

**6th CSPCWG MEETING
Monaco 1-3 December 2009**

Paper for Consideration by CSPCWG

Sectors for oscillating lights

Submitted by:	UK
Executive Summary:	Oscillating sector lights are becoming increasingly common. So far, depiction on charts has used existing abbreviations, but this may not give an accurate description of what is actually observed by the chart user.
Related Documents:	Vega website. IHO S-12 and S-32.
Related Projects:	None

Introduction / Background

Oscillating directional sector lights are becoming increasingly common. So far, depiction on charts has used existing light description abbreviations, but this may not give a technically accurate description of what is actually observed by the chart user. The question is: does this matter or should it be addressed by CSPCWG?

Analysis / Discussion

<http://www.vega.co.nz/default.aspx?Page=1>

This link takes you to Vega's home page. From here go to /PEL Sector lights/Osc boundary.

Looking at the 7 sector example, you will see that:

- Sector 1 flashes red: but depending where you are in the sector, it actually changes from **Fl** to **Iso** to **Oc**, as you get nearer sector 2. There is no correct way to chart that, unless you break the sector into 3 divisions.
- Sector 2 is **F.R**
- Sector 3 will alternate **WR**, but only in the middle of the sector will the periods of **W** and **R** be the same. There is no way currently available to accurately describe what happens in that sector.
- Sector 4 is **F.W**.

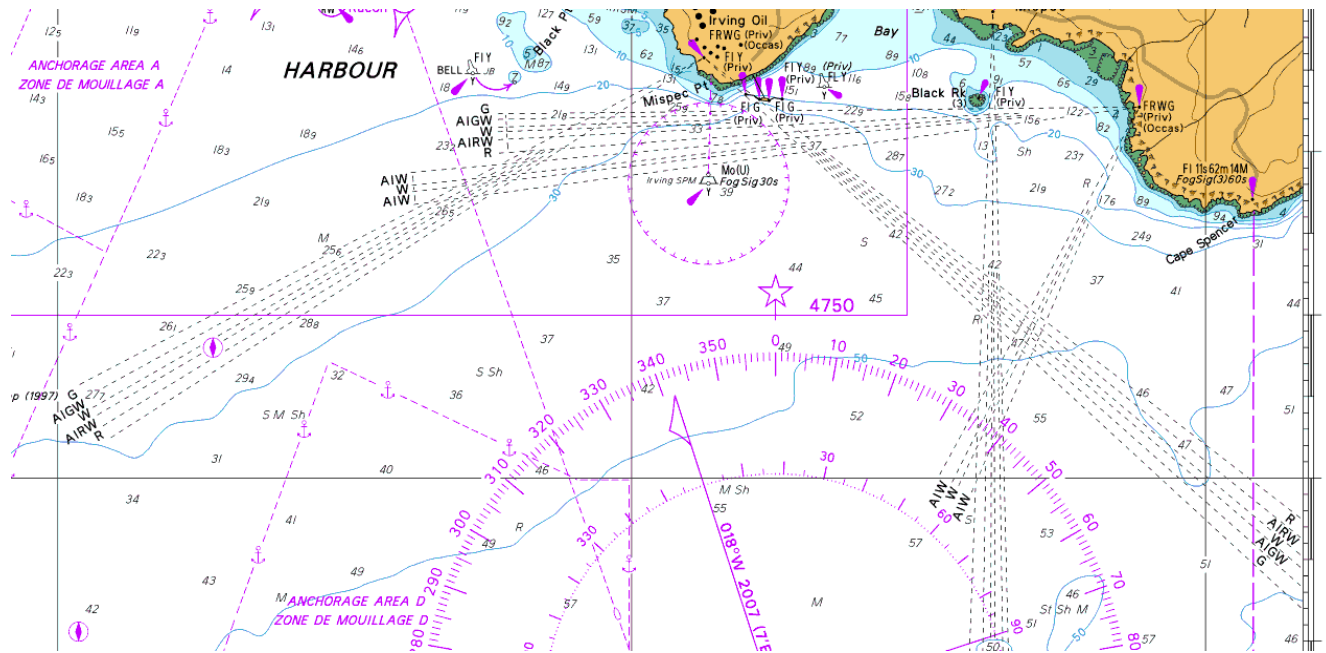
In the 5 sector type, you do not have the **Fl/Iso/Oc** outer sectors.

