Australian Government
Department of Defence

AUSTRALIAN
HYDROGRAPHIC
OFFICE

Fact Sheet: AusENC
Guide to the AHO's ENC numbering system

Most official Australian Electronic Navigation Charts produced by the Australian Hydrographic Office follow a simple grid-based location system, while those covering ports often combine the coverage only obtainable by using several charts.   This guide explains the five differing levels of detail available using AusENC and the file numbering system which helps tell you where they are located.

The components

All ENC must adhere to an eight character file numbering convention controlled by the International Hydrographic Organization (IHO).

National Identifier (always 2 letters)	Navigation Purpose Code (no. in range 1 to 5)	Unique File IDr (always 5 characters)
AU	2	4 5 6 7 8

These letters and numbers include:

National Identifier:

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ENC produced by the AHO have the following national identifiers as the first two characters:

- AU - Australia,
- PG - Papua New Guinea,
- SB - Solomon Islands,
- 7U - Australian test datasets.

Near neighbours include:

- NZ – New Zealand,
- FR – France (charting parts of the SW Pacific Ocean),
- GB – United Kingdom (charting parts of the SW Pacific Ocean and Indian Ocean),
- ID – Indonesia,
- US – United States (charting parts of the SW Pacific Ocean).

Navigation Purpose Code:

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AU	2	4 5 6 7 8

ENC are compiled within six scale ranges to suit differing navigation purposes. When a user zooms in beyond the maximum scale of, for example, a Navigation Purpose 2 ENC, their system will open a Navigation Purpose 3 ENC if one exists in that area.

Navigation Purpose Codes are:

Navigation Purpose Code	Usage	Area (as produced by the AHO)
1	Overview - ocean coverage for international passage planning	30° x 30°
2	General - sea area coverage for offshore navigation	10° x 10°
3	Coastal - continental shelf coverage for coastal navigation	1° x 1°
4	Approach (to coast) - near shore coverage for inshore navigation, including coastal shipping routes.	1° x 1° (plus a few chart-based ENC in the Coral Sea.
5	Harbour – for navigation from the pilot boarding ground to the berth, and in coastal bays and inlets.	Customised to cover port and pilotage areas.
6	ENC containing high density bathymetric data (i.e. depth contours every 1m) to support navigation in areas otherwise restricted by depth. These products are also referred to as 'High Density bathymetric ENCs' (HDbENC).	Customised to cover channels and maneuvering areas

Unique File Identifier:

National Identifier (always 2 letters)	Navigation Purpose Code (no. in range 1 to 5)	Unique File ID (always 5 characters)
AU	2	4 5 6 7 8

This part of the file name is at the discretion of each ENC producing nation.   While some hydrographic offices chose to model their ENC scheme upon their paper charts, refining sometimes dozens of different scales into six scale ranges, and clipping them to remove the overlaps inherent within all paper charts schemes, resulted in a variety of complex numbering systems.   Others are have since, or are in the process of, moving to a grid based system.

AHO ENC identification system

The AHO uses a combination of a grid based system for offshore and coastal coverage, combined with a chart / port based system for the largest scale areas.   The scheme may be summarized as:

- Navigation Purpose Codes 1 to 4 - square grids of latitude and longitude,
- Isolated Navigation Purpose Code 4 covering certain isolated offshore reefs in the Coral Sea retain the limits and number of the existing Paper Nautical Chart (PNC),
- Navigation Purpose Code 5 retain the number of the largest scale PNC,
- Navigation Purpose 6 (HDbENC) are based on the extents of a particular area of interest.

AHO grid-based ENC system

The grid based system uses the latitude and longitude of the south west corner of the ENC as the Unique File ID.

As all AusENC are located south of the equator and east of Greenwich, all latitudes are southern latitudes, and all longitudes are eastern longitudes.

ENC with different Navigation Purpose Codes may share a common latitude and longitude as their SW corner, however the Navigation Purpose Code will always differ.

National Identifier	Navigation Purpose Code	Unique File Identifier	
		Latitude	Longitude
AU	2	3 0	1 2 0

Examples:

AU 1 30120	An Australian navigation purpose code '1' (30° x 30°) ENC whose south west corner is 30° S and 120° E, with coverage extending 1° north and east from the origin.
AU 2 30120	An Australian navigation purpose code '2' (10° x 10°) ENC whose south west corner is 30° S and 120° E, with coverage extending 1° north and east from the origin.
AU 3 30120	An Australian navigation purpose code '3' (1° x 1°) ENC whose south west corner is 30° S and 120° E, with coverage extending 1° north and east from the origin.
SB 4 10160	A Solomon Islands navigation purpose code '4' (1° x 1°) ENC whose south west corner is 10° S and 160° E, with coverage extending 1° north and east from the origin.
PG 4 09155	A Papua New Guinea navigation purpose code '4' (1° x 1°) ENC whose south west corner is 9° S and 155° E, with coverage extending 1° north and east from the origin.

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AHO chart / port-based ENC system – 'Harbour' ENC

The ENC covering ports, as well as plans of coastal inlets, are typically smaller than 1 x 1 degrees in size, so are unsuited to a grid-based system. They have therefore retained a link to the Paper Nautical Chart, or multiple charts, upon which they were originally based. A small number of isolated reefs and islands in the Coral Sea have also retained a chart-based Unique File ID.

