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(54) Title: SYSTEM FOR ENHANCING NAVIGATION AND SURVEILLANCE IN LOW VISIBILITY CONDITIONS

(57) Abstract

A system for enhancing navigation or surveillance in low visibility conditions is realized by employing one or more ultraviolet radiation sources (110), a receiver (130) which is capable of producing output signals from which a two dimensional image of the received radiation can be constructed, and a display device (140) for displaying such image. In one preferred embodiment the ultraviolet radiation source (110) is co-positioned with a critical marker such as a runway beacon or hazard beacon. The ultraviolet radiation emanates from the source (110), preferably modulated to form a repetitive, characteristic signal, propagates through the low visibility atmosphere, and received by the ultraviolet imaging receiver. In another preferred embodiment, an ultraviolet radiation source (110) is placed at or near the ultraviolet imaging receiver, that is, onboard the same vehicle or at the same fixed location. One or more reflectors (150) are co-positioned with the critical markers. The reflector reflects or redirects an ultraviolet radiation signal, received from the source, back through the low visibility atmosphere to the ultraviolet imaging receiver whereby an image of the received radiation is presented to an operator by a display device (140). In another preferred embodiment, the reflector may be replaced with a transponder. The present invention permits a pilot, vehicle operator, air traffic controller, or other operator to perform navigation or surveillance tasks in low visibility conditions in similar manner to that employed under clear weather conditions.

