

Downhole Sensor Tool For Nuclear Measurements

Abstract

A downhole measurement apparatus includes a tool body supporting a logging tool. The logging tool includes a detector outsert coupled into and exposed through an exterior pocket of the tool body to position the outer surface of the outsert adjacent or in close proximity to the outer diameter of the tool body. A stabilizer or off-center stabilizer may be provided to further deflect the outsert portion of the logging tool toward an earth formation to increase detector proximity to the formation. The axial distance between the detector and a nuclear source can be calibrated using configurations of the nuclear source holder and the outsert. Retention mechanisms for the source holder and the outsert further enhance proximity and calibration.

Fig. 15