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INFORMAL TRIAL OF LASER RESCUE FLARE

1. Following receipt of several e-mails last year expressing concern as to the use of laser devices being used to attract the attention of SAR helicopters, a laser rescue flare was obtained for evaluation. The **GREATLAND RESCUE LASER LIGHT** is the smallest of a number of devices similar to a laser pointer, but with a fan shaped beam, designed to attract attention; colour and output power being the main variables.
2. The laser light is of similar size to a lipstick, light weight and powered by a 3 volt lithium battery giving a 40 hour life. The class 3A laser beam, red in this case is directed into a thin fan shape, effectively a 6000 ft line at 16 miles; this fan shape dissipates the power of the pointer compared to a laser pointer and gives a minimum safety range of 13 ft.



3. Operation of the flare is simple, as described on the website http://www.rescue-flares.co.uk/Rescue_laser_flare.html remove the protective cap and twist the base to switch on, but aiming the device takes a little practice. The best method was to make a V with the fingers of one hand and place the target in the centre half way along the fingers; the pointer was then moved left and right so that the vertical light could be seen on the fingers at each end of the sweep. The plan is for the movement of the laser to produce a flashing light that will be more easily noticed than a steady source.
4. The light was trialled in a variety of conditions with variable results as follows:
 - a. Strong Daylight. A bright sunny day was chosen for the first test and was disappointing to say the least, at 25 yds from the aircraft, the flare could not be seen at all and it was obvious that ambient light would play a large factor in detection range. Fears of danger to crews by having lasers shone at them were immediately dispelled.
 - b. Clear Night. A check at night reassured us that the flare did indeed work and ranges in excess of 10 miles were obtained in clear conditions with little ambient light. Detection ranges using Night Vision Goggles (NVG) were much better than eyes alone in similar conditions but as all lights are green on goggles, it was just another winking light. The

down side to the use of NVG was that the limited angle of vision precluded detection by peripheral vision; detection at night is usually in the peripheral area because of the physical characteristics of the eye. Detection of the flare relies on the goggles pointing near the flare as it is swept through the search aircraft.

- c. Overcast Day. A number of tests were carried out during dull overcast days in UK, consistent detection ranges of about 2½ miles were obtained at various angles to the sun.
5. At no time did any of the aircrew comment on after images or adverse affects from the flare.
6. The most impressive performance from the laser was when, at night, it was scanned over some equipment covered with reflective tape similar to Scotchlite, as fitted to most fluorescent jackets. Whilst not measured, the output from the equipment produced a large, very bright target and would be a preferred method of use.
7. The long detection ranges have to be tempered with a little bit of reality, if you cannot see the searching aircraft, you will not be able to aim the flare at it. The survivor must be uninjured to use the flare as it takes 2 hands to turn on and operate effectively. On the positive side, the flare is cheap, small and light; a useful addition to a suit of survival aids but not a replacement for anything that we currently carry.
8. The primary aim of the trial was to discover what, if any, hazard was posed by the present generation of Laser Rescue flares; it is safe to say that as long as the flares are not used at point blank range, there is little hazard to personnel. The secondary aim was to discover what we could expect to see, and at what range. Crews should expect to see an irregular flashing light, probably, but not necessarily red. Detection ranges will vary with the ambient lighting conditions, at worst undetectable on a bright day and at best in excess of 10 miles on a clear night.

I am grateful to Mr Peter Monroe of Monroe Engineering for the loan of the Rescue Flare for trial.

Signed on Original

J D EVANS
Squadron Leader