

FIELD STUDIES OF BOTTOM CREVASSES IN THE ROSS ICE SHELF, ANTARCTICA

(Abstract only)

by

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ABSTRACT

Surface and airborne radar sounding data were used to identify and map fields of bottom crevasses on the Ross Ice Shelf. Two major concentrations of crevasses were found, one along the grid-eastern grounding line and another, made up of eight smaller sites, grid-west of Crary Ice Rise.

Based upon an analysis of bottom crevasse heights and locations, and of the strength of radar waves diffracted from the apex and bottom corners of the

crevasses, we conclude that the crevasses are formed at discrete locations on the ice shelf. By comparing the locations of crevasse formation with ice thickness and bottom topography, we conclude that most of the crevasse sites are associated with grounding. Hence we have postulated that six grounded areas, in addition to Crary Ice Rise and Roosevelt Island, exist in the grid-western sector of the ice shelf. These pinning points may be important for interpreting the dynamics of the West Antarctic ice sheet.

RADAR STUDIES OF INTERNAL LAYERS AND BOTTOM TOPOGRAPHY AT DOME C, EAST ANTARCTICA

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ABSTRACT

Extensive and detailed radar surveys at Dome C were conducted during the 1978-79 and 1979-80 austral field seasons by groups from the University of Wisconsin. Measurements were conducted within a 10 x 10 km grid centered approximately on the Dome C camp (some additional studies were carried out as far as 20 km from the camp) and involved profiling of internal layers and bottom topography. In addition, a new digital recording system for the radar was used during the first season and has yielded interesting results on internal layers near the French bore hole.

Analysis of these data has produced a local map of bottom topography showing generally rough terrain. In particular, there is a rapid deepening of the bottom topography (about 500 m over 2 km) just grid-

south-west of the camp. Internal layers were found to be discontinuous on a scale of tens of meters. The deepest internal layers were detected at depths of about 2 500 m although a set of remarkable layer-like returns were observed about 50 to 100 m above the interpreted base of the ice. (It is not yet clear whether these returns represent reflections from layers internal to the ice or whether they are reflections and diffractions associated with the rough terrain.) In addition the processed digital records show an abrupt decrease in the reflection strength of internal layers at about 1 700 m. Because the digitally recorded data were collected at only one site, we reserve concluding that this observation is characteristic of the entire Dome C area until more of the photographically recorded data can be reduced.