



## (51) International Patent Classification:

G01S 5/00 (2006.01) G01M 3/00 (2006.01)  
G01S 19/14 (2010.01) G01N 1/02 (2006.01)  
G01C 11/00 (2006.01)

## (21) International Application Number:

PCT/US2012/034939

## (22) International Filing Date:

25 April 2012 (25.04.2012)

## (25) Filing Language:

English

## (26) Publication Language:

English

## (30) Priority Data:

61/478,823 25 April 2011 (25.04.2011) US  
13/454,812 24 April 2012 (24.04.2012) US

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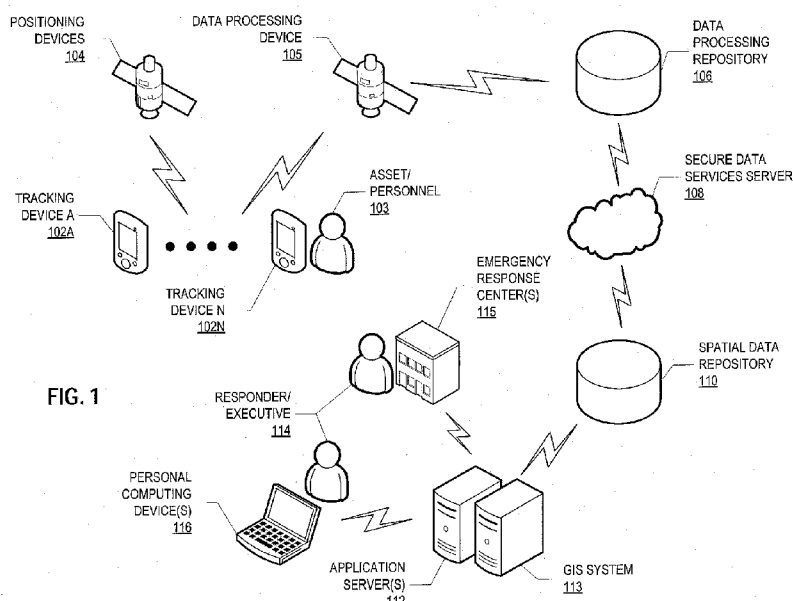
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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: METHOD AND TRACKING DEVICE FOR TRACKING MOVEMENT IN A MARINE ENVIRONMENT WITH TACTICAL ADJUSTMENTS TO AN EMERGENCY RESPONSE



(57) Abstract: The present invention relates to devices and methods for tracking movement in a marine environment. At least one tracking device that is adapted to be deployed on a surface of the water, wherein the tracking device is capable of moving along the same trajectory of a desired object. Data from the tracking devices are received by at least one satellite, transmitted to a database, and used to determine the forecasted trajectory of the desired object. All data collected from deployed tracking devices may be integrated into a spatial data repository for analysis and reporting using GIS and associated information technologies, thereby allowing for more accurate decision-making and asset deployment during a fluid spill or similar marine contamination event. The present invention also allows for the collection and modeling of accurate localized sea current data, which may assist with marine and coastal engineering works such as shoreline protection and port dredging.

**Published:****(88) Date of publication of the international search report:**

17 January 2013

- *with international search report (Art. 21(3))*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

# INTERNATIONAL SEARCH REPORT

International application No  
PCT/US2012/034939

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> INV. G01S5/00      G01S19/14      G01C11/00      G01M3/00 ADD. G01N1/02		
According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b> Minimum documentation searched (classification system followed by classification symbols) G01S G01C G01M		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) EPO-Internal, WPI Data, INSPEC		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 793 813 A (CLEAVE ROBERT R [US]) 11 August 1998 (1998-08-11) column 3, lines 35-53 column 5, line 56 - column 6, line 20 column 6, lines 32-47 column 7, lines 16-22 column 7, line 34 - column 8, line 6 column 8, lines 25,26 figures 1, 2 <div style="text-align: center; margin-top: 10px;">           -----            -/--         </div>	1-13,15, 16
<div style="display: flex; justify-content: space-between;"> <span><input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C.</span> <span><input checked="" type="checkbox"/> See patent family annex.</span> </div>		
* Special categories of cited documents :		
<div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </div> <div style="width: 48%;"> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&amp;" document member of the same patent family</p> </div> </div>		
Date of the actual completion of the international search	Date of mailing of the international search report	
10 August 2012	28/11/2012	
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer	

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2012/034939

### Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

### Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-13, 15, 16

#### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-13, 15, 16

Improved method for tracking the position of an oil slick

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2. claims: 14, 17-25

Constructional characteristics of a waterproof container

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## INTERNATIONAL SEARCH REPORT

International application No

PCT/US2012/034939

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 317 029 B1 (FLEETER RICHARD DAVID [US]) 13 November 2001 (2001-11-13) column 2, line 63 - column 3, line 8 column 3, lines 19-25, 30-50 column 4, lines 6-13, 31-49, 55-60 column 4, line 55 - column 5, line 18 column 5, lines 31-50 column 7, line 35 - column 8, line 3 column 9, lines 10-36 figures 1, 2	1-13,15,16
X	----- KATO N ET AL: "Spilled Oil Tracking Autonomous Buoy", OCEANS 2010, IEEE, PISCATAWAY, NJ, USA, 20 September 2010 (2010-09-20), pages 1-9, XP031832710, ISBN: 978-1-4244-4332-1 page 1, right-hand column, lines 26-29 page 2, left-hand column, lines 4-17 page 3, right-hand column, lines 9-14 page 4, left-hand column, lines 8-11 page 9, left-hand column, line 19 - right-hand column, line 4 -----	1-13,15,16

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2012/034939

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5793813	A	11-08-1998	NONE	
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US 6317029	B1	13-11-2001	NONE	
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