Trials@uspto.gov
571-272-7822

Paper 9
Date: August 6, 2024

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

THE INTEGRATION GROUP OF AMERICAS, INC.,
Petitioner,

v.

SITEPRO, INC.,
Patent Owner.

IPR2024-00724 (Patent 8,649,909 B1), IPR2024-00737 (Patent 11,175,680 B2), IPR2024-00738 (Patent 9,342,078 B2), IPR2024-00739 (Patent 9,898,014 B2), IPR2024-00740 (Patent 11,726,504 B2), IPR2024-00741 (Patent 10,488,871 B2), and IPR2024-00742 (Patent 11,294,403 B2)[1]

Before WILLIAM V. SAINDON, KRISTEN L. DROESCH, LYNNE H. BROWNE, and KEVIN W CHERRY, *Administrative Patent Judges.*[2]

BROWNE, *Administrative Patent Judge*.

TERMINATION
Due to Settlement Prior to Institution of Trial
35 U.S.C. § 317; 37 C.F.R. § 42.74

[1] This Order is entered into each case. The parties are not authorized to use this joint heading and filing style in their papers.
[2] None of the above-listed proceedings have an expanded panel. Rather, the judges constitute the panels of all of these proceedings.

With the Board's authorization, the Parties filed a Joint Motion to Terminate the instant proceeding on the basis of a settlement reached by the Parties. *See* Paper 7[3] ("Mot."); 35 U.S.C. § 317(a); 37 C.F.R. §§ 42.72, 42.74. The Parties also filed a copy of their written Settlement Agreement (Exhibit 1010), along with a Joint Request (Paper 8) to treat the Agreement as business confidential information under 35 U.S.C. § 317(b) and 37 C.F.R. § 42.74(c).

Trial has not been instituted in these proceedings. In the Joint Motion to Terminate, the Parties represent that they have entered into an agreement that has settled their dispute. Mot. 2.

> As part of the Agreement, the parties have stipulated to dismiss, with prejudice, the only district court litigation between the parties involving the '909 patent, *SitePro, Inc. v. WaterBridge Resources, LLC, WaterBridge Operating, LLC*," *WaterBridge Holdings, LLC, WaterBridge Management, Inc., and the Integration Group of the Americas, Inc.* and all proceedings currently pending before the Patent Trial and Appeal Board.

Id. at 2–3.

The Parties further state that "the Agreement is filed separately and concurrently with this motion, as Exhibit 1010," and "there are no other agreements or understandings, oral or written, between them, including any collateral agreements, made in connection with, or in contemplation of, the

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[3] For purposes of expediency, we cite to Papers and Exhibits filed in IPR2024-00724. Similar Papers and Exhibits were filed in IPR2024-00737, -00738, -00739, -00740, -00741, and -00742.

termination of this proceeding." Mot. 2. Under these circumstances, we determine that it is appropriate to terminate the instant proceeding.

In the Joint Request, the Parties request that the Settlement Agreement be treated as business confidential information and be kept separate from the file of the patents involved in these proceedings. Joint Request 1. After reviewing the Settlement Agreement between Petitioner and Patent Owner, we find that the Settlement Agreement contains business confidential information regarding the terms of settlement. We determine that good cause exists to treat the Settlement Agreement between Petitioner and Patent Owner as business confidential information pursuant to 35 U.S.C. § 317(b) and 37 C.F.R. § 42.74(c).

In consideration of the foregoing, it is hereby:

ORDERED that the Parties' request that the Settlement Agreement (Exhibit 1010) be treated as business confidential information, kept separate from the file of U.S. Patent No. 8,649,909 B1[4], and made available only to Federal Government agencies on written request, or to any person on a showing of good cause, under 35 U.S.C. § 317(b) and 37 C.F.R. § 42.74(c), is *granted*; and

FURTHER ORDERED that the joint motion to terminate is *granted* and the proceeding is hereby *terminated*.

[4] The same applies to each of the challenged patents in each of the other proceedings.

IPR2024-00724, Patent 8,649,909 B1
IPR2024-00737, Patent 11,175,680 B2
IPR2024-00738, Patent 9,342,078 B2
IPR2024-00739, Patent 9,898,014 B2
IPR2024-00740, Patent 11,726,504 B2
IPR2024-00741, Patent 10,488,871 B2
IPR2024-00742, Patent 11,294,403 B2

FOR PETITIONER:

Winston Huff
MUNSCH HARDT KOPF & HARR
whuff@munsch.com

FOR PATENT OWNER:

Babak Tehranchi
Marvin Tyler
Brianna Kadjo
Fareid Asphahani
Matthew Lutz
PERKINS COIE LLP
tehranchi-ptab@perkinscoie.com
tyler-ptab@perkinscoie.com
kadjo-ptab@perkinscoie.com
asphahani-ptab@perkinscoie.com
lutz-ptab@perkinscoie.com

Doc Code: MFEE.C.AD
Document Description: Maintenance Fee Address Change

PTO/AIA/47 (11-18)
Approved for use through 09/30/2021. OMB 0651-0016
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no person is required to respond to a collection of information unless it displays a valid OMB control number.

"FEE ADDRESS" INDICATION FORM

Address to:
Mail Stop M Correspondence
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

-OR-

Fax to:
571-273-6500

INSTRUCTIONS: The issue fee must have been paid for the application(s) listed on this form. In addition, only an address represented by a Customer Number can be established as the fee address for maintenance fee purposes (hereafter, fee address). A fee address should be established when correspondence related to maintenance fees should be mailed to a different address than the correspondence address for the application.

When to check the first box below: If you have a Customer Number to represent the fee address.

When to check the second box below: If you have no Customer Number representing the desired fee address, in which case a completed Request for Customer Number (PTO/SB/125) must be attached to this form. For more information on Customer Numbers, see the Manual of Patent Examining Procedure (MPEP) § 403.

For the following listed application(s), please recognize as the "Fee Address" under the provisions of 37 CFR 1.363 the address associated with:

☑ Customer Number: 00197

OR

☐ The attached Request for Customer Number form (PTO/SB/125)

PATENT NUMBER (if known)	APPLICATION NUMBER
9,342,078	14/147,190

Completed by (check one):

☐ Applicant/Inventor

☑ Attorney or Agent of record 63,809 (Reg. No.)

☐ Assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(c) (Form PTO/AIA/96) is enclosed or was filed on _____ (Date)

/Joshua Tucker/
Signature

Joshua Tucker
Typed or printed name

512.580.9628
Requester's telephone number

April 18, 2019
Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. If the assignee is a juristic entity, this form must be signed by a patent practitioner (attorney or agent) of record. Submit multiple forms if more than one signature is required, see below*.

☐ *Total of _____ forms are submitted

This collection of information is required by 37 CFR 1.363. The information is required to obtain or retain a benefit by the public, which is to indicate (and for the USPTO to process) a fee address. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 5 minutes to complete, including gathering, preparing, and submitting the completed form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND COMPLETED FORMS TO THE PREVIOUS ADDRESS. **SEND COMPLETED FORMS TO: Mail Stop M Correspondence, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Electronic Acknowledgement Receipt	
EFS ID:	35766990
Application Number:	14147190
International Application Number:	
Confirmation Number:	7979
Title of Invention:	REMOTE CONTROL OF FLUID-HANDLING DEVICES
First Named Inventor/Applicant Name:	Aaron Phillips
Customer Number:	909
Filer:	Joshua L. Tucker/Jennifer Sallee
Filer Authorized By:	Joshua L. Tucker
Attorney Docket Number:	034392-0437466
Receipt Date:	18-APR-2019
Filing Date:	03-JAN-2014
Time Stamp:	14:59:38
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Maintenance Fee Address Change	0437466_FAIF.pdf	144759 87729da797b2d00020c4e46fa193cdf72b08d4d1	no	1
Warnings:					

Information:	
Total Files Size (in bytes):	144759

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.
National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.
New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/147,190	05/17/2016	9342078	034392-0437466	7979

909 7590 04/27/2016

Pillsbury Winthrop Shaw Pittman, LLP (NV)
PO Box 10500
McLean, VA 22102

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

AmpliSine Labs, LLC, Lubbock, TX;
Aaron Phillips, Lubbock, TX;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

909 7590 09/29/2015
Pillsbury Winthrop Shaw Pittman, LLP (NV)
PO Box 10500
McLean, VA 22102

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

Joshua L. Tucker	(Depositor's name)
/Joshua L. Tucker/	(Signature)
December 29, 2015	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/147,190	01/03/2014	Aaron Phillips	034392-0437466	7979

TITLE OF INVENTION: REMOTE CONTROL OF FLUID-HANDLING DEVICES

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0	$0	$480	12/29/2015

EXAMINER	ART UNIT	CLASS-SUBCLASS
EVERETT, CHRISTOPHER E	2121	700-282000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____
2 Pillsbury Winthrop Shaw Pittman LLP
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: AmpliSine Labs, LLC

(B) RESIDENCE: (CITY and STATE OR COUNTRY): Lubbock, TX

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☑ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:
- ☑ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☑ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number 033975 (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
- ☐ Applicant certifying micro entity status. See 37 CFR 1.29 — NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
- ☐ Applicant asserting small entity status. See 37 CFR 1.27 — NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
- ☐ Applicant changing to regular undiscounted fee status. — NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /Joshua L. Tucker/ Date December 29, 2015

Typed or printed name Joshua L. Tucker Registration No. 63809

PTOL-85 Part B (10-13) Approved for use through 10/31/2013. OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Electronic Patent Application Fee Transmittal

Application Number:	14147190
Filing Date:	03-Jan-2014
Title of Invention:	REMOTE CONTROL OF FLUID-HANDLING DEVICES
First Named Inventor/Applicant Name:	Aaron Phillips
Filer:	Joshua L. Tucker/Kathryn Seeman
Attorney Docket Number:	034392-0437466

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl Issue Fee	2501	1	480	480

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**480**

Electronic Acknowledgement Receipt	
EFS ID:	24476737
Application Number:	14147190
International Application Number:	
Confirmation Number:	7979
Title of Invention:	REMOTE CONTROL OF FLUID-HANDLING DEVICES
First Named Inventor/Applicant Name:	Aaron Phillips
Customer Number:	909
Filer:	Joshua L. Tucker/Kathryn Seeman
Filer Authorized By:	Joshua L. Tucker
Attorney Docket Number:	034392-0437466
Receipt Date:	29-DEC-2015
Filing Date:	03-JAN-2014
Time Stamp:	13:04:53
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$480
RAM confirmation Number	13734
Deposit Account	033975
Authorized User	TUCKER, JOSH
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

Charge any Additional Fees required under 37 CFR 1.20 (Post Issuance fees)

Charge any Additional Fees required under 37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	Issue_Fee_Transmittal_14147190.pdf	116065 d6fc61578da958eb16d35e5064653c2e350b4dfc	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30587 76a1bfb0d0b84c0ce4b216689610104181 3921a0	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	146652		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

<u>New Applications Under 35 U.S.C. 111</u>
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

<u>National Stage of an International Application under 35 U.S.C. 371</u>
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

<u>New International Application Filed with the USPTO as a Receiving Office</u>
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

909 7590 09/29/2015

Pillsbury Winthrop Shaw Pittman, LLP (NV)
PO Box 10500
McLean, VA 22102

EXAMINER	
EVERETT, CHRISTOPHER E	
ART UNIT	PAPER NUMBER
2121	

DATE MAILED: 09/29/2015

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/147,190	01/03/2014	Aaron Phillips	034392-0437466	7979

TITLE OF INVENTION: REMOTE CONTROL OF FLUID-HANDLING DEVICES

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0	$0	$480	12/29/2015

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

909 7590 09/29/2015
Pillsbury Winthrop Shaw Pittman, LLP (NV)
PO Box 10500
McLean, VA 22102

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/147,190	01/03/2014	Aaron Phillips	034392-0437466	7979

TITLE OF INVENTION: REMOTE CONTROL OF FLUID-HANDLING DEVICES

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0	$0	$480	12/29/2015

EXAMINER	ART UNIT	CLASS-SUBCLASS
EVERETT, CHRISTOPHER E	2121	700-282000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
- ❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.
1 _____
2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. The following fee(s) are submitted:
- ❑ Issue Fee
- ❑ Publication Fee (No small entity discount permitted)
- ❑ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
- ❑ A check is enclosed.
- ❑ Payment by credit card. Form PTO-2038 is attached.
- ❑ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
- ❑ Applicant certifying micro entity status. See 37 CFR 1.29 — NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
- ❑ Applicant asserting small entity status. See 37 CFR 1.27 — NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
- ❑ Applicant changing to regular undiscounted fee status. — NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

PTOL-85 Part B (10-13) Approved for use through 10/31/2013. OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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P.O. Box 1450
Alexandria, Virginia 22313-1450
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/147,190	01/03/2014	Aaron Phillips	034392-0437466	7979

909 7590 09/29/2015

Pillsbury Winthrop Shaw Pittman, LLP (NV)
PO Box 10500
McLean, VA 22102

EXAMINER	
EVERETT, CHRISTOPHER E	
ART UNIT	PAPER NUMBER
2121	

DATE MAILED: 09/29/2015

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Examiner-Initiated Interview Summary	Application No.	Applicant(s)	
	14/147,190	PHILLIPS, AARON	
	Examiner	Art Unit	
	Christopher E. Everett	2121	

All participants (applicant, applicant's representative, PTO personnel):

(1) *Christopher E. Everett*. (3)_____.

