**“Decoding of INCOIS messages using C code”**

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**1. Introduction:**

The **Indian Regional Navigation Satellite System** (**IRNSS**), with an operational name of **NAVIC**  is an autonomous regional [satellite navigation](https://en.wikipedia.org/wiki/Satellite_navigation) system that provides accurate real-time positioning and timing services. NAVIC will provide two levels of service, the "standard positioning service", which will be open for civilian use, and a "restricted service for authorised users. The Constellation consists of seven satellites. NAVIC signals consists of SPS and Precision service which will be carried on S band . A messaging interface is embedded in NAVIC system .This feature allows the command center to send warnings to a specific geographic area. The signal in space ICD for messaging services provide the information on INCOIS messaging service offered by ISRO using IRNSS spacecraft. INCOIS is an autonomous organization of government of India. ESSO INCOIS is mandated to provide the best possible ocean information and advisory services to society , industry, government agencies through sustained ocean observations & constant improvements. INCOIS is providing various type of warning & information messaging services to the user in India. The warning may include messages like: Tsunami warning , Cyclone warning , High Wave Alert & Potential Fishing Zone to the fishermen of India. The messaging services are provided to users within Indian region using IRNSS ICD document provides necessary information for decoding the messages being transmitted by IRNSS spacecraft.

**2. Aim of the Application:**

The project aims to develop a easy system that is user friendly and with less cost and it should get the message directly to the phone from the NAViC receiver so that people will be alerted whenever there will be a disaster. The implementation of the project to the phones is my future work. For now i am writing a code that will decode the bits that are received by the NAVIc receiver.

**3. Objectives:**

* Analyzing the frame and subframe structure of the message received from the NAVIC receiver which is provided by the ICD document.
* Decoding the message bits received by the NAVIC receiver accordingly to the message bits present in the subframe structure.
* The received message is decoded by writing the MATLAB code and the output message is obtained
* The decoded information (output message) is used to intimate public with warning like High wave alert, Cyclone warning, Tsunami alert message, Potential Fishing Zone.

**4. Problem Statement Description:**

Whenever there is disaster in seas or in land regions we wont get the warning messages, so that it became difficult to save the lives of the people. If we are able to send the warning messages to all the phone prior to the disaster everyone will be alerted and they will go to safe zones.

**5. System Requirements:**

**For Software:**

1. Operating System: Windows 98 or higher versions
2. Codeblocks or Turbo C needs to be installed.

**6. Test Plan and Test Cases:**

**7. Conclusion:**

To sum up the project, we have written a C code for easy delivering of messages to the people with the less cost . Hence, the project completes by decoding of INCOIS messages via NAVIC receiver which is beneficial for the public and also the fishermen’s in India.

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