



Senior Design Project in Electrical & Computer Engineering



International Ice Patrol

Upgrade of Thermograph Data Recording Software

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Sponsor: International Ice Patrol

Project Background

The International Ice Patrol is a unit of the U.S. Coast Guard that tracks and reports on icebergs near the Grand Banks of Newfoundland and publishes this information to mariners who may be sailing through that region. To track the ice field, aircraft are used to look for icebergs as well as gather data that will help predict the future location of the ice.

To help gather this data, the crews of the HC-130 patrol aircraft periodically deploy small disposable buoys at various locations in the ice field. These buoys record temperature at various depths and transmits that data to a receiver onboard the aircraft. This data is then recorded onto a laptop computer connected to the receivers and stored for later analysis.

The software currently in use on these computers is far from user friendly, and does not allow the user to observe the data in real-time, leaving the air crews with no way to determine if accurate data has been obtained until after the patrol is complete.



HC-130 on Ice Patrol Flight



Data Buoy and Recording Computer

Project Goals

The goals that we hope to achieve during this year are:

- Improve the legacy software by making it more user friendly.
- Reconfigure the software so that it records and monitors up to three streams of incoming data at the same time.

Results

- Completed GUI in Borland C++ Builder.
- Converted legacy visual basic source code over to C++ source code.
- Completed Status and Bite test code modules

Project Plan

The current software that the International Ice Patrol uses is not user-friendly and cannot be used to concurrently monitor and record data. The new software will incorporate a more user-friendly operating environment with the ability to multi-task operations. This will be done through the use of Graphical User Interface (GUI) programming, serial communications, and multi-threading processes. The International Ice Patrol will be able to effectively detect proper buoy performance by simultaneously monitoring and recording data. This will save the Ice Patrol time and money along with improving their ability to accurately predict the location of the Labrador Current and the melting rate of the icebergs.



Future IIP Software