(2) *Joshua Tucker, Reg. No. 63,809*. (4)_____.

Date of Interview: *17 September 2015*.

Type: ☒ Telephonic ☐ Video Conference
☐ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☒ No.
If Yes, brief description: _____.

Issues Discussed ☐101 ☐112 ☐102 ☒103 ☐Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: *21 and 40*.

Identification of prior art discussed: *U.S. Patent No. 7,289,994 (Nixon) and U.S. Patent Publication No. 2004/0262008 (Deans)*.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

Applicant's representative, Josh Tucker, and Examiner Christopher E. Everett discussed the technology within the patent application including the plurality of target states. Applicant's representative and Examiner discussed the difference between the prior art and the technology. Applicant's representative and Examiner discussed proposed amendments to claims 21 and 40 to clarify the contents of the one or more translated instructions (see Examiner's Amendment) with respect to the technology and the cited prior art (Nixon and Deans). Examiner agreed that the proposed amendments to claims 21 and 40 would overcome the cited prior art (Nixon and Deans). Applicant's representative and Examiner discussed the need for additional consideration and/or search in view of the proposed amendments to claims 21 and 40.

Applicant recordation instructions: It is not necessary for applicant to provide a separate record of the substance of interview.

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☐ Attachment

/Christopher E. Everett/ Examiner, Art Unit 2121	

Notice of Allowability	Application No. 14/147,190	Applicant(s) PHILLIPS, AARON	
	Examiner Christopher E. Everett	Art Unit 2121	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *8/18/2015*.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on_____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are *21-59*. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov .
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☐ All b) ☐ Some *c) ☐ None of the:
   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☒ Interview Summary (PTO-413), Paper No./Mail Date *9/17/2015* .
5. ☒ Examiner's Amendment/Comment
6. ☒ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/Christopher E. Everett/
Examiner, Art Unit 2121

DETAILED ACTION

1. The Office Action is responsive to the communication filed on 8/18/2015.

2. The present application is being examined under the pre-AIA first to invent provisions.

3. Claims 21-59 are pending.

Continued Examination Under 37 CFR 1.114

4. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/18/2015 has been entered.

EXAMINER'S AMENDMENT

5. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Joshua Tucker, Reg. No. 63,809 on September 17, 2015.

The application has been amended as follows:

Claims 21 and 40 are currently amended.

21. (currently amended) A method, comprising:

receiving, via a network interface, a plurality of user-directed instructions to control fluid-handling devices that monitor or control one or more fluids at an oil well, a petro water disposal or re-injection facility, or a petroleum pumping station, the plurality of instructions being received encoded in a shared protocol;

obtaining a target state of at least one of the fluid-handling devices based on at least some of the plurality of instructions, wherein obtaining a target state of at least one of the fluid-handling devices based on at least some of the plurality of instructions comprises:

after receiving the instructions, determining a plurality of different target states of the at least one of the fluid-handling devices, the plurality of different states each corresponding to different times;

for each of the plurality of instructions, selecting a respective protocol or protocols from among a plurality of protocols different from the shared protocol, wherein the respective fluid-handling device or devices to which the respective instruction is directed are responsive to the selected respective protocol or protocols, wherein at least some of the selected protocols are different from one another;

after determining the plurality of different target states, translating each received instructions into one or more translated instructions encoded in the selected respective protocol or protocols, the one or more translated instructions including the determined plurality of different target states; and

sending each translated instructions to at least the fluid-handling device to which the respective translated instruction is directed, wherein at least some of the translated instructions are effective to cause the at least one of the fluid-handling devices to attempt to achieve the target state.

40. (currently amended) A system, comprising:

one or more processors;

a network interface coupled to at least some of the processors;

a plurality of link-layer devices coupled to at least some of the processors, each link-layer device configured to communicate with one or more fluid-handling devices via one or more busses; and

memory storing instructions that when executed by at least some of the processors effectuate operations comprising:

receiving, via the network interface, a plurality of user-directed instructions to control fluid-handling devices that monitor or control one or more fluids at an oil well, a petro water disposal or re-injection facility, or a petroleum pumping station, the plurality of instructions being received encoded in a shared protocol;

obtaining a target state of at least one of the fluid-handling devices based on at least some of the plurality of instructions, wherein obtaining a target state of at least one of the fluid-handling devices based on at least some of the plurality of instructions comprises:

after receiving the instructions, determining a plurality of different target states of the at least one of the fluid-handling devices, the plurality of different states each corresponding to different times;

for each of the plurality of instructions, selecting a respective protocol or protocols from among a plurality of protocols different from the shared protocol, wherein the respective fluid-handling device or devices to which the respective instruction is directed are responsive to the selected respective protocol or protocols, wherein at least some of the selected protocols are different from one another;

after determining the plurality of different target states, translating each received instructions into one or more translated instructions encoded in the selected respective protocol or protocols, the one or more translated instructions including the determined plurality of different target states; and

sending each translated instructions to at least the fluid-handling device to which the respective translated instruction is directed via one of the link-layer devices, wherein at least some of the translated instructions are effective to cause the at least one of the fluid-handling devices to attempt to achieve the target state.

Allowable Subject Matter

6. Claims 21-59 are allowed.

7. The following is an examiner's statement of reasons for allowance:

Claims 21-39

Regarding claim 21, the prior art as described in the prosecution history describes:

A method, comprising:

- receiving, via a network interface, a plurality of user-directed instructions to control fluid-handling devices that monitor or control one or more fluids at an oil well, a petro water disposal or re-injection facility, or a petroleum pumping station, the plurality of instructions being received encoded in a shared protocol;
- for each of the plurality of instructions, selecting a respective protocol or protocols from among a plurality of protocols different from the shared protocol, wherein the respective fluid-handling device or devices to which the respective instruction is directed are responsive to the selected respective protocol or protocols, wherein at least some of the selected protocols are different from one another;
- sending each translated instructions to at least the fluid-handling device to which the respective translated instruction is directed, wherein at least some of the translated instructions are effective to cause the at least one of the fluid-handling devices to attempt to achieve the target state.

However, regarding claim 21, the prior art as described in the prosecution history does not describe:

- obtaining a target state of at least one of the fluid-handling devices based on at least some of the plurality of instructions, wherein obtaining a target state of at least one of

the fluid-handling devices based on at least some of the plurality of instructions comprises:

- after receiving the instructions, determining a plurality of different target states of the at least one of the fluid-handling devices, the plurality of different states each corresponding to different times;

- after determining the plurality of different target states, translating each received instructions into one or more translated instructions encoded in the selected respective protocol or protocols, the one or more translated instructions including the determined plurality of different target states; and

Dependent claims 22-39 depend from independent claim 21 and are allowable for the same reasons as described above.

Claims 40-59

Independent claim 40 is substantially similar to independent claim 21 and is allowable for the same reasons as outlined above with respect to claim 1. Dependent claims 41-59 depend from independent claim 40 and are allowable for the same reasons as described above.

8. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher E. Everett whose telephone number is (571)272-2851. The examiner can normally be reached on Monday through Friday from 8:00 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Lo can be reached on 571-272-9774. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Christopher E. Everett/
Examiner, Art Unit 2121

Examiner-Initiated Interview Summary	**Application No.** 14/147,190	**Applicant(s)** PHILLIPS, AARON	
	Examiner Christopher E. Everett	**Art Unit** 2121	

All participants (applicant, applicant's representative, PTO personnel):

(1) *Christopher E. Everett*. (3)_____.

(2) *Joshua Tucker, Reg. No. 63,809*. (4)_____.

Date of Interview: *17 September 2015*.

Type: ☒ Telephonic ☐ Video Conference
☐ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☒ No.
If Yes, brief description: _____.

Issues Discussed ☐101 ☐112 ☐102 ☒103 ☐Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: *21 and 40*.

Identification of prior art discussed: *U.S. Patent No. 7,289,994 (Nixon) and U.S. Patent Publication No. 2004/0262008 (Deans)*.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

Applicant's representative, Josh Tucker, and Examiner Christopher E. Everett discussed the technology within the patent application including the plurality of target states. Applicant's representative and Examiner discussed the difference between the prior art and the technology. Applicant's representative and Examiner discussed proposed amendments to claims 21 and 40 to clarify the contents of the one or more translated instructions (see Examiner's Amendment) with respect to the technology and the cited prior art (Nixon and Deans). Examiner agreed that the proposed amendments to claims 21 and 40 would overcome the cited prior art (Nixon and Deans). Applicant's representative and Examiner discussed the need for additional consideration and/or search in view of the proposed amendments to claims 21 and 40.

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☐ Attachment

/Christopher E. Everett/ Examiner, Art Unit 2121	

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14147190	PHILLIPS, AARON
	Examiner	**Art Unit**
	CHRISTOPHER E EVERETT	2121

CPC						
Symbol					**Type**	**Version**
G05D		7	/	0676	F	2013-01-01
G05B		2219	/	25204	A	2013-01-01
G05B		2219	/	31369	A	2013-01-01
E21B		47	/	00	I	2013-01-01
G05B		9	/	02	I	2013-01-01
G05B		2219	/	23472	A	2013-01-01
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CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
			/					
			/					

		Total Claims Allowed:	
(Assistant Examiner)	(Date)	39	
/CHRISTOPHER E EVERETT/ Examiner.Art Unit 2121	09/22/2015	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14147190	PHILLIPS, AARON
	Examiner	**Art Unit**
	CHRISTOPHER E EVERETT	2121

US ORIGINAL CLASSIFICATION		INTERNATIONAL CLASSIFICATION										
CLASS	SUBCLASS	CLAIMED					NON-CLAIMED					
700	282	G	0	5	D	7 / 00 (2006.01.01)						

CROSS REFERENCE(S)					
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)				

(Assistant Examiner)	(Date)	Total Claims Allowed: 39	
/CHRISTOPHER E EVERETT/ Examiner.Art Unit 2121	09/22/2015	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
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	Examiner	**Art Unit**
	CHRISTOPHER E EVERETT	2121

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☒ T.D. ☐ R.1.47

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original

(Assistant Examiner)	(Date)	**Total Claims Allowed:** 39	
/CHRISTOPHER E EVERETT/ Examiner.Art Unit 2121	09/22/2015	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14147190	PHILLIPS, AARON
	Examiner	Art Unit
	CHRISTOPHER E EVERETT	2121

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
Search of EAST using classes, text, and inventor searches	7/22/2014	CEE
Search of sub-classes 340/853.3, 853.2, 856.3 (text search only - see search history printout)	7/22/2014	CEE
Search of sub-classes 166/336, 363, 250.1 (text search only - see search history printout)	7/22/2014	CEE
Search of PALM using inventor searches	7/22/2014	CEE
Search of sub-classes 700/1, 282, 275, 281, 42 (text search only - see search history printout)	7/22/2014	CEE
Search of sub-classes 702/6, 13, 183, 188 (text search only - see search history printout)	7/22/2014	CEE
Search of sub-class 709/224 (text search only - see search history printout)	7/22/2014	CEE
Search of CPC G05D7/0676;G05B9/02;E21B47/00;G05B2219/23472 using text	7/22/2014	CEE
Update of EAST and class searches described above	3/6/2015	CEE
Search of Google patent using text searches	9/21/2015	CEE
Search of Google scholar using text searches	9/21/2015	CEE
Update of EAST and class searches described above	9/21/2015	CEE

/CHRISTOPHER E EVERETT/ Examiner.Art Unit 2121	

INTERFERENCE SEARCH			
US Class/ CPC Symbol	**US Subclass / CPC Group**	**Date**	**Examiner**
	Search of USPAT, USPGPUB, and USPAD using text searches	9/21/2015	CEE

