These are some rough notes on the S57 file format. The existing documentation on this is either fairly sparse or incredibly complex. If you want to get in to the gory details then try to read the IHO documentation. It is much more focused on how to generate the file than it is on how to use it. By far, I got more out of closely examining the code from the gdal and sharpmap distribution than I did from reading all that stuff.

In brief, a S57 file consists of a number of layers. Some of the layers have displayable and some do not. The non-displayable layers typically contain information about the map itself, while the displayable layers contain references to object. It has to be noted that the S57 file contains no directly displayable information. It contains objects that must be translated into their appropriate display objects and color. How to display the data in an S57 file requires the implementation of the S52 translation layer. I have not got that far yet.

The basic structure of each layer is exactly the same. The first set of elements is the "Feature Definitions". Each "Feature Definition" has a name.

This dataset tells us how to interpret the next layer. For example, it contains data such as what data type each element, how many digits it contains, and what precision it has.

For example, the first layer that is typically in each map is DSID. This is a non-displayable layer, but contains all the pertinent information about the map. Here are the first few entries of this layer from a file I dumped.

DSID\_EXPP: Integer (3.0)

DSID\_INTU: Integer (3.0)

DSID\_DSNM: String (0.0)

DSID\_EDTN: String (0.0)

DSID\_UPDN: String (0.0)

DSID\_UADT: String (8.0)

DSID\_ISDT: String (8.0)

This shows the first few entries. EXPP is an integer with three digits with no digits to the right of the decimal point. Some of these seemingly make little sense. For example DSNM is a String with 0 digits, but as we will see, that is not the case.

There is only one Feature Definition dataset for each layer.

The next dataset is called “Features”. The elements have exactly the same names as the “Feature Definitions”. There is at least one “Feature” dataset, but there may be several. In all cases, they match the names of the “Feature Definitions”.

Field Name: DSID\_EXPP, Field Name Ref: DSID\_EXPP, Field Type Name: (Integer, Field Type: OFTInteger, Value: (1)

Field Name: DSID\_INTU, Field Name Ref: DSID\_INTU, Field Type Name: (Integer, Field Type: OFTInteger, Value: (5)

Field Name: DSID\_DSNM, Field Name Ref: DSID\_DSNM, Field Type Name: (String, Field Type: OFTString, Value: (US5TX51M.000)

Field Name: DSID\_EDTN, Field Name Ref: DSID\_EDTN, Field Type Name: (String, Field Type: OFTString, Value: (1)

Field Name: DSID\_UPDN, Field Name Ref: DSID\_UPDN, Field Type Name: (String, Field Type: OFTString, Value: (0)

Field Name: DSID\_UADT, Field Name Ref: DSID\_UADT, Field Type Name: (String, Field Type: OFTString, Value: (20010711)

Field Name: DSID\_ISDT, Field Name Ref: DSID\_ISDT, Field Type Name: (String, Field Type: OFTString, Value: (20010711)

Notice that the names match exactly. In the case of the features, the actual values are included. To decipher these values, we need to use the S57 magic decoder. The best one I know of is located at: <http://www.s-57.com/>

If we go to that site, we will not find a layer called DSID. That is because, as best I can tell, s-57.com only includes information about displayable layers. DSID is not a displayable layer, but contains meta-data about the map.