



- (51) International Patent Classification:  

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<i>G01N 29/26</i> (2006.01)	<i>G01V 1/28</i> (2006.01)
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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.
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[Continued on next page]

(54) Title: DATA ACQUISITION

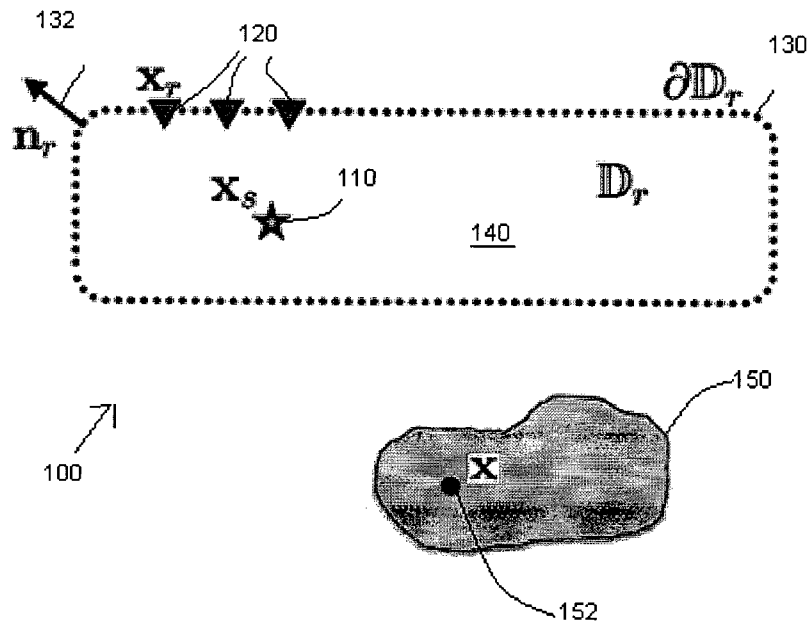


Fig. 1

(57) Abstract: Methods for indirect data acquisition via exact inverse receiver extrapolation. The desired data are obtained from extrapolation of directly measured data containing a wavefield quantity (e.g. pressure) and a component of its gradient. The methods use exact representations of scattering reciprocity. Methods of evaluating/validating the extrapolated data are also disclosed. These methods can be used in any industries involving imaging, such as geophysical/seismic exploration, bio-medical imaging, non-destructive remote sensing, acoustic space architecture, design and engineering.

WO 2012/160430 A3



UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, 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).

— *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))*

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

21 February 2013

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## INTERNATIONAL SEARCH REPORT

International application No.  
**PCT/IB2012/000970****A. CLASSIFICATION OF SUBJECT MATTER***G01V 1/24(2006.01)i, G01N 29/26(2006.01)i, A61B 8/00(2006.01)i, G01V 1/28(2006.01)i*

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

G01V 1/24; G01V 1/38; G01V 1/30; G06G 7/48; G01V 1/28; G01V 1/36; G01V 1/40

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)

eKOMPASS(KIPO internal) &amp; Keywords: extrapolating, gradient, wavefield, boundary, normal, quantity, volume, reciprocity and similar terms.

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2009-0292475 A1 (ALAM AFTAB et al.) 26 November 2009 See the whole document.	1-14
A	US 2009-0109794 A1 (SINHA BIKASH K.) 30 April 2009 See the whole document.	1-14
A	WO 2011-049654 A1 (EXXONMOBIL UPSTREAM RESEARCH COMPANY et al.) 28 April 2011 See the whole document.	1-14
A	US 2010-0110830 A1 (THOMSON COLIN) 06 May 2010 See the whole document.	1-14

 Further documents are listed in the continuation of Box C. See patent family annex.

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"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

"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

"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

"&amp;" document member of the same patent family

Date of the actual completion of the international search

31 DECEMBER 2012 (31.12.2012)

Date of mailing of the international search report

**02 JANUARY 2013 (02.01.2013)**

Name and mailing address of the ISA/KR

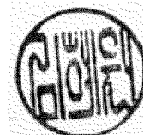
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**INTERNATIONAL SEARCH REPORT**

International application No.

**PCT/IB2012/000970****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.: 15  
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:

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 fee, this Authority did not invite payment of any additional fee.
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.:

**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.

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/IB2012/000970**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2009-0292475 A1	26.11.2009	None	
US 2009-0109794 A1	30.04.2009	US 7649804 B2 WO 2009-055196 A3	19.01.2010 30.04.2009
WO 2011-049654 A1	28.04.2011	CA 2771865 A1	28.04.2011
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