/CHRISTOPHER E EVERETT/ Examiner.Art Unit 2121	

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14147190	PHILLIPS, AARON
	Examiner	Art Unit
	CHRISTOPHER E EVERETT	2121

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☒ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	07/22/2014	03/06/2015	09/21/2015						
	1	✓	-	-						
	2	✓	-	-						
	3	✓	-	-						
	4	✓	-	-						
	5	✓	-	-						
	6	✓	-	-						
	7	✓	-	-						
	8	✓	-	-						
	9	✓	-	-						
	10	✓	-	-						
	11	✓	-	-						
	12	✓	-	-						
	13	✓	-	-						
	14	✓	-	-						
	15	✓	-	-						
	16	✓	-	-						
	17	✓	-	-						
	18	✓	-	-						
	19	✓	-	-						
	20	✓	-	-						
	21		✓	=						
	22		✓	=						
	23		✓	=						
	24		✓	=						
	25		✓	=						
	26		✓	=						
	27		✓	=						
	28		✓	=						
	29		✓	=						
	30		✓	=						
	31		✓	=						
	32		✓	=						
	33		✓	=						
	34		✓	=						
	35		✓	=						
	36		✓	=						

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14147190	PHILLIPS, AARON
	Examiner	Art Unit
	CHRISTOPHER E EVERETT	2121

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☒ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	07/22/2014	03/06/2015	09/21/2015						
	37		✓	=						
	38		✓	=						
	39		✓	=						
	40		✓	=						
	41		✓	=						
	42		✓	=						
	43		✓	=						
	44		✓	=						
	45		✓	=						
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	48		✓	=						
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	52		✓	=						
	53		✓	=						
	54		✓	=						
	55		✓	=						
	56		✓	=						
	57		✓	=						
	58		✓	=						
	59		✓	=						

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	5577	700/1,282,275,281,42.ccls.	US-PGPUB; USPAT; EPO	OR	ON	2015/09/21 08:46
L2	6864	702/6,13,183,188.ccls.	US-PGPUB; USPAT; EPO	OR	ON	2015/09/21 08:46
L3	25873	709/224.ccls.	US-PGPUB; USPAT; EPO	OR	ON	2015/09/21 08:46
L4	1107	166/336,363,250.1.ccls.	US-PGPUB; USPAT; EPO	OR	ON	2015/09/21 08:46
L5	547	340/853.3,853.2,856.3.ccls.	US-PGPUB; USPAT; EPO	OR	ON	2015/09/21 08:46
L6	39674	L1 L2 L3 L4 L5	US-PGPUB; USPAT; EPO	OR	ON	2015/09/21 08:46
L7	205047	(oil hydrocarbon (hydro adj2 carbon) gas) near2 (well site disposal station)	US-PGPUB; USPAT; EPO	OR	ON	2015/09/21 08:46
L8	2685982	(controller control device) near2 (operate operat$4 adjust drive move close)	US-PGPUB; USPAT; EPO	OR	ON	2015/09/21 08:46
L9	43	((AARON) near2 (PHILLIPS)).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2015/09/21 08:46
L10	5	((AARON) near2 (PHILLIPS)).INV.	EPO; JPO; DERWENT	OR	ON	2015/09/21 08:46
L11	3	(AMPLISINE adj2 LABS).as.	EPO; JPO; DERWENT	OR	ON	2015/09/21 08:46
L12	6	real-time and onsite and internet and communication	EPO; JPO; DERWENT	OR	ON	2015/09/21 08:46
L13	20	(US-20040262008-$ or US-20120316658-$ or US-20080208475-$ or US-20060271299-$ or US-20060240818-$ or US-20050092523-$ or US-20040231851-$ or US-20040088115-$ or US-20030182463-$ or US-20020169645-$ or US-20020112860-$).did. or (US-7148812-$ or US-7958938-$ or US-7967066-$ or US-7845404-$ or US-6913083-$ or US-5732776-$ or US-4052703-$ or US-8179279-$).did. or	US-PGPUB; USPAT; EPO	OR	ON	2015/09/21 08:46

		(WO-2008124765-$).did.				
L14	0	L13 and (oil near2 water near2 separation)	US-PGPUB; USPAT; EPO	OR	ON	2015/09/21 08:46
L15	7	L13 and (oil near2 water)	US-PGPUB; USPAT; EPO	OR	ON	2015/09/21 08:46
L16	5794	(oil near2 water near2 separation)	US-PGPUB; USPAT; EPO	OR	ON	2015/09/21 08:46
L17	2926	L16 and pump	US-PGPUB; USPAT; EPO	OR	ON	2015/09/21 08:46
L18	1087	L17 and (oil near2 well)	US-PGPUB; USPAT; EPO	OR	ON	2015/09/21 08:46
L19	297	L18 and (oil near2 level)	US-PGPUB; USPAT; EPO	OR	ON	2015/09/21 08:46
L20	4	L19 and ("700"/$.ccls. "702"/$.ccls.)	US-PGPUB; USPAT; EPO	OR	ON	2015/09/21 08:46
L21	1898	L6 and L7	US-PGPUB; USPAT; EPO	OR	ON	2015/09/21 08:46
L22	2471267	(internet network (web adj2 server))	US-PGPUB; USPAT; EPO	OR	ON	2015/09/21 08:46
L23	21038	(local autonomous independent) near2 (controller control device) near2 (operate operat$4 adjust drive move close)	US-PGPUB; USPAT; EPO	OR	ON	2015/09/21 08:46
L24	891	L8 and L21	US-PGPUB; USPAT; EPO	OR	ON	2015/09/21 08:46
L25	452	L24 and L22	US-PGPUB; USPAT; EPO	OR	ON	2015/09/21 08:46
L26	430	L7 and L23	US-PGPUB; USPAT; EPO	OR	ON	2015/09/21 08:46
L27	10	L25 and L26	US-PGPUB; USPAT; EPO	OR	ON	2015/09/21 08:46
L28	17	L7 and L23 and L6	US-PGPUB; USPAT;	OR	ON	2015/09/21 08:46

			EPO			
L29	692562	(remote internet network) near2 (control monitor control$4 monitor$4 command)	US-PGPUB; USPAT; EPO	OR	ON	2015/09/21 08:46
L30	12566	L29 and L7	US-PGPUB; USPAT; EPO	OR	ON	2015/09/21 08:46
L31	153	L30 and L23	US-PGPUB; USPAT; EPO	OR	ON	2015/09/21 08:46
L32	210	L9 L10 L11 L12 L14 L15 L20 L27 L28 L31	US-PGPUB; USPAT; EPO	OR	ON	2015/09/21 08:46
L33	210	L32	US-PGPUB; USPAT; EPO	OR	ON	2015/09/21 08:46
L34	210	L33	US-PGPUB; USPAT; EPO	OR	ON	2015/09/21 08:46
L35	2965	G05D7/0676;G05B9/02;E21B47/00;G05B2219/23472.cpc.	US-PGPUB; USPAT; EPO	OR	ON	2015/09/21 08:46
L36	752	L35 and L7	US-PGPUB; USPAT; EPO	OR	ON	2015/09/21 08:46
L37	523	L36 and (oil near2 well)	US-PGPUB; USPAT; EPO	OR	ON	2015/09/21 08:46
L38	16	L37 and (oil near2 level)	US-PGPUB; USPAT; EPO	OR	ON	2015/09/21 08:46
L39	18	L35 and L23 and L22	US-PGPUB; USPAT; EPO	OR	ON	2015/09/21 08:46
L40	239	L38 L39 L34	US-PGPUB; USPAT; EPO	OR	ON	2015/09/21 08:46
L41	239	L40	US-PGPUB; USPAT; EPO	OR	ON	2015/09/21 08:46
L42	239	L41	US-PGPUB; USPAT; FPRS; EPO	OR	ON	2015/09/21 08:46
S1	11	("20020161685" | "20020169645" | "20030004624" | "20030182463" | "20040088115" | "20040231851" |	US-PGPUB;	OR	ON	2013/02/22 08:35

		"20050108504" | "20060240818" | "20080208475" | "20100295673" | "20120316658").PN.	USPAT; EPO			
S2	34	((AARON) near2 (PHILLIPS)).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2013/02/22 08:35
S3	5	((AARON) near2 (PHILLIPS)).INV.	EPO; JPO; DERWENT	OR	ON	2013/02/22 08:35
S4	0	(AMPLISINE adj2 LABS).as.	EPO; JPO; DERWENT	OR	ON	2013/02/22 08:36
S5	5	real-time and onsite and internet and communication	EPO; JPO; DERWENT	OR	ON	2013/02/22 08:39
S6	1	("20060149476").PN.	US-PGPUB; USPAT; EPO	OR	OFF	2013/02/22 08:39
S7	1	("20060271299").PN.	US-PGPUB; USPAT; EPO	OR	OFF	2013/02/22 08:40
S8	1	("20030065447").PN.	US-PGPUB; USPAT; EPO	OR	OFF	2013/02/22 08:40
S9	1	("4594665").PN.	US-PGPUB; USPAT; EPO	OR	OFF	2013/02/22 08:40
S10	1	("20050092523").PN.	US-PGPUB; USPAT; EPO	OR	OFF	2013/02/22 08:42
S11	1	("20060047527").PN.	US-PGPUB; USPAT; EPO	OR	OFF	2013/02/22 08:42
S12	53	S1 S2 S3 S4 S5 S6 S7 S8 S9 S10 S11	US-PGPUB; USPAT; EPO	OR	ON	2013/02/22 08:54
S13	17	(US-20090260829-$ or US-20020112860-$ or US-20040262008-$ or US-20070107903-$ or US-20040251030-$).did. or (US-7000693-$ or US-6420976-$ or US-7967066-$ or US-RE41173-$ or US-7148812-$ or US-6768700-$ or US-7845404-$ or US-6913083-$ or US-4636934-$ or US-5732776-$ or US-4052703-$ or US-7958938-$ or US-4755943-$).did.	EPO; JPO; DERWENT	OR	ON	2013/02/22 09:01
S14	1	("7261162").PN.	US-PGPUB; USPAT; EPO	OR	OFF	2013/02/22 09:05
S15	62	("5331318" | "5597042" | "5662165" | "5706892" | "5706896" | "5721538" | "5730219" | "5732776" | "5803167" | "5868201" | "5934371" | "5941307" | "5959547" | "5975204" | "5992250" | "6006832" | "6012015" | "6046685" | "6068053" | "6075462" | "6125938" | "6160492" | "6161618" | "6176312" | "6179057" | "6192980" | "6192988" | "6209640" | "6247536" | "6257332" | "6271766" | "6276454" | "6279660" | "6281489" | "6288975" | "6296066" |	US-PGPUB; USPAT; USOCR	OR	ON	2013/02/22 09:05

		"6422315" | "6469636" | "6498988" | "6622799" | "6670880" | "6717501" | "6788980" | "6801135" | "6816082" | "6851444").PN. OR ("7261162").URPN.				
S16	1	("20040262008").PN.	US-PGPUB; USPAT; EPO	OR	OFF	2013/02/22 09:05
S17	1	("7148812").PN.	US-PGPUB; USPAT; EPO	OR	OFF	2013/02/22 09:08
S18	1	("7958938").PN.	US-PGPUB; USPAT; EPO	OR	OFF	2013/02/22 09:08
S19	1	("7967066").PN.	US-PGPUB; USPAT; EPO	OR	OFF	2013/02/22 09:08
S20	1	("7845404").PN.	US-PGPUB; USPAT; EPO	OR	OFF	2013/02/22 09:08
S21	1	("6913083").PN.	US-PGPUB; USPAT; EPO	OR	OFF	2013/02/22 09:09
S22	1	("20020112860").PN.	US-PGPUB; USPAT; EPO	OR	OFF	2013/02/22 09:09
S23	1	("5732776").PN.	US-PGPUB; USPAT; EPO	OR	OFF	2013/02/22 09:10
S24	1	("4052703").PN.	US-PGPUB; USPAT; EPO	OR	OFF	2013/02/22 09:11
S25	20	(US-20040262008-$ or US-20120316658-$ or US-20080208475-$ or US-20060271299-$ or US-20060240818-$ or US-20050092523-$ or US-20040231851-$ or US-20040088115-$ or US-20030182463-$ or US-20020169645-$ or US-20020112860-$).did. or (US-7148812-$ or US-7958938-$ or US-7967066-$ or US-7845404-$ or US-6913083-$ or US-5732776-$ or US-4052703-$ or US-8179279-$).did. or (WO-2008124765-$).did.	US-PGPUB; USPAT; EPO	OR	ON	2013/02/25 15:50
S26	0	S25 and (oil near2 water near2 separation)	US-PGPUB; USPAT; EPO	OR	ON	2013/02/25 15:50
S27	7	S25 and (oil near2 water)	US-PGPUB; USPAT; EPO	OR	ON	2013/02/25 15:51
S28	4518	(oil near2 water near2 separation)	US-PGPUB; USPAT; EPO	OR	ON	2013/02/25 15:52

