NATIONAL RESEARCH COUNCIL OF CANADA

ASSOCIATE COMMITTEE ON GEOTECHNICAL RESEARCH

PROCEEDINGS

of the

THIRD CANADIAN CONFERENCE ON PERMAFROST

14 AND 15 JANUARY 1969

PREPARED BY

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FOREWORD

This is a record of the Third Canadian Conference on Permafrost which was held at MacEwan Hall, The University of Calgary, on 14 and 15 January 1969. The Conference was sponsored by the Associate Committee on Geotechnical Research of the National Research Council. A list of those in attendance is included in Appendix "A" of these proceedings. Approximately 370 persons attended the Conference from Canada and the United States including delegates from the Yukon and Northwest Territories, and Alaska.

The overall theme of the Conference was concerned with permafrost problems related to the mining and oil and gas production industries. Papers from both Canada and the United States considered various aspects of these problems in the permafrost region of North America. The first session, under the chairmanship of Dr. R. M. Hardy, Dean of Engineering, University of Alberta, Edmonton, Alberta, included papers on the distribution of permafrost in Canada, permafrost problems in iron mining at Schefferville, P.Q., site investigations at potential mine sites in northern Quebec and Baffin Island, and blasting frozen ground with compressed air. The second session was chaired by Mr. L. Samson, Terratech Limited, Montreal, P.Q., and three papers on experiences with permafrost at mines in northern Canada were presented. The Chairman of the third session was Mr. R.A. Hemstock, Imperial Oil Limited, Calgary, Alberta. Papers were presented on possible problems with pipelines in permafrost regions, considerations of heat transfer in soils for design and performance of engineering structures, velocity of compressional waves in porous media at permafrost temperatures, and permafrost aspects of oil exploration in northern Alaska after the Second World War. The Chairman of the fourth session was Dr. W.O. Kupsch, Director of the Institute for Northern Studies, University of Saskatchewan, Saskatoon, Saskatchewan. Papers were presented on permafrost problems in oil and gas exploration and production, thermal erosion problems in pipelining, and techniques for setting drill rigs on piles and cementing well casing in permafrost.

The documentary film of construction on permafrost in the U.S.S.R., presented to the Division of Building Research, National Research Council, by the Soviet Ambassador to Canada, was shown. Of the fifteen papers presented at the Conference, thirteen are reproduced in their entirety in these proceedings and two are presented in summary or abstract form.

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