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WATER EXTRACTION FROM SIMULATED MARTIAN BASE AT MDRS, UTAH FOR HUMAN
CONSUMPTION AND PROPELLANT MANUFACTURE

Abstract

Extraction of water from eroded Morrison formation, upper Jurassic sedimentary rock consisting of mudstone and sandstone, was undertaken at the Mars Desert Research Station (MDRS) in Utah, USA. The aim was to investigate extraction of water from Martian soils, known to consist of 1 to 10% water, by using a prototype water extractor developed previously at NASA Ames then through electrolysis trial making oxygen and hydrogen. The investigation has application for human Mars exploration. The MDRS soil samples were measured 5 - 7 cm and 10 - 13 cm depth, to contain 4 - 12% and 2.5 - 8% by weight water. The extractor, consisting of a heated container with air pumped through to a cold finger condenser, extracted up to 30% of possible extractable water but mostly around 10% over a 40 minute heating process. Water extracted had a pH of 5 and was electrolyzed to oxygen and hydrogen without the addition of salts. The water extracted and soil is currently being tested for human usage.