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Russell Page

Construction drilling in snow, ice and frozen ground.

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Russell Page talked about construction operations in the Polar Regions. It requires an efficient method of drilling large diameter holes in snow, ice and frozen ground. Holes are often needed for wells, anchors for wires, utility poles, pile foundations and for ship docking. In the McMurdo Sound construction activities have been hampered by the lack of adequate drilling equipment. Regular augers did not work. They experimented with different bits. The work was done between 1966-1968. They drilled in areas of frozen ground, volcanic rock, sea ice, fast ice with inclusions of rock, glacier ice and deep snow. He described the runways and infrastructure at McMurdo Station. Construction drilling is needed for a variety of reasons including utility poles and pile foundations. He described the materials they had to drill through. They drilled through ice to tie off ships. They tried various diameters of augers in snow and ice. They had various limitations. They had success with a tube coring drill. He described the drill and their success in different materials. He discussed difficulties of drilling deeper holes and the problem of using compressed air in permafrost areas. They used sea water for their drilling fluid. He said the tube coring drill has real application in the arctic.

The rest of the papers in the Section: Physical aspects of Arctic development can be found in the Proceedings of the Twentieth Alaska Science Conference (Q 180 U5 A66a 20th 1969).