

## INERTIAL GUIDANCE SYSTEM SIMPLIFIED

The aircraft knows where it is at all times. It knows this because it knows where it isn't. By subtracting where it is from where it isn't, or where it isn't from where it is (whichever is the greater), it obtains a difference, or deviation.

The Inertial Guidance System uses deviations to generate error signal commands which instruct the aircraft to move from a position where it is to a position where it isn't, arriving at a position where it wasn't, or now is.

Consequently, the position where it is, is now the position where it wasn't; thus, it follows logically that the position where it was is the position where it isn't.

In the event that the position where the aircraft now is, is not the position where it wasn't, the Inertial Guidance System has acquired a variation.

Variations are caused by external factors, the discussions of which are beyond the scope of this report.

A variation is the difference between where the aircraft is and where the aircraft wasn't. If the variation is considered to be a factor of significant magnitude, a correction may be applied by the use of the autopilot system.

However, use of this correction requires that the aircraft now knows where it was because the variation has modified some of the information which the aircraft has, so it is sure where it isn't.

Nevertheless, the aircraft is sure where it isn't (within reason) and it knows where it was. It now subtracts where it should be from where it isn't, where it ought to be from where it wasn't (or vice versa) and integrates the difference with the product of where it shouldn't be and where it was; thus obtaining the difference between its deviation and its variation, which is variable constant called "error".