S29	2295	S28 and pump	US-PGPUB; USPAT; EPO	OR	ON	2013/02/25 15:53
S30	839	S29 and (oil near2 well)	US-PGPUB; USPAT; EPO	OR	ON	2013/02/25 15:53
S31	239	S30 and (oil near2 level)	US-PGPUB; USPAT; EPO	OR	ON	2013/02/25 15:54
S32	2	S31 and ("700"/$.ccls. "702"/$.ccls.)	US-PGPUB; USPAT; EPO	OR	ON	2013/02/25 15:54
S33	4284	700/1,282,275,281,42.ccls.	US-PGPUB; USPAT; EPO	OR	ON	2013/02/26 10:07
S34	5841	702/6,13,183,188.ccls.	US-PGPUB; USPAT; EPO	OR	ON	2013/02/26 10:07
S35	18470	709/224.ccls.	US-PGPUB; USPAT; EPO	OR	ON	2013/02/26 10:07
S36	767	166/336,363,250.1.ccls.	US-PGPUB; USPAT; EPO	OR	ON	2013/02/26 10:07
S37	463	340/853.3,853.2,856.3.ccls.	US-PGPUB; USPAT; EPO	OR	ON	2013/02/26 10:08
S38	29579	S33 S34 S35 S36 S37	US-PGPUB; USPAT; EPO	OR	ON	2013/02/26 10:08
S39	168445	(oil hydrocarbon (hydro adj2 carbon) gas) near2 (well site disposal station)	US-PGPUB; USPAT; EPO	OR	ON	2013/02/26 10:08
S40	2119066	(controller control device) near2 (operate operat$4 adjust drive move close)	US-PGPUB; USPAT; EPO	OR	ON	2013/02/26 10:10
S41	1404	S38 and S39	US-PGPUB; USPAT; EPO	OR	ON	2013/02/26 10:10
S42	1837654	(internet network (web adj2 server))	US-PGPUB; USPAT; EPO	OR	ON	2013/02/26 10:11
S43	579	S41 and (internet network (web adj2 server))	US-PGPUB; USPAT; EPO	OR	ON	2013/02/26 10:11

S44	15604	(local autonomous independent) near2 (controller control device) near2 (operate operat$4 adjust drive move close)	US-PGPUB; USPAT; EPO	OR	ON	2013/02/26 10:12
S45	642	S40 and S41	US-PGPUB; USPAT; EPO	OR	ON	2013/02/26 10:12
S46	315	S45 and S42	US-PGPUB; USPAT; EPO	OR	ON	2013/02/26 10:12
S47	337	S39 and S44	US-PGPUB; USPAT; EPO	OR	ON	2013/02/26 10:12
S48	6	S46 and S47	US-PGPUB; USPAT; EPO	OR	ON	2013/02/26 10:12
S49	2	("2010/0147510").URPN.	USPAT	OR	ON	2013/02/26 10:13
S50	62	("5331318" | "5597042" | "5662165" | "5706892" | "5706896" | "5721538" | "5730219" | "5732776" | "5803167" | "5868201" | "5934371" | "5941307" | "5959547" | "5975204" | "5992250" | "6006832" | "6012015" | "6046685" | "6068053" | "6075462" | "6125938" | "6160492" | "6161618" | "6176312" | "6179057" | "6192980" | "6192988" | "6209640" | "6247536" | "6257332" | "6271766" | "6276454" | "6279660" | "6281489" | "6288975" | "6296066" | "6422315" | "6469636" | "6498988" | "6622799" | "6670880" | "6717501" | "6788980" | "6801135" | "6816082" | "6851444").PN. OR ("7261162").URPN.	US-PGPUB; USPAT; USOCR	OR	ON	2013/02/26 10:14
S51	11	("5941305" | "5959547" | "5978749" | "6061603" | "6670880").PN. OR ("6801135").URPN.	US-PGPUB; USPAT; USOCR	OR	ON	2013/02/26 10:18
S52	10	S39 and S44 and S38	US-PGPUB; USPAT; EPO	OR	ON	2013/02/26 10:21
S53	337	S39 and S44	US-PGPUB; USPAT; EPO	OR	ON	2013/02/26 10:22
S54	203	S53 and (internet network (web adj2 server))	US-PGPUB; USPAT; EPO	OR	ON	2013/02/26 10:22
S55	387	(local autonomous independent) and S45	US-PGPUB; USPAT; EPO	OR	ON	2013/02/26 10:25
S56	381	S55 not S54	US-PGPUB; USPAT; EPO	OR	ON	2013/02/26 10:25
S57	501662	(remote internet network) near2 (control monitor control$4 monitor$4 command)	US-PGPUB; USPAT;	OR	ON	2013/02/26 10:28

			EPO			
S58	8886	S57 and S39	US-PGPUB; USPAT; EPO	OR	ON	2013/02/26 10:29
S59	106	S58 and S44	US-PGPUB; USPAT; EPO	OR	ON	2013/02/26 10:29
S60	44	("20030004624" | "20040088115" | "20100147510" | "5732776" | "7931090" | "7967066" | "8312320" | "20130144531" | "8301386" | "20050108504" | "20100295673" | "20110231024" | "6061603" | "8386059" | "20100098507" | "20030182463" | "4052703" | "6192980" | "7958938" | "8373418" | "20130024026" | "20040231851" | "20060240818" | "7148812" | "7289994" | "20120316658" | "20040262008" | "7921916" | "8131510" | "8290737" | "20100326654" | "20020161685" | "20090149969" | "7845404" | "8179279" | "20020112860" | "20050096846" | "5149443" | "6801135" | "6913083" | "20130008645" | "20020169645" | "20080208475" | "7591308").PN.	US-PGPUB; USPAT; EPO	OR	ON	2013/06/11 13:22
S61	37	(US-20040262008-$ or US-20020112860-$ or US-20090149969-$ or US-20100147510-$ or US-20050096846-$ or US-20110231024-$ or US-20120316658-$ or US-20080208475-$ or US-20060271299-$ or US-20060240818-$ or US-20050092523-$ or US-20040231851-$ or US-20040088115-$ or US-20030182463-$ or US-20020169645-$ or US-20020161685-$).did. or (US-7148812-$ or US-7958938-$ or US-7967066-$ or US-7845404-$ or US-6913083-$ or US-5732776-$ or US-4052703-$ or US-8179279-$ or US-5149443-$ or US-8386059-$ or US-8131510-$ or US-7289994-$ or US-8373418-$ or US-8312320-$ or US-8290737-$ or US-7931090-$ or US-7921916-$ or US-6801135-$ or US-6061603-$ or US-6192980-$).did. or (WO-2008124765-$).did.	US-PGPUB; USPAT; EPO	OR	ON	2013/06/12 07:58
S62	0	S61 and oscillate	US-PGPUB; USPAT; EPO	OR	ON	2013/06/12 07:58
S63	1	S61 and (stuck adj3 valve)	US-PGPUB; USPAT; EPO	OR	ON	2013/06/12 07:59
S64	4400	700/1,282,275,281,42.ccls.	US-PGPUB; USPAT; EPO	OR	ON	2013/06/12 08:10
S65	5969	702/6,13,183,188.ccls.	US-PGPUB; USPAT; EPO	OR	ON	2013/06/12 08:10
S66	19220	709/224.ccls.	US-PGPUB; USPAT; EPO	OR	ON	2013/06/12 08:10
S67	804	166/336,363,250.1.ccls.	US-PGPUB; USPAT;	OR	ON	2013/06/12 08:10

			EPO			
S68	475	340/853.3,853.2,856.3.ccls.	US-PGPUB; USPAT; EPO	OR	ON	2013/06/12 08:10
S69	30612	S64 S65 S66 S67 S68	US-PGPUB; USPAT; EPO	OR	ON	2013/06/12 08:10
S70	172242	(oil hydrocarbon (hydro adj2 carbon) gas) near2 (well site disposal station)	US-PGPUB; USPAT; EPO	OR	ON	2013/06/12 08:10
S71	241	S69 and S70 and "240"	US-PGPUB; USPAT; EPO	OR	ON	2013/06/12 08:10
S72	2175607	(controller control device) near2 (operate operat$4 adjust drive move close)	US-PGPUB; USPAT; EPO	OR	ON	2013/06/12 08:11
S73	664	S69 and S70 and S72	US-PGPUB; USPAT; EPO	OR	ON	2013/06/12 08:11
S74	6	S73 and (inoperative in-operative stuck) adj3 (valve part)	US-PGPUB; USPAT; EPO	OR	ON	2013/06/12 08:11
S75	94	S70 and (stuck) adj3 (valve)	US-PGPUB; USPAT; EPO	OR	ON	2013/06/12 08:14
S76	94	S70 and ((stuck) adj3 (valve))	US-PGPUB; USPAT; EPO	OR	ON	2013/06/12 08:14
S77	109	S70 and ((frozen froze stuck) adj3 (valve))	US-PGPUB; USPAT; EPO	OR	ON	2013/06/12 08:19
S78	12	((move jerk oscillate move) near2 ((frozen froze stuck) adj3 (valve)))	US-PGPUB; USPAT; EPO	OR	ON	2013/06/12 08:21
S79	1	("4823749").PN.	US-PGPUB; USPAT; EPO	OR	OFF	2013/06/12 08:22
S80	1	("20010032518").PN.	US-PGPUB; USPAT; EPO	OR	OFF	2013/06/12 10:53
S81	35	((AARON) near2 (PHILLIPS)).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2013/06/12 11:14
S82	5	((AARON) near2 (PHILLIPS)).INV.	EPO; JPO; DERWENT	OR	ON	2013/06/12 11:14

S83	0	(AMPLISINE adj2 LABS).as.	EPO; JPO; DERWENT	OR	ON	2013/06/12 11:14
S84	5	real-time and onsite and internet and communication	EPO; JPO; DERWENT	OR	ON	2013/06/12 11:14
S85	20	(US-20040262008-$ or US-20120316658-$ or US-20080208475-$ or US-20060271299-$ or US-20060240818-$ or US-20050092523-$ or US-20040231851-$ or US-20040088115-$ or US-20030182463-$ or US-20020169645-$ or US-20020112860-$).did. or (US-7148812-$ or US-7958938-$ or US-7967066-$ or US-7845404-$ or US-6913083-$ or US-5732776-$ or US-4052703-$ or US-8179279-$).did. or (WO-2008124765-$).did.	US-PGPUB; USPAT; EPO	OR	ON	2013/06/12 11:14
S86	0	S85 and (oil near2 water near2 separation)	US-PGPUB; USPAT; EPO	OR	ON	2013/06/12 11:14
S87	7	S85 and (oil near2 water)	US-PGPUB; USPAT; EPO	OR	ON	2013/06/12 11:14
S88	4795	(oil near2 water near2 separation)	US-PGPUB; USPAT; EPO	OR	ON	2013/06/12 11:14
S89	2432	S88 and pump	US-PGPUB; USPAT; EPO	OR	ON	2013/06/12 11:14
S90	889	S89 and (oil near2 well)	US-PGPUB; USPAT; EPO	OR	ON	2013/06/12 11:14
S91	246	S90 and (oil near2 level)	US-PGPUB; USPAT; EPO	OR	ON	2013/06/12 11:14
S92	2	S91 and ("700"/$.ccls. "702"/$.ccls.)	US-PGPUB; USPAT; EPO	OR	ON	2013/06/12 11:14
S93	1458	S69 and S70	US-PGPUB; USPAT; EPO	OR	ON	2013/06/12 11:14
S94	1900176	(internet network (web adj2 server))	US-PGPUB; USPAT; EPO	OR	ON	2013/06/12 11:14
S95	16083	(local autonomous independent) near2 (controller control device) near2 (operate operat$4 adjust drive move close)	US-PGPUB; USPAT; EPO	OR	ON	2013/06/12 11:14
S96	664	S72 and S93	US-PGPUB; USPAT; EPO	OR	ON	2013/06/12 11:14
S97	327	S96 and S94	US-PGPUB; USPAT;	OR	ON	2013/06/12 11:14

