IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

In re U.S. Patent No. 7,268,703

Filed: September 18, 2003

Issued: September 11, 2007

Inventors: Darrin W. Kabel; Steven J. Myers

Assignee: Garmin Ltd.

Title: Methods, Systems, and Devices for Cartographic Alerts

DECLARATION OF DR. MICHAEL S. BRAASCH

I, Dr. Michael S. Braasch, make this declaration at the request of FLIR Systems, Inc. and FLIR Maritime US, Inc. in connection with the petition for *inter partes* review submitted by Petitioners for U.S. Patent No. 7,268,703 ("the 703 Patent"). All statements made herein of my own knowledge are true, and all statements made herein based on information and belief are believed to be true. Although I am being compensated for my time in preparing this declaration, the opinions articulated herein are my own, and I have no stake in the outcome of this

proceeding or any related litigation or administrative proceedings.

I. INTRODUCTION

1. In the preparation of this declaration, I have reviewed the relevant portions of the following documents:

FLIR-1001	U.S. Patent No. 7,268,703 to Kabel et al. ("703 Patent")
FLIR-1002	Prosecution File History of U.S. Patent No. 7,268,703
FLIR-1004	Curriculum Vitae of Dr. Michael S. Braasch
FLIR-1005	W.J. de Jong, *Automated Route Planning – A Network-Based Route Planning Solution for Marine Navigation*, University of Nottingham (December 2001) ("de Jong")
FLIR-1006	L. Tetley *et al.*, *Electronic Navigation Systems*, 3d Ed. (Butterworth-Heinemann 2001) ("Tetley")
FLIR-1007	B. Brogdon, *Boat Navigation for the Rest of Us*, 2d Ed., Introduction (McGraw-Hill 2001) ("Brogdon")
FLIR-1008	Fernão Vaz Dourado, Map of West Africa Waterways (1571)
FLIR-1009	National Oceanic and Atmospheric Administration, Nautical Chart 25664 (1976)
FLIR-1010	National Oceanic and Atmospheric Administration, Nautical Chart 12283-02 (1990)
FLIR-1011	International Maritime Organization, Resolution A.817(19), *Performance Standards for Electronic Chart Display and Information Systems (ECDIS)* (Dec. 15, 1996)
FLIR-1012	U.S. Patent No. 6,356,837 to Yokota et al. ("Yokota")
FLIR-1013	Wan Xiaoxia *et al.*, *Electronic chart display and information system*, Geo-spatial Information Science, 5:1, 7-11 (Mar. 5, 2002) ("Xiaoxia")

FLIR-1017	Hein Sabelis, *Voyage Planning in ECDIS*, International Hydrographic Review, Monaco, LXXVI(2) (September 1999)
FLIR-1018	Nathaniel Bowditch, *The American Practical Navigator*, National Imagery and Mapping Agency, U.S. Government (2002 Bicentennial Edition) ("Bowditch")
FLIR-1019	*Encyclopedia of Electronics*, 2d. Ed. (McGraw-Hill 1990) (excerpts)
FLIR-1021	Complaint filed in *Garmin Switzerland GmbH and Garmin Corp. v. FLIR Maritime US, Inc. (f/k/a Raymarine, Inc.)*, Case No. 16-2806 (D. Kansas)
FLIR-1022	Garmin's Opposition to FLIR's Motion to Dismiss the Complaint, Case No. 16-2806, D.I. 24 (D. Kansas Feb. 8, 2017)

2. The opinions I have formed as explained herein are informed by and based on my consideration of the documents listed above, as well as my own knowledge and experience based upon my work in the relevant field of technology, as discussed below.

3. The application that led to the issuance of the 703 Patent was filed on September 18, 2003. I am familiar with the technology described therein and am aware of the state of the art around September 2003. It is my opinion that a person of ordinary skill in the art would include someone who has a Bachelor's degree in Electrical Engineering (or related discipline) and 3 to 5 years of experience in navigation engineering. A person holding a more advanced degree but less experience (e.g., a Master's degree and 1 to 2 years of experience) would also

qualify. Consistent with my opinion, I understand that Patent Owner has identified in litigation involving the 703 Patent that the related art is "computer-assisted navigation." FLIR-1022.012, fn. 5. I held at least the qualifications of a person of ordinary skill in the art as of September 2003. My analyses and opinions herein are given from the perspective of a person of ordinary skill in the art as of September 2003, unless stated otherwise.

II. QUALIFICATIONS AND COMPENSATION

4. I am currently a Professor with tenure in the School of Electrical Engineering and Computer Science at Ohio University.

5. I received my Bachelor of Science and Master of Science degrees in Electrical Engineering from the Ohio University in 1988 and 1989 respectively. In 1992, I received a Ph.D. in Electrical Engineering also from Ohio University. During that time, my post-baccalaureate and doctoral work focused on aircraft navigation systems with an emphasis in GPS.

6. From 1989 to 1993, I was a research engineer in the Avionics Engineering Center at Ohio University. I became an adjunct assistant professor in the Department of Electrical and Computer Engineering at Ohio University in 1993 and have been on the faculty at Ohio University since that time. I have held the title of Professor in the School of Electrical Engineering and Computer Science since 2003 and was appointed as the Thomas Professor of Electrical Engineering in

2004. As a professor of Electrical Engineering, I have taught courses in navigation and real-time positioning including courses specifically on the use of GPS.

7. I am a Licensed Professional Engineer (P.E.) in the State of Ohio. In my professional career, I have specialized in the areas of electronic navigation receiver design, electronic navigation system engineering, satellite-based navigation systems, inertial navigation systems, and integrated navigation systems.

8. Since the mid 1980s, I have been involved with research related to navigation and transportation systems including navigation system computer modeling and validation; characterization of GPS error sources and development of mitigation strategies; design, development and testing of software-defined GPS receiver architectures; design, development and flight testing of advanced cockpit displays; and analysis of safety-certification issues in unmanned aerial vehicle operations. I have been the recipient of over 65 research grants and contracts, including awards from the U.S. Department of Transportation, Federal Aviation Administration, Air Force Office of Scientific Research and NASA. In 1992 I received the RTCA (formerly known as the Radio Technical Commission for Aeronautics) William E. Jackson Award in recognition of an outstanding aviation electronics publication.

9. I have published over 80 journal articles, book chapters, conference papers, and workshop papers, most of which were related to navigation systems. I

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