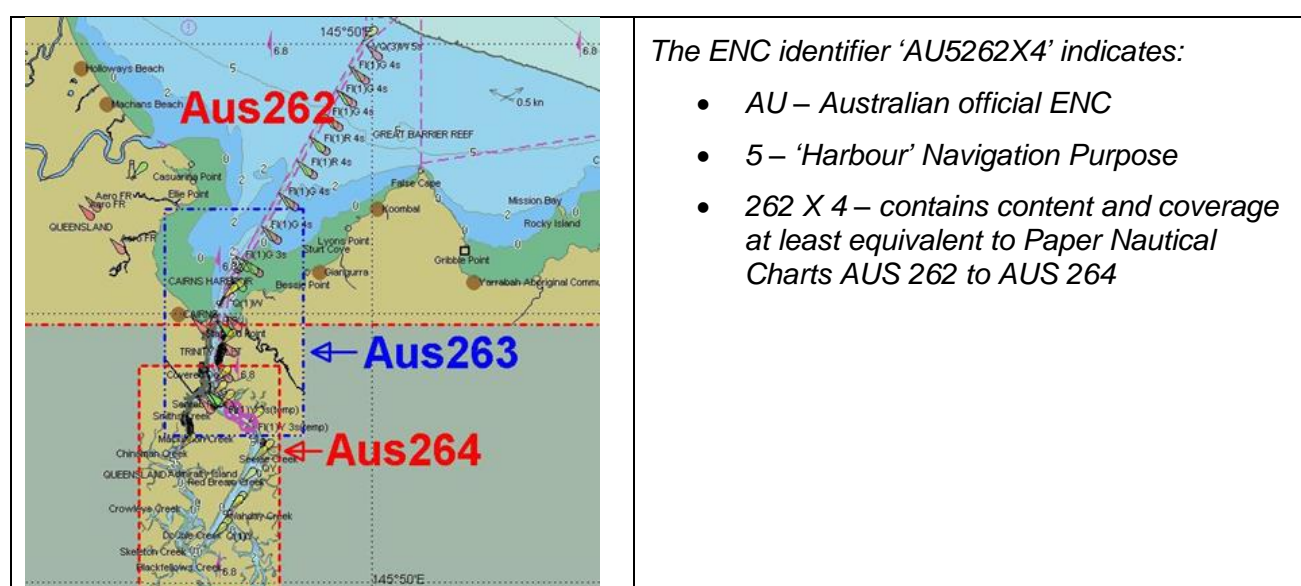| National Identifier	Navigation Purpose Code	Unique File Identifier
AU	5	262X4

The Unique File ID includes five characters linking the ENC to either a single paper chart, multiple paper charts or the large scale plan for which it provides equivalent coverage.

'P' is used to denote that the ENC is based on a single paper chart or plan from that chart. Since first being compiled, port ENC are likely to contain significantly greater levels of detail than the equivalent paper chart, and with many extended to cover approach channels and the full extent of pilotage routes into and out of the port. However, to provide continuity for users, the original Unique File IDs have been retained.

An ENC numbered in the form '194P0', indicates the ENC contains coverage at least equivalent to the main chart on Aus194.

If 'P' is followed by a number in the range 1 to 9, it is used to denote that the ENC is based on a plan from the named chart. An ENC numbered in the form '256P2', indicate the ENC contains coverage of the second plan depicted on the paper chart Aus256.

'X' is used to indicate a range of paper charts. ENC of equivalent coverage to several charts are numbered in the form '262X4', indicating the ENC contains coverage equivalent to all charts in the range Aus262 to Aus264, as in following example:

The ENC identifier 'AU5262X4' indicates:

- *AU – Australian official ENC*
- *5 – 'Harbour' Navigation Purpose*
- *262 X 4 – contains content and coverage at least equivalent to Paper Nautical Charts AUS 262 to AUS 264*

Other examples:

AU 5 194P0	An Australian navigation purpose code '5' (Harbour) ENC originally based upon AUS194.
AU 5 198X9	An Australian navigation purpose code '5' (Harbour) ENC originally based upon AUS198 to AUS199.
AU 5 256P1	An Australian navigation purpose code '5' (Harbour) ENC originally based upon AUS2the first Plan on AUS256.

AHO chart / port-based ENC system - High Density bathymetric ENC

The High Density bathymetric ENC covering critical parts of a port and its departure channels have no equivalent paper chart, nor even a legacy connection to one that may have previously existed. There are frequently several of these in each named port covering separate sections of a channel. These HDbENC therefore use a three letter abbreviation for the port, similar to those used for airports, combined with a number to denote individual ENC.

National Identifier	Navigation Purpose Code	Unique File Identifier
AU	6	CNS01

The first three characters of the Unique File ID is taken from the United Nations Location Code (UN/LOCODE), used for transport hubs world-wide.

The last characters are a two digit number that starts at 01 and increases as the cell gets closer to the wharves, the main harbour or to an anchorage.