The entire Filter Assembly inside the light is forced to oscillate 20 cycles/minute (ie a 3s period). This causes the entire projected signal to rotate back and forth through an arc.

For vessels attempting to stay very close to a centre line, the oscillating boundary gives immediate and accurate warning of a lateral deviation as small as 2 metres (6 feet) when at a distance of 6 kilometres (3 nautical miles) from the light. The warning comes as the fixed white light is interrupted by a brief flash of colour every 3 seconds. The duration of the flash increases as the vessel moves further from the centre line.

As the observer moves across an oscillating sector, the duration of one colour flash relative to the other changes continuously. As one colour increases, the other decreases, but one cycle is always 3 seconds.

Extract from CA chart 4116



These are 5-sector lights, and follow the usual style of depiction for these lights, with the sectors either side of the centre sector being shown as **AI.WR** (or **AI.WG**) – which is not strictly what the mariner sees, but is probably understandable.

More unusually, there are some sectors which just have an oscillating white light, which the cartographer has shown as 3 sectors: a **F.W** centre and **AI.W** outer sectors. As Alternating always implies two (or more) colours, this is certainly not correct – but what would be?

S-12 definition: A light showing different colours alternately.

S-32 definition: light: alternating. A signal LIGHT that shows, in any given direction, two or more colours in a regularly repeated sequence with a regular periodicity.

IALA dictionary: As S-32, with the following additional note: The term continuous alternating light refers to an alternating light that shows continuously; the term rhythmic alternating light refers to an alternating light that shows intermittently. [We would chart the latter as **AI.FI** or **AI.Oc.**]

Strictly there are 7 sectors: **FI.W/Iso.W/Oc.W/F.W/Oc.W/Iso.W/Oc.W**

It would be impractical to show all these sectors and even if we did, the exact truth would still not be conveyed as the **FI** and **Oc** sectors are not consistent in division of light and eclipse and the **Iso** sectors are infinitely small.

This seems to be an equally complex problem for ENC.

Conclusions

Current charting techniques for depicting oscillating lights may be inconsistent and not technically correct. However, the issues may not be of concern to the chart user.

Recommendations

It may be better to simply have a new light description ‘Oscillating’ with a new INT abbreviation ‘**Osc**’ at the light star: eg **DirOsc.WRG.3s**, where 3 seconds is the period between the beginnings of complete oscillations. (Actually, the period only applies within the non-fixed sectors). These lights are always ‘directional’ lights. On small scale charts, it may be appropriate to just show the bearing line with legend **DirOsc.WRG 235°** or just **DirOsc**

235° along it.

The fixed sectors could then be labelled as usual, with the in-between and (where appropriate) outer sectors labelled **Osc.WR** or **Osc.WG**.

Os would be possible instead of **Osc**, but could at a glance be confused with **Oc**.

Justification and Impacts

It would be technically more accurate than using existing abbreviations to convey information they were never intended for.

The incidence of such lights is getting much more common.

There would be a need for small changes in S-4 and INT1.

TSMAD and DIPWG would need to consider whether a change is required for charting in ENC/ECDIS.

Action required of CSPCWG

The CSPCWG is invited to discuss the matter and:

- decide whether:
 - a consistent specification for such lights using existing symbols and abbreviations can be drafted, or
 - a new abbreviation **Osc** would be better
- consider whether the existing definitions of ‘alternating’ in S-12 and S-32 are adequate and accurate. Do they need amending or is there a need for additional definitions for oscillating. (This would need discussing with IALA, if change is required).
- It would be interesting to know how WG members describe these lights in their Lights Lists.