			EPO			
S98	343	S70 and S95	US-PGPUB; USPAT; EPO	OR	ON	2013/06/12 11:14
S99	6	S97 and S98	US-PGPUB; USPAT; EPO	OR	ON	2013/06/12 11:14
S100	10	S70 and S95 and S69	US-PGPUB; USPAT; EPO	OR	ON	2013/06/12 11:14
S101	528886	(remote internet network) near2 (control monitor control$4 monitor$4 command)	US-PGPUB; USPAT; EPO	OR	ON	2013/06/12 11:14
S102	9459	S101 and S70	US-PGPUB; USPAT; EPO	OR	ON	2013/06/12 11:14
S103	110	S102 and S95	US-PGPUB; USPAT; EPO	OR	ON	2013/06/12 11:14
S104	158	S81 S82 S83 S84 S86 S87 S92 S99 S100 S103	US-PGPUB; USPAT; EPO	OR	ON	2013/06/12 11:14
S105	16	("2004/0262008").URPN.	USPAT	OR	ON	2013/10/25 12:32
S106	9	("20040262008" | "20050035875" | "4701756" | "5959547" | "6229453" | "6816082").PN. OR ("7148812").URPN.	US-PGPUB; USPAT; USOCR	OR	ON	2013/10/25 12:39
S107	1	("5959547").PN.	US-PGPUB; USPAT; EPO	OR	OFF	2013/10/25 12:45
S108	4578	700/1,282,275,281,42.ccls.	US-PGPUB; USPAT; EPO	OR	ON	2013/10/25 12:46
S109	6150	702/6,13,183,188.ccls.	US-PGPUB; USPAT; EPO	OR	ON	2013/10/25 12:46
S110	20349	709/224.ccls.	US-PGPUB; USPAT; EPO	OR	ON	2013/10/25 12:46
S111	850	166/336,363,250.1.ccls.	US-PGPUB; USPAT; EPO	OR	ON	2013/10/25 12:46
S112	486	340/853.3,853.2,856.3.ccls.	US-PGPUB; USPAT; EPO	OR	ON	2013/10/25 12:46

S113	32148	S108 S109 S110 S111 S112	US-PGPUB; USPAT; EPO	OR	ON	2013/10/25 12:46
S114	177528	(oil hydrocarbon (hydro adj2 carbon) gas) near2 (well site disposal station)	US-PGPUB; USPAT; EPO	OR	ON	2013/10/25 12:46
S115	2253717	(controller control device) near2 (operate operat$4 adjust drive move close)	US-PGPUB; USPAT; EPO	OR	ON	2013/10/25 12:46
S116	36	((AARON) near2 (PHILLIPS)).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2013/10/25 12:46
S117	5	((AARON) near2 (PHILLIPS)).INV.	EPO; JPO; DERWENT	OR	ON	2013/10/25 12:46
S118	0	(AMPLISINE adj2 LABS).as.	EPO; JPO; DERWENT	OR	ON	2013/10/25 12:46
S119	5	real-time and onsite and internet and communication	EPO; JPO; DERWENT	OR	ON	2013/10/25 12:46
S120	20	(US-20040262008-$ or US-20120316658-$ or US-20080208475-$ or US-20060271299-$ or US-20060240818-$ or US-20050092523-$ or US-20040231851-$ or US-20040088115-$ or US-20030182463-$ or US-20020169645-$ or US-20020112860-$).did. or (US-7148812-$ or US-7958938-$ or US-7967066-$ or US-7845404-$ or US-6913083-$ or US-5732776-$ or US-4052703-$ or US-8179279-$).did. or (WO-2008124765-$).did.	US-PGPUB; USPAT; EPO	OR	ON	2013/10/25 12:46
S121	0	S120 and (oil near2 water near2 separation)	US-PGPUB; USPAT; EPO	OR	ON	2013/10/25 12:46
S122	7	S120 and (oil near2 water)	US-PGPUB; USPAT; EPO	OR	ON	2013/10/25 12:46
S123	4935	(oil near2 water near2 separation)	US-PGPUB; USPAT; EPO	OR	ON	2013/10/25 12:46
S124	2501	S123 and pump	US-PGPUB; USPAT; EPO	OR	ON	2013/10/25 12:46
S125	917	S124 and (oil near2 well)	US-PGPUB; USPAT; EPO	OR	ON	2013/10/25 12:46
S126	257	S125 and (oil near2 level)	US-PGPUB; USPAT; EPO	OR	ON	2013/10/25 12:46
S127	2	S126 and ("700"/$.ccls. "702"/$.ccls.)	US-PGPUB; USPAT; EPO	OR	ON	2013/10/25 12:46
S128	1540	S113 and S114	US-	OR	ON	2013/10/25

			PGPUB; USPAT; EPO			12:46
S129	1987225	(internet network (web adj2 server))	US-PGPUB; USPAT; EPO	OR	ON	2013/10/25 12:46
S130	16785	(local autonomous independent) near2 (controller control device) near2 (operate operat$4 adjust drive move close)	US-PGPUB; USPAT; EPO	OR	ON	2013/10/25 12:46
S131	707	S115 and S128	US-PGPUB; USPAT; EPO	OR	ON	2013/10/25 12:46
S132	351	S131 and S129	US-PGPUB; USPAT; EPO	OR	ON	2013/10/25 12:46
S133	357	S114 and S130	US-PGPUB; USPAT; EPO	OR	ON	2013/10/25 12:46
S134	6	S132 and S133	US-PGPUB; USPAT; EPO	OR	ON	2013/10/25 12:46
S135	10	S114 and S130 and S113	US-PGPUB; USPAT; EPO	OR	ON	2013/10/25 12:46
S136	553323	(remote internet network) near2 (control monitor control$4 monitor$4 command)	US-PGPUB; USPAT; EPO	OR	ON	2013/10/25 12:46
S137	9948	S136 and S114	US-PGPUB; USPAT; EPO	OR	ON	2013/10/25 12:46
S138	117	S137 and S130	US-PGPUB; USPAT; EPO	OR	ON	2013/10/25 12:46
S139	166	S116 S117 S118 S119 S121 S122 S127 S134 S135 S138	US-PGPUB; USPAT; EPO	OR	ON	2013/10/25 12:46
S140	166	S139	US-PGPUB; USPAT; EPO	OR	ON	2013/10/25 12:46
S144	4914	700/1,282,275,281,42.ccls.	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
S145	6494	702/6,13,183,188.ccls.	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
S146	22712	709/224.ccls.	US-	OR	ON	2014/07/22

			PGPUB; USPAT; EPO			16:19
S147	948	166/336,363,250.1.ccls.	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
S148	511	340/853.3,853.2,856.3.ccls.	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
S149	35297	S144 S145 S146 S147 S148	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
S150	188122	(oil hydrocarbon (hydro adj2 carbon) gas) near2 (well site disposal station)	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
S151	2416039	(controller control device) near2 (operate operat$4 adjust drive move close)	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
S152	38	((AARON) near2 (PHILLIPS)).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2014/07/22 16:19
S153	5	((AARON) near2 (PHILLIPS)).INV.	EPO; JPO; DERWENT	OR	ON	2014/07/22 16:19
S154	2	(AMPLISINE adj2 LABS).as.	EPO; JPO; DERWENT	OR	ON	2014/07/22 16:19
S155	5	real-time and onsite and internet and communication	EPO; JPO; DERWENT	OR	ON	2014/07/22 16:19
S156	20	(US-20040262008-$ or US-20120316658-$ or US-20080208475-$ or US-20060271299-$ or US-20060240818-$ or US-20050092523-$ or US-20040231851-$ or US-20040088115-$ or US-20030182463-$ or US-20020169645-$ or US-20020112860-$).did. or (US-7148812-$ or US-7958938-$ or US-7967066-$ or US-7845404-$ or US-6913083-$ or US-5732776-$ or US-4052703-$ or US-8179279-$).did. or (WO-2008124765-$).did.	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
S157	0	S156 and (oil near2 water near2 separation)	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
S158	7	S156 and (oil near2 water)	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
S159	5262	(oil near2 water near2 separation)	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
S160	2663	S159 and pump	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
S161	969	S160 and (oil near2 well)	US-PGPUB;	OR	ON	2014/07/22 16:19

			USPAT; EPO			
S162	268	S161 and (oil near2 level)	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
S163	4	S162 and ("700"/$.ccls. "702"/$.ccls.)	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
S164	1686	S149 and S150	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
S165	2171012	(internet network (web adj2 server))	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
S166	18312	(local autonomous independent) near2 (controller control device) near2 (operate operat$4 adjust drive move close)	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
S167	776	S151 and S164	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
S168	390	S167 and S165	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
S169	383	S150 and S166	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
S170	8	S168 and S169	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
S171	12	S150 and S166 and S149	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
S172	605853	(remote internet network) near2 (control monitor control$4 monitor$4 command)	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
S173	10936	S172 and S150	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
S174	129	S173 and S166	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
S175	178	S152 S153 S154 S155 S157 S158 S163 S170 S171 S174	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
S176	178	S175	US-PGPUB;	OR	ON	2014/07/22 16:19

			USPAT; EPO			
S177	178	S176	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
S178	2489	G05D7/0676;G05B9/02;E21B47/00;G05B2219/23472.cpc.	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:20
S179	645	S178 and S150	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:28
S180	452	S179 and (oil near2 well)	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:28
S182	15	S180 and (oil near2 level)	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:28
S183	16	S178 and S166 and S165	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:29
S184	204	S182 S183 S177	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:29
S185	23	("4007450" | "4888726" | "5560005" | "5724575" | "5828851" | "5838563" | "5845230" | "5956483" | "6000045" | "6131120" | "6263487" | "6701437" | "6799077").PN. OR ("7289994").URPN.	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/23 16:41
S186	1	("20090055029").PN.	US-PGPUB; USPAT; EPO	OR	OFF	2015/03/06 14:23
S187	46	(US-20120316658-$ or US-20080208475-$ or US-20060271299-$ or US-20060240818-$ or US-20050092523-$ or US-20040231851-$ or US-20040088115-$ or US-20030182463-$ or US-20020169645-$ or US-20040262008-$ or US-20020112860-$ or US-20090149969-$ or US-20100147510-$ or US-20050096846-$ or US-20110231024-$ or US-20020161685-$ or US-20120310582-$ or US-20010032518-$ or US-20140163749-$ or US-20090055029-$).did. or (US-7148812-$ or US-7958938-$ or US-7967066-$ or US-7845404-$ or US-6913083-$ or US-5732776-$ or US-4052703-$ or US-8179279-$ or US-5149443-$ or US-8386059-$ or US-8131510-$ or US-7289994-$ or US-8373418-$ or US-8312320-$ or US-8290737-$ or US-7931090-$ or US-7921916-$ or US-6801135-$ or US-6061603-$ or US-6192980-$ or US-6435022-$ or US-4823749-$ or US-8208478-$ or US-7347271-$ or US-5959547-$).did. or (WO-2008124765-$).did.	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 14:45
S188	2	S187 and pid	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 14:45

S189	5307	700/1,282,275,281,42.ccls.	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
S190	6733	702/6,13,183,188.ccls.	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
S191	24915	709/224.ccls.	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
S192	1044	166/336,363,250.1.ccls.	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
S193	530	340/853.3,853.2,856.3.ccls.	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
S194	38241	S189 S190 S191 S192 S193	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
S195	197343	(oil hydrocarbon (hydro adj2 carbon) gas) near2 (well site disposal station)	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
S196	2561451	(controller control device) near2 (operate operat$4 adjust drive move close)	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
S197	39	((AARON) near2 (PHILLIPS)).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2015/03/06 16:10
S198	5	((AARON) near2 (PHILLIPS)).INV.	EPO; JPO; DERWENT	OR	ON	2015/03/06 16:10
S199	2	(AMPLISINE adj2 LABS).as.	EPO; JPO; DERWENT	OR	ON	2015/03/06 16:10
S200	6	real-time and onsite and internet and communication	EPO; JPO; DERWENT	OR	ON	2015/03/06 16:10
S201	20	(US-20040262008-$ or US-20120316658-$ or US-20080208475-$ or US-20060271299-$ or US-20060240818-$ or US-20050092523-$ or US-20040231851-$ or US-20040088115-$ or US-20030182463-$ or US-20020169645-$ or US-20020112860-$).did. or (US-7148812-$ or US-7958938-$ or US-7967066-$ or US-7845404-$ or US-6913083-$ or US-5732776-$ or US-4052703-$ or US-8179279-$).did. or (WO-2008124765-$).did.	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
S202	0	S201 and (oil near2 water near2 separation)	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
S203	7	S201 and (oil near2 water)	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
S204	5538	(oil near2 water near2 separation)	US-	OR	ON	2015/03/06

