.

The increased use of GPS, electronic charts and other electronic devices allows today's mariner to navigate closer to shore before he needs to rely on lighthouses and other traditional aids to navigation. While the role of the traditional aid to navigation will continue for many years to come, the need or justification for lights with ranges greater than 20 nautical miles has become almost non-existent.

When planning today's aids to navigation system it is important to recognise these changes and take advantage of the efficiencies to be gained from them and through the selection of modern beacons that have been designed to meet these changing requirements with greater reliability than ever before.

In general, the installation and maintenance cost of lighthouses can be greatly reduced by considering the following:

1. Limit maximum range of the light to 20 nautical miles.
2. Use white instead of coloured lights.
3. Avoid complex flash characters.
4. At locations requiring acquisition of the beacon in restricted visibility conditions or background lighting, the addition of a racon will solve the problem providing both day and night service.

GEOGRAPHICAL RANGE TABLE IN NAUTICAL MILES

Geographical Range is the maximum distance at which an object or light from a light source can theoretically be seen by an observer, as limited only by the curvature of the earth, the refraction of the atmosphere, the elevation of the object or light and the height of eye of the observer.

HEIGHT OF OBSERVER'S EYE IN METRES	ELEVATION OF SEAMARK IN METRES										
	0	1	2	3	4	5	10	50	100	200	300
1	2.0	4.1	4.9	5.5	6.1	6.6	8.5	16.4	22.3	30.8	37.2
2	2.9	4.9	5.7	6.4	6.9	7.4	9.3	17.2	23.2	31.6	38.1
5	4.5	6.6	7.4	8.1	8.6	9.1	11.0	18.9	26.9	33.3	39.7
10	6.4	8.5	9.3	9.9	10.5	11.0	12.8	20.8	26.7	35.1	41.6
20	9.1	11.1	12.0	12.6	13.1	13.6	15.5	23.4	29.4	37.8	46.3
30	11.1	13.2	14.0	14.6	15.2	15.7	17.5	25.5	31.4	39.8	46.3

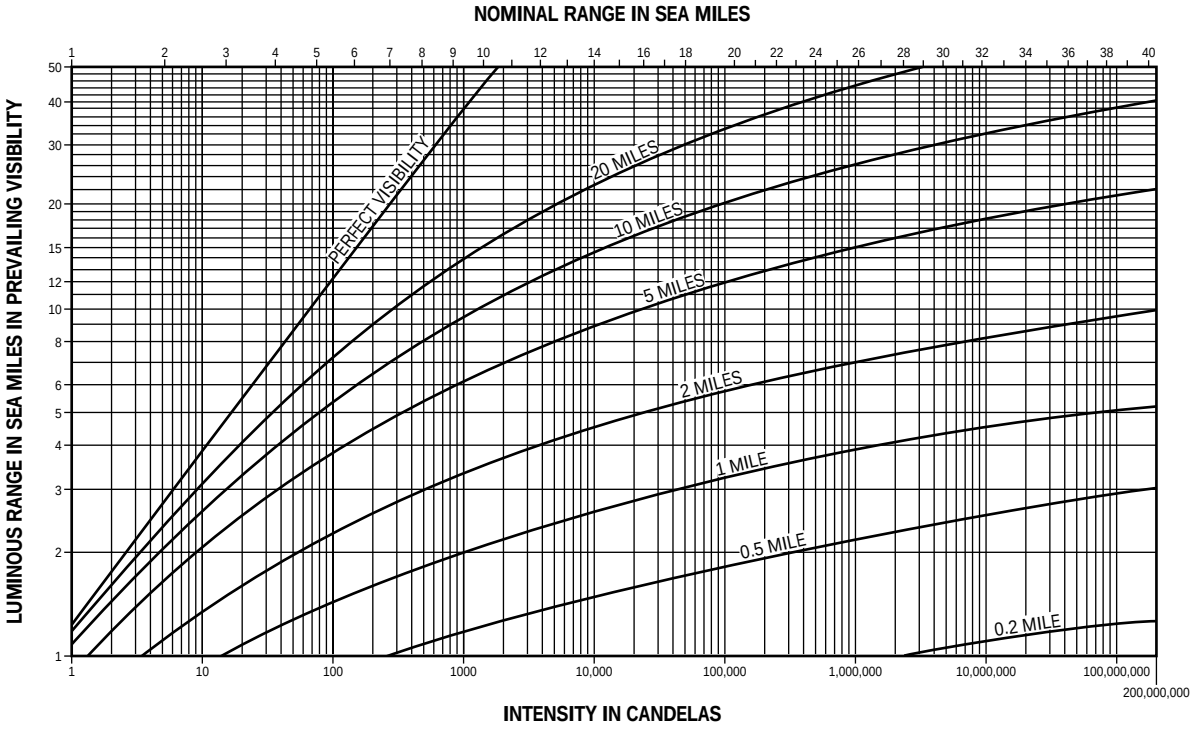
Visual Range is the maximum distance at which contrast of the object against its background is reduced by the atmosphere to the contrast threshold of the observer. The term visual range is used instead of luminous range in daytime viewing.

The **Luminous Range** is the maximum distance at which a given signal light can be seen by the eye of the observer at a given time, as determined by the intensity of the meteorological visibility prevailing at that time. It takes no account of elevation, observer's height of eye or the curvature of the earth (see Luminous Range Diagram).

Nominal Range is the luminous range when the meteorological visibility is 10 sea miles, equivalent to a transmission factor of T = 0.74.

Generally the nominal range is used on charts and in lists of lights. However, some countries use luminous range in their publications. The most commonly adopted meteorological visibility is 20 miles, equivalent to an atmospheric transmissivity of T = 0.85.

LUMINOUS RANGE DIAGRAM



Luminous Range Diagram – This diagram enables the mariner to determine the approximate range at which a light may be sighted at night, in the meteorological visibility prevailing at the time of observation.

The diagram is entered from the top border, using the nominal range of the light or from the bottom border using the intensity of the light.

The figures along the curves represent the estimated meteorological visibility at the time of observation and those along the left-hand border the luminous range under those conditions.

Example: A light of an intensity of 100,000 candelas has a nominal range at night of about 20 nautical miles. When the meteorological visibility is 20 nautical miles, the light would be sighted at about 33 nautical miles, given a sufficient elevation and height of eye; and when 2 nautical miles, at about 5.5 nautical miles.

The diagram can also be used to obtain an approximate meteorological visibility; when, for example, a light of an intensity of 100,000 candelas is sighted at 12 nautical miles, the meteorological visibility will be about 5 nautical miles.

Caution: When using this diagram, it must be remembered that:

1. The ranges obtained are approximate.
2. The transparency of the atmosphere is not necessarily consistent between the observer and the light.
3. Glare from background lighting will reduce considerably the range at which lights are sighted at night.

Approximate sighting ranges may be obtained by entering the diagram with the listed intensity divided by 10 for minor background lighting, and by 100 for major background lighting.

Example: A light of 100,000 candelas has a nominal range of about 20 nautical miles; with minor background lighting as from a populated coastline, this range will be reduced to about 14 nautical miles, and with major background lighting as from a city or from harbour installations, to about 9 nautical miles.

NOTE: For detailed information, see the IALA Recommendation for the Notation of Luminous Intensity and Range of Lights, November 1966 and the IALA Recommendation for a definition of Nominal Daytime Range of Maritime Signal Lights intended for the Guidance of Shipping by Day, April 1974.