

SURVEY OF APPROACHES TO FOX HARBOUR (PORT BURWELL), UNGAVA BAY

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Introduction

Reconnaissance surveys of the seabed were conducted in 1990 in the approaches to Fox Harbour (Port Burwell) on the east coast of Ungava Bay.

This is the locality where the historic Sikorsky S-38 flying boat "Untin Bowler" is believed to have sunk in 1929 after being caught in pack ice. The aircraft was attempting a trans Atlantic mail flight and had stopped at Fox Harbour to await improved weather conditions.

The history surrounding this aircraft and the interest of "The Flying Boat Society" in locating and recovering it were brought to the attention of the Canadian Hydrographic Service and Atlantic Geoscience Centre through Mr. Alan Ruffman, President, Geomarine Associates Ltd., Halifax, N.S.

Surveys of this area in 1990 were carried out in conjunction with other programs in the region and were intended to provide an overview of seabed conditions as an aid to those planning further efforts to locate this aircraft.

The surveys were in two parts.

1. A preliminary bathymetric survey of the area was conducted by the Canadian Hydrographic Service from CSS Baffin in July, 1990.
2. Utilizing these bathymetric data, Atlantic Geoscience Centre conducted surveys to obtain sidescan sonar imagery and Hunttec high resolution seismic reflection profile data in this area in September, 1990 during CSS Hudson cruise 90-023.

The open file report contains copies of:

- I) the CHS preliminary bathymetric data;
- II) CSS Hudson's survey tracks;
- III) sidescan sonograms (reproduced at 50 % reduction)*;
- IV) Hunttec profile (internal hydrophone)*;
- V) Hunttec profile (external hydrophone)*

* original data may be viewed at Atlantic Geoscience Centre

Methods

Bathymetric data were obtained from CSS Baffin by means of an Elac 72 echosounder, from which depths were digitized by an Elac 721 digitizer, processed on a microvax computer, and velocity corrected with water column data obtained by an Applied Microsystems SVP 16 Velocimeter. Positioning was by a Sercel Syledis system in range range mode.

Sidescan sonar imagery was obtained from CSS Hudson by means of the Bedford Institute of Oceanography 72.5 kHz sidescan system with a range of 750 m to each side. High resolution seismic reflection data were obtained with a Hunttec deep towed profiler equipped with internal and towed hydrophones. CSS Hudson's survey tracks were positioned by radar from the adjacent shore.

Preliminary results

The seabed in the search area shallows gradually shoreward with water depths ranging from more than 200 m in the outer part to 50 m in the inner part directly off the entrance to Fox Harbour, and to less than 10 m adjacent to the northwestern tip of Jackson Island.

Hunttec profile data and sidescan sonar imagery suggest that the area is floored by a hard bottom with little penetration or resolution of the substrate by acoustic energy from the Hunttec system. The seafloor sediments bear the imprint of extensive ice scours. The scours consist principally of furrows that range in width from < 5m to 50 m, together with a few pit marks. These appear to be mainly shallow features

with relief of < 2 m. Many of these display a parallel orientation and possibly include glacial ice sheet sole marks, on which some later iceberg scours have been superimposed. Except for the low relief associated with the ice scour features and more irregular morphology in a few areas due to bedrock or glacial deposits, the seabed is relatively smooth.

The ice scours and occasional bedrock/glacial sediment outcrops in some areas create background reflections against which an object the size of "Untin Bowler" which had a wingspan of 22 m, or its main remaining components, would not be clearly distinguishable on the sonograms obtained with the Bedford Institute sidescan. Future investigations will require more detailed examination of the seabed with higher resolution techniques.

Strong surface currents were encountered in the region during the Hudson survey. If these were active at the time of the aircraft's sinking their possible effect on its location must be considered.

The strength of seabed currents is not known. Sidescan data suggest that some of the ice scours, particularly some of the older ones, have undergone some modification, but current velocities have not been so vigorous as to obliterate these features.