

NOTES ON LANDING WITH THE AID OF THE
RAE-THORN VISUAL APPROACH SLOPE
INDICATOR (VASI)

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The Visual Approach Slope Indicator (VASI) is designed to provide by visual reference the same information that the glide slope unit of an ILS provides electronically. It provides a visual light path within the approach zone, at a fixed plane inclined 2½ deg.- 3 deg. from horizontal by which an approaching aircraft pilot can see and utilize for descent guidance, during an approach to a landing, the element of course guidance obtained from reference to the runway lights.

The VASI can be used by pilots of all types of aircraft, both civil and military, both by day and by night. It will improve safety, especially at night, where descent guidance is provided by which the pilot of an aircraft can maintain a descent path which will assure proper clearance of obstructions in the approach area. It will provide guidance for approaches over water or featureless terrain where sources of visual reference are lacking or misleading. It will provide optimum descent guidance for the landing of large aircraft, particularly turbo-jets and minimise the possibility of undershoots and overshoots. Widespread use of the visual glide slope will materially aid in the abatement of aircraft noise by reduction in the number of low level approaches at high power, particularly from turbine aircraft. Finally, the VASI will provide guidance for a safe approach to a landing, well within the first third of a runway.

Standard installation of the complete System consists of twelve light source units arranged in light bars with three units placed on each side of the runway, opposite the 600-foot mark (from threshold) and three on each side of the runway at the 1300-foot mark. These are the downwind and upwind bars respectively. The visual glide slope reference point is midway between the upwind and downwind bars.

Provision is made for controlling the intensity of the lights and adjustments can be made at the request of the pilot. The VASI can normally be seen at the approximate range of the outer marker (4 - 5 miles) and at greater distances at night. Under sunlight or snow conditions the range is decreased to about 3,5 nautical miles.

The VASI has an integral fail-safe capability. A failure of a lamp unit, a complete half bar, or all units on one side of a runway will not create a hazard in the system because the colour relationship between the remaining units will still provide glide slope information. Thus, a safe approach can always be made on the visual glide slope.

The following is offered to pilots as yet unfamiliar with the principles and operation of this system and the pilot-technique required. The basic principle of the VASI is that of colour differentiation between red and white. Each light unit projects a beam of light having a white colour in the upper part and a red colour in the lower part. The light units are arranged so that the pilot of an aircraft during an approach will see the following:-

- | | | |
|------------------------|----------------|----------------|
| (a) Above glide slope: | White
White | White
White |
| (b) On glide slope: | Red
White | Red
White |
| (c) Below glide slope: | Red
Red | Red
Red |

Only the final approach and transition areas of airports have been protected for obstruction clearance. Therefore, the VASI information should not be utilized prior to final approach. The proper procedure for commencing a VASI approach is to first become aligned with the runway or runway lights. Distance from the runway should be approximately 1 mile for each 250' above the airport or about 4 miles at 1000'. Proceed inbound, maintaining a constant altitude until the downwind (near) bar transition from red through pink to white. Descent should then be initiated. When on the proper glide path, the pilot is in effect overshooting the bars nearer the threshold and undershooting the bars farther down. Thus he will see the downwind bars as white and the upwind bars as red. A position below the glide path will cause both bars to be red, and a high position will cause both bars to be white. Impending departure from the glide path is indicated to the pilot by a transition in colour from red through pink to white or vice versa. A movement to the high side will cause the upwind bars to change from red through pink to white. A descent below the glide path will change the downwind bars from white through pink to red.

As the pilot approaches the threshold, some deterioration of system guidance may occur due to the spread of light sources. However, the VASI will bring the pilot safely through a "gate" at the threshold, from which point he may accomplish a normal flare-out and landing.

This table indicates the glide slope intercept elevation above the airport at the following distances:-

Distance (nmi)	2½ deg. Glide Slope	3 deg. Glide Slope
1	266'	319'
2	531'	637'
3	797'	956'
4	1063'	1274'
5	1329'	1593'
6	1594'	1912'
7	1860'	2231'

NOTE

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