

Notes



ECDIS Type-Approval – A Brief Primer

Dr. Lee Alexander

ECDIS type-approval is the certification process that ECDIS equipment must undergo before it can be considered as complying with the IMO Performance Standards for ECDIS. Type-approval is normally conducted by recognised type-approval organisations or by marine classification societies. Some maritime nations also have type-approval programmes within their maritime safety administration or Department of Marine Transportation. There are no ECDIS type-approval facilities or organisations in North America.

For each of the sections contained in the IMO Performance Standards for ECDIS, the International Electrotechnical Commission (IEC) has developed appropriate test requirements, procedures and required test results. This also applies to the various ECDIS-related specifications provided in IHO S-52 and IHO S-57, and associated appendices. IEC 61174 is the publication containing the IEC ECDIS Performance Standards (Operational and Performance Requirements: Methods of Testing and Required Test Results). Under international convention, IEC 61174 is the basis for type-approval specifications related to operational methods of testing and required test results for an IMO-compliant ECDIS. IEC 61174 was officially published as an International Standard in August 1998.

In order to gain type-approval/certification by National Administrations, ECDIS manufacturers must fully comply with the IMO Performance Standard for ECDIS. Anything less (e.g., use of non-official data, different chart content/display, reduced functional capability, non-conforming equipment, etc.) would likely be considered non-compliant. The key factors are conformance to IMO Performance Standards and IHO specifications, and achieving the required minimum functional capability. In other words, either a manufacturer designs for an IMO-compliant ECDIS and has it type-approved (certified), or it is –by default– an Electronic Chart System (ECS).

On 29 March 1998, the first type-approval certificate for ECDIS was issued by the Russian Department of Maritime Transport / Register of Shipping to the Transas Marine NaviSailor 2400 ECDIS. The certificate was based on a draft International Standard version of IEC 61174 issued in March 1998. In October 1999, the German Federal Maritime and Hydrographic Agency (BSH) also issued a type-approval certificate for the Transas Marine NaviSailor 2400 ECDIS. Since that time, at least eight other systems have been certified by BSH and Det Norske Veritas (DnV). To date, this includes:

Transas Marine Ltd.	NaviSailor 2400 ECDIS	Mar 98	Dept. Maritime Transport, Russia
Transas Marine Ltd.	NaviSailor 2400 ECDIS	Oct 99	BSH, Germany
Kelvin Hughes	Nucleus 2/5000/6000 ECDIS	Nov 99	BSH, Germany
ASPO/Navintra	EC 1000	Feb 00	BSH, Germany
Furuno	ECDIS FEA-2105	Feb 00	BSH, Germany
Hagenuk	ECDIS 2000	May 00	BSH, Germany
STN Atlas Marine Electronics	Chartpilot	Aug 00	BSH, Germany
Litton Marine Systems	Vision 2100 ECDIS	Nov 00	DnV, Norway
Sea Information Systems	Microplot Mariner ECDIS 7	Jan 01	DnV, Norway

Currently, two other manufacturers at BSH and five at DnV are undergoing an ECDIS type-approval process for their equipment.

Some questions have been raised about adding additional functionality beyond what is called for in the IMO Performance Standards for ECDIS, and the possible impact on type-approval. Since the IMO Performance Standards specify the minimum functional requirements for ECDIS, IEC 61174 was produced to test for this minimum capability. It is up to a Type Approval Authority (e.g., BSH or DnV) to determine for a given system if additional functions would degrade this required capability. However, it was never intended that ECDIS would be limited to just a minimum capability. A good example of this "ECDIS plus" approach is how the North Atlantic Treaty Organisation (NATO) dealt with the matter. The NATO Standardisation Agreement (STANAG) 4564 considers an IMO-compliant ECDIS to be the core functionality of a NATO "Warship" ECDIS (WECDIS). In other words, WECDIS is an ECDIS plus some additional "warfare" capability (e.g., multiple types of data, additional military layers, etc.) However, you cannot achieve a WECDIS without first having a type-approved ECDIS.

Biography

Dr. Lee Alexander is an Associate Research Professor at the Center for Coastal and Ocean Mapping at the University of New Hampshire, USA. Previously a Research Scientist at the U.S. Coast Guard Research and Development Center, he was also a Visiting Scientist on Electronic Charts with the Canadian Hydrographic Service. His area of expertise is applied research, development, test and evaluation on electronic chart data/display, and the use of electronic charts for navigation safety and naval warfare.

He serves on a number of international committees dealing with electronic charting standards, including IMO, IHO, IEC and NATO. He has published over 75 papers and reports on electronic chart-related technologies, and is a co-author of a textbook on Electronic Charting to be published in the summer of 2001. Dr. Alexander received his M.S. from the University of New Hampshire, and Ph.D. from Yale University. He is also a Captain (now retired) in the U.S. Navy Reserve.