			PGPUB; USPAT; EPO			16:10
S205	2804	S204 and pump	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
S206	1031	S205 and (oil near2 well)	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
S207	287	S206 and (oil near2 level)	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
S208	4	S207 and ("700"/$.ccls. "702"/$.ccls.)	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
S209	1822	S194 and S195	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
S210	2334181	(internet network (web adj2 server))	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
S211	19758	(local autonomous independent) near2 (controller control device) near2 (operate operat$4 adjust drive move close)	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
S212	846	S196 and S209	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
S213	432	S212 and S210	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
S214	411	S195 and S211	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
S215	10	S213 and S214	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
S216	17	S195 and S211 and S194	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
S217	652812	(remote internet network) near2 (control monitor control$4 monitor$4 command)	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
S218	11860	S217 and S195	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
S219	139	S218 and S211	US-	OR	ON	2015/03/06

			PGPUB; USPAT; EPO			16:10
S220	192	S197 S198 S199 S200 S202 S203 S208 S215 S216 S219	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
S221	192	S220	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
S222	192	S221	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
S223	2737	G05D7/0676;G05B9/02;E21B47/00;G05B2219/23472.cpc.	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
S224	706	S223 and S195	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
S225	492	S224 and (oil near2 well)	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
S226	16	S225 and (oil near2 level)	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
S227	16	S223 and S211 and S210	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
S228	219	S226 S227 S222	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
S229	219	S228	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L43	0	(obtaining a target state of at least one of the fluid handling devices based on at least some of the plurality of instructions wherein obtaining a target state of at least one of the fluid handling devices based on at least some of the plurality of instructions comprises after receiving the instructions determining a plurality of different target states of the at least one of the fluid handling devices, the plurality of different states each corresponding to different times after determining the plurality of different target states translating each received instructions into one or more translated instructions encoded in	US-PGPUB; USPAT; UPAD	AND	ON	2015/09/21 08:51

		the selected respective protocol or protocols the one or more translated instructions including the determined plurality of different target states).clm.				
L44	0	(obtaining a target state of at least one of the fluid handling devices based on at least some of the plurality of instructions wherein obtaining a target state of at least one of the fluid handling devices based on at least some of the plurality of instructions comprises after receiving the instructions determining a plurality of different target states of the at least one of the fluid handling devices).clm.	US-PGPUB; USPAT; UPAD	AND	ON	2015/09/21 08:51
L45	0	(obtaining a target state of at least one of the fluid handling devices based on at least some of the plurality of instructions wherein obtaining a target state).clm.	US-PGPUB; USPAT; UPAD	AND	ON	2015/09/21 08:51
L46	0	(the plurality of different states each corresponding to different times after determining the plurality of different target states translating each received instructions into one or more translated instructions encoded in the selected respective protocol or protocols the one or more translated instructions including the determined plurality of different target states).clm.	US-PGPUB; USPAT; UPAD	AND	ON	2015/09/21 08:51
S141	0	(translating plurality commands translated commands encoded plurality protocols different from the first protocol each translated command being translated into a protocol among the plurality of protocols suitable for a fluid handling device to which the respective command is directed the at least some of the translated command being operative to cause a local controller of the given fluid-handling device to drive the given fluid-handling device to the plurality of different target states the local controller being responsive to the translated commands and feedback from the given fluid handling device indicative of whether the given fluid handling device is in a targeted state).clm.	US-PGPUB; USPAT; UPAD	AND	ON	2013/10/25 13:15
S142	0	(translating plurality commands translated commands encoded plurality protocols different from the first protocol each translated command being translated into a protocol among the plurality of protocols suitable for a fluid handling device to which the respective command is directed the at least some of the translated command being operative to cause a local controller of the given fluid-handling device).clm.	US-PGPUB; USPAT; UPAD	AND	ON	2013/10/25 13:16
S143	0	(sending the translated commands to respective local controllers of the respective fluid handling devices to which the respective commands are directed).clm.	US-PGPUB; USPAT; UPAD	AND	ON	2013/10/25 13:16

9/21/2015 8:52:02 AM
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Remote control of fluid-handling devices



www.google.com/patents/US8649909

Grant - Filed Dec 7, 2012 - Issued Feb 11, 2014 - Aaron Phillips - Amplisine Labs, LLC

A system for remotely controlling a **fluid-handling** device of an oil well, a petro water .... A tangible, non-transitory **machine**-readable medium storing ... devices, the plurality of commands being encoded in a **shared protocol**; .... to translate commands into various device-**specific protocols**, such that a single ...

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Remote control of fluid-handling devices



www.google.com/patents/US20140163749

App. - Filed Jan 3, 2014 - Published Jun 12, 2014 - Aaron Phillips - Amplisine Labs, LLC

... -gplus-sharePatent US20140163749 - Remote control of **fluid-handling** devices ... A system for remotely controlling **fluid-handling** device of an oil well, a petro water .... A tangible, non-transitory **machine**-readable medium storing .... to translate commands into various device-**specific protocols**, such that a ...

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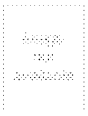
www.google.com/patents/US20130143328

App. - Filed Jan 30, 2013 - Published Jun 6, 2013 - Kevin F. Peters - Hewlett-Packard Development Company, L.P.

... =gb-gplus-sharePatent US20130143328 - Automated Assay Fluid Dispensing Patent ... An assay-**protocol-specific** multi-channel fluid-dispenser cassette for an ... indicates, for each channel, the assay fluid to be handled by that channel. .... Herein, a "type identifier" is a human-readable and/or **machine** ...

Overview · Related · Discuss

Enhanced communications protocol for improved modularity ...



www.google.com/patents/WO2008154027A1?cl=en

App. - Filed Jun 11, 2008 - Published Dec 18, 2008 - John Glenn Edelen - John Glenn Edelen

Methods and apparatus for improving modularity in a micro-fluid ejection device ... The instruction data is provided to a plurality of data handling devices ... =gb-gplus-sharePatent WO2008154027A1 - Enhanced communications **protocol** .... ENHANCED COMMUNICATIONS **PROTOCOL** FOR IMPROVED ...

Overview · Related · Discuss

Imaging system protocol handling method and apparatus



www.google.com/patents/US6272469

Grant - Filed Nov 25, 1998 - Issued Aug 7, 2001 - Ianne Mae Howards Koritzinsky - Ge Medical Systems Global Technology Company, Llc

The **protocols** are created and stored on **machine** readable media. ... such **protocols** to provide **specific** types of images as required by the .... in a file sharing configuration, a client/server arrangement, or in any other suitable manner. ..... Systems and methods for quantification and classification of fluids in ...

Overview · Related · Discuss

Enhanced communications protocol for improved modularity ...

www.google.com/patents/US7992952

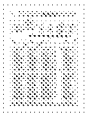
Grant - Filed Jun 11, 2007 - Issued Aug 9, 2011 - John Glenn Edelen - Lexmark International, Inc.

Methods and apparatus for improving modularity in a micro-fluid ejection ...



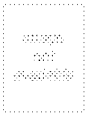
The instruction data is provided to a plurality of data **handling** devices including at least one data controller. ... The control circuit 32 provides a signal to **particular** logic switches 30 ... data controller 150 may be a state **machine**.
Overview · Related · Discuss

Method for delivering a fluid to a patient



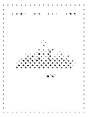
www.google.com/patents/US8645154
Grant - Filed Dec 23, 2005 - Issued Feb 4, 2014 - Philip N. Eggers - Carefusion 303, Inc.
The selected **protocol** includes default parameters for delivering the drug, and ... a **machine**-readable drug label identifying a **particular protocol** stored in the ..... to be **shared** between **protocols** and/or configuration databases to avoid ..... management and pumping system having an alarm **handling** system.
Overview · Related · Discuss

Laboratory reagent and sample assembly, management and ...



www.google.com/patents/WO2007106833A2?cl=en
App. - Filed Mar 13, 2007 - Published Sep 20, 2007 - Gary P Magnant - Sage Science Inc
A **fluid handling** apparatus for use with a fluid transfer instrument has a ... =gb-gplus-sharePatent WO2007106833A2 - Laboratory reagent and sample ... of a **machine** readable media, a pointer to instructions available over a network, ... for a first **protocol** step, awaiting detection of a liquid handling action ...
Overview · Related · Discuss

Method for assessing disposable absorbent structures



www.google.com/patents/US6085579
Grant - Filed Mar 25, 1997 - Issued Jul 11, 2000 - Mathais Kurt Herrlein - The Procter & Gamble Company
The invention refers to methods for assessing absorbent structures (10) for their **fluid handling** ability by ... -gplus-sharePatent US6085579 - Method for assessing disposable .... articles, in **particular** when used in a test **protocol** optimised for both ... 2 shows a simplified test **equipment** for assessing the liquid ...
Overview · Related · Discuss

Method for assessing disposable absorbent structures



www.google.com/patents/CA2254074C?cl=en
Grant - Filed Mar 25, 1997 - Issued Nov 2, 2004 - Mathias Kurt Herrlein - The Procter & Gamble Company
... ?cl=en&utm_source=gb-gplus-sharePatent CA2254074C - Method for .... After a **certain** time such as to allow for equilibration and preferably under a **certain** ... can be combined with other **fluid handling** evaluation **protocols**, ... 1 show, a simplified test **equipment** according to a preferred test **protocol** for ...
Overview · Related · Discuss

State-space and verbal **protocol** methods for studying the human operator in process control
PM Sanderson, AG Verhage, RB Fuld - Ergonomics, 1989 - Taylor & Francis
... If control functions are to be **shared** between the human operator and a computer or another'hurnan operator, how should functions be allocated and how should the interaction between these agents best be ... 3. Verbal **protocol** analysis 'Think aloud' verbal **protocols** are an ...
Cited by 55 Related articles All 4 versions Cite Save

Controller Area Networks and the **protocol** CAN for machine control systems
LB Fredriksson - Mechatronics, 1994 - Elsevier
... the CAN-bus concept formed in 1990 the " CAN Textile Users Group " where they **share** common experience ... clock and then it will be possible to create true time driven and synchronous **protocols**. If CAN is used in CA (Collision Avoiding) type of **protocol** the inherent arbitration ...
Cited by 38 Related articles All 5 versions Cite Save

Experimental bridge LonWorks/sup/spl reg///UPnP/spl trade/1.0
S Chemishkian, J Lund - Consumer Communications and ..., 2004 - ieeexplore.ieee.org
... be typically connected between a xDSL or cable modem, and home IP network, enabling **shared** access to ... security awareness, the LONWORKS / UPnP bridge has to address security require- ments for both communication **protocols**. ... LonWorks **protocol** stack LonWorks Adapter ...
Cited by 15 Related articles Cite Save

Securing SCADA systems
RL Krutz - 2005 - books.google.com
... and Infor- mation Sector Working Group (CISWG) was established with the mission to "promote information **sharing** and coordinated ... ControlNet An Allen Bradley communications **protocol** applied to control systems. Data Highway, Allen Bradley communications **protocols**. ...
Cited by 171 Related articles All 2 versions Cite Save More

Wireless sensor networks: architectures and **protocols**
EH Callaway Jr - 2003 - books.google.com
... 264 9.7.3 Software to Control **Specific** MCU Functions ... Note 1. Edgar H. Callaway, Jr., A Communication **Protocol** for Wireless Sensor Networks, Ph.D ... WIRELESS SENSOR NETWORKS: ARCHITECTURES AND **PROTOCOLS** the conference room for a meeting, for example, the ...
Cited by 879 Related articles All 7 versions Cite Save More

State of play
G Wood - IEE review, 2000 - IET
... lower–the result of replacing multiple point-to-point links with a **shared** bus – while ... Fieldbus Standards Committee has produced 'Guide to the evaluation of fieldbus **protocols** – selecting the ... or Profibus function blocks–it's just a matter of using a communications **protocol** stack in ...
Cited by 4 Related articles All 3 versions Cite Save

