

BigRAID –an 11.2” diameter version of the BAS Rapid Access Isotope Drill

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The BigRAID is a large diameter version of The British Antarctic Survey (BAS) Rapid Access Isotope Drill (RAID), whereas the original RAID was based around a 3-inch barrel and has cutters with an outer diameter of 85.2mm, the BigRAID has cutters with an outer diameter of 285mm. Both drills work on the same principle with full face twin cutters that create chippings which are then collected internally within the drill sonde. The drill sonde is then winched to the surface and the chippings ejected by running the drill motor in reverse. This presentation focuses on the concept and design of the full BigRAID drill system highlighting the differences between the BigRAID and the RAID. The most significant are, a direct drive drill motor, an asymmetric cutting head to reduce chip loss during borehole transit, anti-torque slip ring and above surface anti-torque. The BigRAID has been drilling access holes as part of the Radio Neutrino Observatory –Greenland (RNO-G) up at Summit Station. The drill is mounted on an plastic sheet and can be setup quickly and moved easily from one site to the next.

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