

Installation and Testing of a Cosmic Veto System at the IMS Station RN67, St Helena

AWE recently developed a Cosmic Veto system for use with CTBTO detectors at UK laboratory GBL15. The technology used for this has subsequently been adapted and optimised so that Cosmic Veto systems can be retrofitted to existing IMS manual station designs. During October 2016, in collaboration with the PTS and Enviroearth, a 'Hot Spare' system was installed at RN67 St Helena in the South Atlantic to field test the Veto system on a CTBTO specification detector. The 'Hot Spare' configuration is of particular importance for remote stations, comprising of a secondary certified detector that can be used if there is a problem with the primary system. Additionally, experience and expertise in the design of low-background systems was utilised to upgrade the shielding of the 'Hot Spare', further improving system sensitivity. This upgrade was also designed specifically to enable easy and cost-effective retrofit of existing IMS stations. RN67 and AWE both utilise a 'Snow White' sampler, allowing testing of the system as a hot spare and as a primary detector. The Veto has been proven to provide a substantial sensitivity improvement in the field, with no adverse effects on the validity and robustness of the CTBTO certified measurement and analysis process.

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