Fieldbus brings **protocol** to process control
MK Santori, K Zech - Spectrum, IEEE, 1996 - ieeexplore.ieee.org
... functional aspects of the Foundation fieldbus ensure that compliant field devices can easily **share** data and ... Like other all-digital communi- cation technologies, it is easily networked over a **shared** bus. ... That lan- guage is embodied in the user layer of the **protocol** stack, which will ...
Cited by 22 Related articles All 6 versions Cite Save

Wireless sensor networks for industrial process monitoring and control: A survey
G Zhao - Network **Protocols** and Algorithms, 2011 - macrothink.org
... Wireless Standard Uses proprietary **protocol** ISA100.11a WirelessHart ... Secondly, unlike wired control systems, where devices **share** a single bus, multiple wireless communications can act simultaneously if there is ... Network **Protocols** and Algorithms ISSN 1943-3581 2011, Vol. ...
Cited by 42 Related articles All 2 versions Cite Save

Components for embedded software: the PECOS approach
T Genßler, A Christoph, M Winter, O Nierstrasz... - Proceedings of the ..., 2002 - dl.acm.org
... ModBus outputs this value over a serial line to the frequency converter using the ModBus **protocol**. ... Ports are **shared** variables that allow components to communicate with each other. ... This way a developer is able to specify an entire family of applications that **share** a common ar ...
Cited by 125 Related articles All 13 versions Cite Save

Remote Labs and Resource **Sharing** in Control Systems Education
P Burgel, O Fiala, T Fencl, L Moc - Proceedings of the 17th World Congress of The ..., 2008
Cited by 3 Related articles All 4 versions Cite Save

Google shared protocol to specific protocol for target states of a valve controller Sign in

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Remote control of fluid-handling devices



www.google.com/patents/US8649909
Grant - Filed Dec 7, 2012 - Issued Feb 11, 2014 - Aaron Phillips - Amplisine Labs, LLC
a first layer of **control** in which **targeted states** of the fluid handling devices are ... the plurality of commands being encoded in a **shared protocol**; ..... on the **specific protocol** used to communicate with the corresponding **valve** at ...
Overview · Related · Discuss

Remote control of fluid-handling devices



www.google.com/patents/US20140163749
App. - Filed Jan 3, 2014 - Published Jun 12, 2014 - Aaron Phillips - Amplisine Labs, LLC
receiving, from a user device, the command to change the **state** of the ..... **specific protocol** used to communicate with the corresponding **valve** at ...
Overview · Related · Discuss

Utility load control management communications protocol



www.google.com/patents/US7869904
Grant - Filed Mar 24, 2010 - Issued Jan 11, 2011 - Joel R. Cannon - Cooper Technologies Company
The load **control** message includes the **target** address and a plurality of ... a reply message formed according to the communication **protocol** from the **target**. ... of **specific** load management messages, configuration messages, maintenance ... configure a thermostat **state** of the at least one **target** device;.
Overview · Related · Discuss

System and method for batch process control with diverse ...



www.google.com/patents/US7747416
Grant - Filed May 30, 2007 - Issued Jun 29, 2010 - Thomas A. Deininger - Siemens Industry, Inc.
determining a second DCS **protocol** associated with said **controller** prior to ... wherein said **protocol** translation logic comprises at least one **state** .... Accordingly, legacy DCS systems typically communicate using vendor **specific protocols**. .... model elements in the **target** batch management system database.
Overview · Related · Discuss

Utility load control management communications protocol



www.google.com/patents/US7702424
Grant - Filed Oct 30, 2007 - Issued Apr 20, 2010 - Joel Cannon - Cannon Technologies, Inc.
A load **control** management **protocol**, system, and method that address many ... **Specific** electrically powered appliances and **certain** uses of electricity ... configure a thermostat **state** of the at least one **target** device; ..... is cut off for shorter periods of time in an attempt to **share** the shortage over a wider base.
Overview · Related · Discuss

System and method for batch process control with diverse ...



www.google.com/patents/EP1865413A1?cl=en
App. - Filed Jun 1, 2007 - Published Dec 12, 2007 - Thomas A Deininger - Siemens Energy & Automation, Inc.
detecting a change in first distributed **control** system (DCS) **protocol** ... wherein said **protocol** translation logic comprises at least one **state** .... Accordingly, legacy DCS systems typically communicate using vendor **specific protocols**. .... model elements in the **target** batch management system database.

Overview · Related · Discuss

Targeted separation protocols for rapid characterizations ...



www.google.com/patents/US6491823
Grant - Filed Nov 28, 2000 - Issued Dec 10, 2002 - Adam Safir - Symyx Technologies, Inc.
In **particular**, the invention relates to liquid chromatography and related .... Such optical **protocols** can also require a sample to thermally equilibrate for ... **protocols** that can be employed in near-real-time industrial process **control**. ... 3 is a schematic diagram illustrating an eight-port injection **valve** used for ...
Overview · Related · Discuss

Multi-component process analysis and control



www.google.com/patents/EP1185393A2?cl=en
App. - Filed Oct 7, 1999 - Published Mar 13, 2002 - Jason M. Hamilton - Mississippi State University
The use of a **protocol** also allows for numerous checks on the ... The foremost method for detection of the **specific target** molecule in ... constituents which indicate the **state** of the process, transmitting the ... The pressure is controlled by the electronic **control valve** 16, also under the **control** of the **controller** 6.
Overview · Related · Discuss

Efficient addressing in wireless hart protocol



www.google.com/patents/US8570922
Grant - Filed Apr 10, 2006 - Issued Oct 29, 2013 - Wallace A. Pratt, JR. - Hart Communication Foundation
A method of providing a wireless extension to a wired **protocol** for transferring ... wireless **protocol**, the wireless **protocol** and the wireless **protocol sharing** a ..... device 34 may be a WirelessHART **valve positioner**, and the field device 36 ..... Source devices may send messages to one ore more **specific target** ...
Overview · Related · Discuss

Multi-component process analysis and control



www.google.com/patents/CA2346736A1?cl=en
App. - Filed Oct 7, 1999 - Published Apr 13, 2000 - Jeffrey S. Lindner - Jeffrey S. Lindner
protocol to determine the concentrations of a plurality of molecules in the sample, ... The foremost method for detection of the **specific target** molecule in the ... the **state** of the process, transmitting the determined concentrations) to a .... The pressure is controlled by the electronic **control valve** 16, also under ...
Overview · Related · Discuss

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NGO influence in the implementation of the Kyoto **Protocol**: Compliance, flexibility mechanisms, and sinks

LH Gulbrandsen, S Andresen - Global Environmental Politics, 2004 - MIT Press

... associated with an environmental organization that may or may not **translate** into political ... three dimensions relevant to pro- moting climate compliance: resources, prime **target** groups and ... Arenas/groups **targeted** International negotiations Domestic policy **Industry** Public opinion ...

Cited by 153 Related articles All 13 versions Cite Save

A handbook of **protocols** for standardised and easy measurement of **plant** functional traits worldwide

JHC Cornelissen, S Lavorel, E Garnier, S Diaz... - Australian journal of ..., 2003 - CSIRO

... of Forest Resources, University of Minnesota, 1530 N. Cleveland Ave., St Paul, MN 55108, **USA**. ... within functional classification schemes, can be defined as groups of **plant** species **sharing** similar functioning ... These similarities are based on the fact that they tend to **share** a set of ...

Cited by 1487 Related articles All 20 versions Cite Save More

Application-**specific protocol** architectures for wireless networks

WB Heinzelman - 2000 - dcc.ic.uff.br

... I am very lucky to have such wonderful family members. I have enjoyed **sharing** my MIT experiences with all of you! ... remain in the sleep **state**. . . . . 66 ... My thesis is that application-**specific protocol** architectures must be designed and deployed in ...

Cited by 1084 Related articles All 31 versions Cite Save More

The Kyoto **Protocol**: international climate policy for the 21st century

S Oberthür, HE Ott - 1999 - books.google.com

... of the material is concerned, specifically the rights of **translation**, reprinting, reuse ... 296 24.5 Non-governmental Developments 297 24.6 Conclusion: The **State** of Climate ... Implementation JUSSCANNZ A Group of Countries Comprising Japan, Unites **States**, Switzerland, Canada ...

Cited by 587 Related articles All 3 versions Cite Save More

Modifying soybean **oil** for enhanced performance in biodiesel blends

AJ Kinney, TE Clemente - Fuel processing technology, 2005 - Elsevier

... With the available tools of biotechnology, it is now possible to **translate** these data on simulated ... in some cases it may be necessary to optimize codon usage to maximize **translation** efficiency [36]. ... 20% ricinoleic acid coupled with 70–80% oleic acid is a reasonable **target** for an ...

Cited by 148 Related articles All 4 versions Cite Save

The costs of the Kyoto **Protocol** in the European Union

LL Viguier, MH Babiker, JM Reilly - Energy Policy, 2003 - Elsevier

... In Section 4, we consider the economic impact for European countries of implementing the Kyoto **target**, and the Burden **Sharing** Agreement, without flexibility ... Coal prices increase at higher rates in Europe than in the United **States** or in Japan. ... **USA**, 1.5, 1.0, 2.7, 2.0, 3.7, 3.0. ...

Cited by 87 Related articles All 22 versions Cite Save More

Securing SCADA systems

RL Krutz - 2005 - books.google.com

... current advanced development programs, additional countermeasures, and legisla— tion **targeted** to increase ... departments: The Department of Homeland Security The Department of **State** The Department of ... the timeline of the major activities relating to CIP in the United **States**. ...

Cited by 171 Related articles All 2 versions Cite Save More

The development of biofuels in Asia

A Zhou, E Thomson - Applied Energy, 2009 - Elsevier

... In order to achieve this, the Government **targeted** 11.2 million ha to be planted with Jatropha by ... the current third phase, the **target** is to achieve a 10% blend once all **target states** have implemented ... and especially at the peak 2008 prices, has it made sense to **convert** cassava to ...

Cited by 159 Related articles All 11 versions Cite Save

The costs of compliance: a CGE assessment of Canada's policy options under the Kyoto **protocol**

C Böhringer, TF Rutherford - The World Economy, 2010 - Wiley Online Library

... towards less CO 2 implies a less productive use of resources which **translates** into a ... CO 2 values for Russia are zero across all abatement scenarios since the Kyoto **target** does not ... both face drastic reduction requirements from their BaU emission levels which **translate** into CO ...

Cited by 42 Related articles All 9 versions Cite Save

Canada/United **States** Military Interoperability and Humanitarian Law Issues: Land Mines, Terrorism, Military Objectives and **Targeted** Killing

K Watkin - Duke J. Comp. & Int'l L., 2004 - HeinOnline

... AND HUMANITARIAN LAW ISSUES: LAND MINES, TERRORISM, MILITARY OBJECTIVES AND **TARGETED** KILLING Colonel ... to which differences at the treaty or interpretive level **translate** into practical ... threat of trans-national terrorism.55 Like the United **States**, Canada has ...

