

The book concludes with nine appendices covering topics from spherical trigonometry, to least squares and Kalman filtering, to a discussion of how satellites are launched into specific orbits.

Although many of the systems and specifications listed in the book are out of date, the fundamental principles are presented in a thorough, yet easy to understand, way that is not found in many more recent texts. Specifically, the two “error calculations” chapters should be required reading for any prospective surveyor or geomatics engineer. Overall, Radionavigation Systems is an excellent book, and one many younger navigation engineers will wish they had been able to obtain earlier in their careers.

*Kyle o’Keefe*

*Note of the Editor: Reprinted by kind permission of the Canadian Institute of Geomatics.*

\*\*\*\*\*

**“THE ELECTRONIC CHART DISPLAY AND INFORMATION SYSTEM (ECDIS)  
An Operational Handbook”**

One can find little fault about this book except its weight! Written by Adam Weintrit, who has a distinguished background as a mariner and academic, it provides a comprehensive view of ECDIS covering both governmental and commercial interests. It is lavishly illustrated and the written English is clear and readable. Its origin and no doubt its future use will be primarily in the school room and particularly in the hands of young navigators. The need for adequate training has been stressed repeatedly when new technology is being introduced and this volume will contribute substantially to that objective. The author, although working in the academic arena, clearly knows his way around the international institutions that have been so much involved in introducing this technology. He also seems most familiar with the numerous companies providing both systems and developing the chart data. He shows detailed knowledge of the development of the complex international legislation that has associated itself with the charts, the chart systems and the several other systems that today contribute to modern e-navigation. The illustrations are both colourful schematics describing processes and configurations and cartoon drawings, presumably used in the lecture hall. This is a good time to be

describing ECDIS as it is really coming of age. At long last Electronic Navigational Charts (ENCs) are available for most areas of interest and the long expected legal requirement for ECDIS to be carried is becoming a reality.

Before launching into a commentary of the strengths and few weaknesses of this book it may be useful to outline the contents:

1. Legal Aspects, Requirements and International Standards
2. Principal Types of ECS and Electronic Charts
3. ECDIS Data
4. Presentation of ECDIS Data
5. Main Functions of ECDIS
6. Special Functions for Route Planning
7. Route Monitoring and Special functions
8. Data Updating Systems
9. Additional Navigation- Related Information Sensors, Display and Function
10. Voyage Data Recording
11. Errors, Status Indications, Warnings and Alarms
12. Operational Requirements

In addition to discussing each of these subjects in great detail there are a number of appendices that cover such useful topics as the IMO ECDIS Model Course, a Glossary of ECDIS-Related Terms and a description of the Admiralty Vector Chart Service (AVCS).

Anyone who has spent time in the ECDIS arena of committees, working groups and assemblies since electronic charts first came on the scene in the early 1980s will know the extent of discussion that has gone on concerning every one of the titles above. The author has covered each in great detail objectively discussing the often opposing views of government and industry as the technology has developed. This has included the need to carefully distinguish between ECDIS and

ECS and between official and non-official products. The complexities of SENCs and RENCs, the differences between vector and raster charts have been covered in detail. The actual tasks of the navigator in route planning, route monitoring and updating have been well described with the use of clear schematic diagrams.

The book has moved from ECDIS into complementary technology such as ARPA, AIS and AMLs ( Additional Military Layers), once again with good illustrations, for which can only be faulted by the difficulties of showing chart areas as small diagrams that will fit in with the text layout. There is an interesting discussion on special functions that can be used in Route Planning, merging together meteorological ocean route planning with the capabilities of ECDIS. The author has in general not ventured too far into the future but describes what is available today and can make ECS and ECDIS have a use beyond the direct replication of the paper chart. Although these matters have been discussed in detail there

does not seem to be an explicit recognition that ECDIS has the capacity to go far beyond the conversion of a nautical chart from paper to digital but this can no doubt be inferred from the various procedures discussed.

Besides describing the technology itself the author goes in detail into the data development organisations such as PRIMAR, IC-ENC, and WEND. The concept of RENCs and WEND are fully explored. Perhaps more could have been said about the American way of doing business from the DNC/ ENC arguments to the difference between the commercial approach to chart provision in Europe compared with the freely available products of the USA. This is such a large and complex volume that it remains quite possible all this has yet to be found amongst the pages. Overall this will be found by many navigators as a first class reference.

*Adam J.Kerr*

[Back to Contents](#)