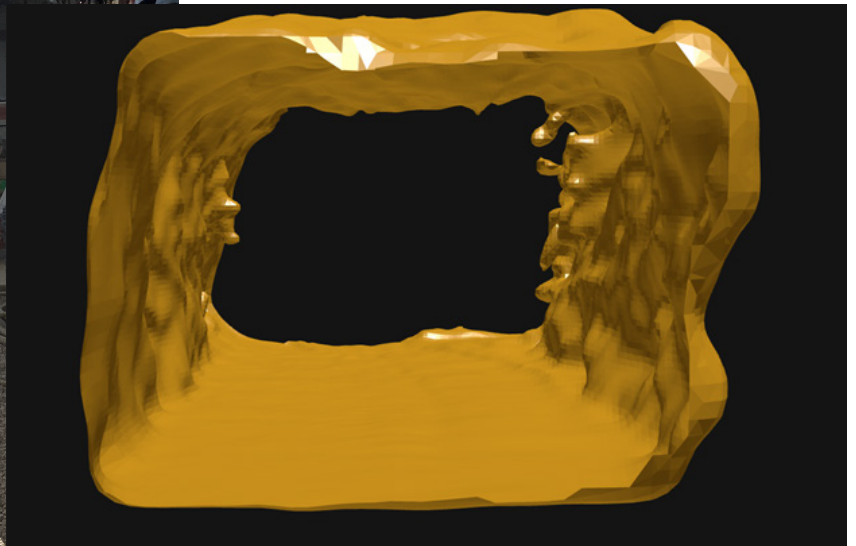


HOMESTAKE MINE TUNNEL MAPPING

RESPEC is working on a Department of Energy Research Project to determine the effectiveness of inducing borehole breakouts using a manufactured heater tool. They test their heater designs at the Sanford Underground Research Facility (formerly the Homestake Gold Mine) near Lead, South Dakota, on the 4100 Level of the facility, which is 4,100 feet below the surface.

The underground area is relatively small to perform their experiments in, so an accurate 3D model of the space helps the team lay out their testing environment. The tunnel area is roughly 9 feet wide and 9 feet tall. Components for the experiment consist of power controllers, custom heaters and protective canisters, deployment rods, computers, and temperature monitoring instruments. The equipment needs to be organized to be inserted into boreholes varying in diameters from 3" to 6" and staged for easy handling.

To scan the tunnel space, the C-ALS was set up on a tripod stand as it was accessible for personnel. The area was scanned at a 1-degree interval to create a high-definition model of the small space. Rock features and spatial data were observed from the scan. This model provided the team with insight related to the available space to work in. They could design their equipment layout in the laboratory prior to executing the staging of the equipment in the underground area.



3D Scan Viewed from Multiple Angles