Cited by 45 Related articles All 6 versions Cite Save

Google translate target states from a shared protocol to a specific protocol for oil pr

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Remote control of fluid-handling devices



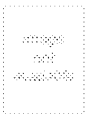
www.google.com/patents/US8649909
Grant - Filed Dec 7, 2012 - Issued Feb 11, 2014 - Aaron Phillips - Amplisine Labs, LLC
a command-center server having a data store storing multiple user accounts, each ... data indicative of the amount of oil, produced fluid, or flowback fluid. ... a first layer of control in which targeted states of the fluid handling devices .... to translate commands into various device-specific protocols, such that a ...
Overview · Related · Discuss

Remote control of fluid-handling devices



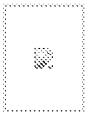
www.google.com/patents/US20140163749
App. - Filed Jan 3, 2014 - Published Jun 12, 2014 - Aaron Phillips - Amplisine Labs, LLC
an input/output module operable to communicate with a fluid-handling device; ... receiving, from a user device, the command to change the state of the ... a plurality of oil-wells, petro water disposal or re-injection facilities, ... operative to translate commands into various device-specific protocols, such that a ...
Overview · Related · Discuss

F-box protein targeted plant oil production



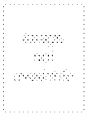
www.google.com/patents/CA2623720C?cl=en
Grant - Filed Sep 22, 2006 - Issued Jun 17, 2014 - John B. Ohlrogge - John B. Ohlrogge
A method of modifying oil production in a plant comprising: ... In particular, this invention relates to methods and compositions for increasing oil ..
Overview · Related · Discuss

F-box protein targeted plant oil production



www.google.com/patents/US9006518
Grant - Filed Mar 2, 2011 - Issued Apr 14, 2015 - John B. Ohlrogge - Board Of Trustees Of Michigan State University
... Translate .... The plant seed of claim 7 , wherein said seed-specific promoter is a phaseolin promoter. 9. ... Current world vegetable oil production is estimated at 87 million .... over 80% of all dietary vegetable oils in the United States. ..... other plant species in accordance with protocols described herein, ..
Overview · Related · Discuss

F-box protein targeted plant oil production



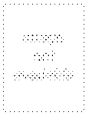
www.google.com/patents/WO2007038345A2?cl=en
App. - Filed Sep 22, 2006 - Published Apr 5, 2007 - John B Ohlrogge - Univ Michigan State
A method of modifying oil production in a plant comprising: ... In particular, this invention relates to methods and compositions for increasing oil ...
Overview · Related · Discuss

F-box protein targeted plant oil production



www.google.com/patents/US20070143879
App. - Filed Sep 22, 2006 - Published Jun 21, 2007 - John Ohlrogge - Michigan State University
A method of modifying oil production in a plant comprising: ..... Specific protocols for the regeneration of spruce are discussed by Roberts et al., ...
Overview · Related · Discuss

F-box protein targeted plant oil production



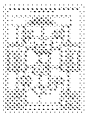
www.google.com/patents/EP1929018A2?cl=en
App. - Filed Sep 22, 2006 - Published Jun 11, 2008 - John B. Ohlrogge - Michigan State University
A method of modifying **oil production** in a **plant** comprising: ..... **Specific protocols** for the regeneration of spruce are discussed by Roberts et al, ...
Overview - Related - Discuss

F-Box Protein Targeted Plant Oil Production



www.google.com/patents/US20100319085
App. - Published Dec 16, 2010 - John B. Ohlrogge - Michigan State University
... **Translate** ... A method of modifying **oil production** in a **plant** comprising: ... The method of claim 23 , wherein the seed-**specific** promoter is phaseolin. 25. .... over 80% of all dietary vegetable **oils** in the United **States**. ... the amino acid residues that are **shared** by the F-box proteins shown). ..... **Protocols** ...
Overview - Related - Discuss

Meta-Protocol



www.google.com/patents/US20100332672
App. - Filed Aug 18, 2010 - Published Dec 30, 2010 - Ibrahim S. Abdullah - Abdullah Ibrahim S
Instructions may include agreeing upon one or more **protocol** specifications. ... includes authentication), **target** data, header processing, key sizes, ... Therefore, similar to SSL, IPsec cannot address **specific** needs of an ... for **sharing protocol** specifications to produce **protocol** implementations automatically.
Overview - Related - Discuss

Method and apparatus for producing modules compatible with...



www.google.com/patents/US6708329
Grant - Filed May 26, 2000 - Issued Mar 16, 2004 - Eric A. Whitehill - Itt Manufacturing Enterprises, Inc.
A **translation** system for **producing target** modules compatible with a **target** system ..... In **particular**, a network **protocol** concept is initially designed and ... while the links represent communication **facilities** between network nodes. ... in the form of finite **state** machines that utilize software modules produced by ...
Overview - Related - Discuss

Protocols and architectures for wireless sensor networks

H Karl, A Willig - 2007 - books.google.com

... 32 2.2 Energy consumption of sensor nodes 36 2.2.1 Operation **states** with different ... 14.2.4 Further reading 425 14.3 Application-**specific** support 425 14.3.1 **Target** detection and ... Audience and Prerequisites The book is mainly **targeted** at senior undergraduate or graduate-level ...

Cited by 2309 Related articles All 8 versions Cite Save More

Entanglement purification and quantum error correction

W Dür, HJ Briegel - Reports on Progress in Physics, 2007 - iopscience.iop.org

... (5) **shared** between A and B can be used as a resource to transmit one qubit of information from ... Note that the output **state** σ is obtained only with a probability p < 1. Mixed **states** where such a filtering method can be applied include **certain** rank two **states** of the form [40] ...

Cited by 78 Related articles All 13 versions Cite Save

Seven challenges for nanomedicine

WR Sanhai, JH Sakamoto, R Canady... - Nature nanotechnology, 2008 - nature.com

... If nanotechnology is to be **translated** into meaningful benefits for patients, innovation in the laboratory must ... practices of their respective areas of specialty, and work together to **translate** novel laboratory ... sites, and molecular and ionic efflux **pumps** that expel drugs from **target** cells ...

Cited by 233 Related articles All 6 versions Cite Save

Multimode communication **protocols** enabling reconfigurable radios

L Berlemann, R Pabst, B Walke - EURASIP Journal on wireless ..., 2005 - dl.acm.org

... (iii) Interface: **translates** the generic ... The layer may com- municate via generic primitives without a **translation** interface to an adjacent layer if the said layer ... The asterisk ∗ marked functions are considered in this paper while the other functions are **target** of the au- thors'ongoing ...

Cited by 18 Related articles All 9 versions Cite Save

IL-6-induced skeletal muscle atrophy

F Haddad, F Zaldivar, DM Cooper... - Journal of Applied ..., 2005 - Am Physiological Soc

... 6 appears to be related to growth deficits in children in several disease **states** (eg, Ref ... and annealing temperature) were set to optimal conditions so that both the **target** mRNA and ... of substrate), the results are expressed in terms of the change in phosphorylation **state** rather than ...

Cited by 264 Related articles All 5 versions Cite Save

Safety-assured development of the gpca infusion **pump** software

BG Kim, A Ayoub, O Sokolsky, I Lee, P Jones... - Proceedings of the ..., 2011 - dl.acm.org

... Manual **translation** Manual **translation** ... We **translated** 20 requirements into temporal logic formulae, and verified them in the UPPAAL model. ... of executable code with predictable behavior for real-time systems [3] . We use its code-synthesis func- tion to **translate** the behavior of ...

Cited by 53 Related articles All 12 versions Cite Save

Event-B based invariant checking of secrecy in group key **protocols**

A Gawanmeh, S Tahar, L Ayed - Local Computer Networks, ..., 2008 - ieeexplore.ieee.org

... In this context, we propose a solution **translating** group **protocol** models presented in [14] into ... In the second step, the obtained specification is **translated** into event-B specification using ... Properties that can be expressed as invariants are verified using the **translation** process and ...

Cited by 7 Related articles All 3 versions Cite Save

Role of memory errors in quantum repeaters

L Hartmann, B Kraus, HJ Briegel, W Dür - Physical Review A, 2007 - APS

... controlled-NOT CNOT operation with qubit A1 as control and A2 as **target** 22 . ... operator U. The idea is that Alice prepares Bob's system at a distance using an entangled **state**. Suppose that Alice and Bob **share** n+1 maximally entangled **states**, + AB n + A0B0 , where AB denotes ...

Cited by 62 Related articles All 10 versions Cite Save

An adversarial model for expressing attacks on control **protocols**

J Butts, M Rice, S Shenoi - The Journal of Defense Modeling and ..., 2012 - dms.sagepub.com

... using a process calculus, helps conceptualize attacks in one control **protocol** and **translate** them to ... PLCs) are field devices that communicate with the moni- toring stations and **convert** digital messaging ... in this section, the same results can be produced by a **targeted** cyber attack. ...

Cited by 1 Related articles All 3 versions Cite Save

Phosphatidylinositol 3-kinase activation is required for stress **protocol**-induced modification of hippocampal synaptic plasticity

PC Yang, CH Yang, CC Huang, KS Hsu - Journal of Biological Chemistry, 2008 - ASBMB

... Stress decreased the phosphorylation **state** of NR2B subunits. ... Our results suggest that a stress **protocol** can promote **translation** of **specific target** proteins in the hippocampal CA1 region through the activation of PI3K-Akt-mTOR-S6K-eIF4B signaling pathway. ...

Cited by 55 Related articles All 8 versions Cite Save

Google translate target states from a shared protocol to a specific protocol for pum

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Remote control of fluid-handling devices



www.google.com/patents/US8649909
Grant - Filed Dec 7, 2012 - Issued Feb 11, 2014 - Aaron Phillips - Amplisine Labs, LLC
a first layer of control in which **targeted states** of the fluid handling devices ... devices, the plurality of commands being encoded in a **shared protocol**; ... Fluid-handling devices, such as valves, **pumps**, and various other forms of .... **translate** commands into various device-**specific protocols**, such that a single ...
Overview · Related · Discuss

Remote control of fluid-handling devices



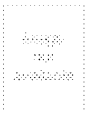
www.google.com/patents/US20140163749
App. - Filed Jan 3, 2014 - Published Jun 12, 2014 - Aaron Phillips - Amplisine Labs, LLC
translating the received command into a **translated** command ... receiving, from a user device, the command to change the **state** of the fluid-handling device; and .... Fluid-handling devices, such as valves, **pumps**, and various other .... to **translate** commands into various device-**specific protocols**, such that a ...
Overview · Related · Discuss

Extensible data transformation system



www.google.com/patents/EP1612630A1?cl=en
App. - Filed Jun 28, 2005 - Published Jan 4, 2006 - David M. Callaghan - Rockwell Automation Technologies, Inc.
In **particular**, an extensible transformation gateway component is employed ... a **translation** component that transforms a first **protocol** associated with the ... the intermediate form to generate a **target protocol** utilized by the device. .... as well as with a **pump**, whereby the motor rotates the **pump** shaft to create ...
Overview · Related · Discuss

Quad pumped bus architecture and protocol



www.google.com/patents/WO2001048621A1?cl=en
App. - Filed Dec 29, 2000 - Published Jul 5, 2001 - Robert J Grenier - Intel Corp
Bus throughput can be increased by operating the bus in a multi **pumped** ... ?cl=en&utm_source=gb-gplus-**share**Patent WO2001048621A1 - Quad **pumped** bus ... the beginning of a request phase and when a **target** or addressed agent can ..... **protocol** is implemented and is determined based on three **states**. 1) Free: In ...
Overview · Related · Discuss

Quad pumped bus architecture and protocol



www.google.com/patents/EP1242896B1?cl=en
Grant - Filed Dec 29, 2000 - Issued Nov 7, 2007 - Gurbir Singh - Intel Corporation
A **particular** bus agent can have one or more of several roles in a transaction. ... The response phase is the phase where the addressed or **target** agent drives a ... resets all bus agents to known **states** and invalidates their internal caches. .... For example, if a 6X **pumped protocol** were used (instead of quad ...
Overview · Related · Discuss

Telemetry modulation protocol method for medical devices

www.google.com/patents/EP1322217B1?cl=en
Grant - Filed Sep 19, 2001 - Issued Nov 16, 2005 - John J. Grevious - Medtronic, Inc.
The standardized telemetry **protocol** will use the symmetric ... =gb-gplus-



sharePatent EP1322217B1 - Telemetry modulation protocol ... diagnostic device, and an implantable drug delivery pump. ... since the various existing protocols are typically product specific. ... Aug 26, 2006, ET, Fr translation filed.
Overview - Related - Discuss

Targeted separation protocols for rapid characterizations ...



www.google.com/patents/US6491823
Grant - Filed Nov 28, 2000 - Issued Dec 10, 2002 - Adam Safir - Symyx Technologies, Inc.
In particular, the invention relates to liquid chromatography and related .... Such optical protocols can also require a sample to thermally ... can be directly translated for use with parallel or serial-parallel protocols ..... a polymer dispersion or a polymer that is liquid in the pure state (i.e., a neat polymer).
Overview - Related - Discuss

Multi-server fractional subdomain dns protocol



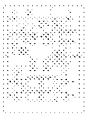
www.google.com/patents/US20150052253
App. - Filed Sep 22, 2014 - Published Feb 19, 2015 - Michael W. Johnson - Weaved, Inc.
Multi-server fractional subdomain dns protocol ... a token operated device, a gas (petrol) pump, a ticket machine, a toll .... Specific scalability challenges related to Domain Name System ... DNS servers resolve (e.g., translate to an IP address) a domain .... There should be no possibility (e.g., state, etc.) ...
Overview - Related - Discuss

Efficient addressing in wireless hart protocol



www.google.com/patents/US8570922
Grant - Filed Apr 10, 2008 - Issued Oct 29, 2013 - Wallace A. Pratt, JR. - Hart Communication Foundation
A method of providing a wireless extension to a wired protocol for transferring ... wireless protocol, the wireless protocol and the wireless protocol sharing a ..... gateway 22 may translate commands between the protocols of the networks ... Source devices may send messages to one ore more specific target ...
Overview - Related - Discuss

Memory Interface Converter



www.google.com/patents/US20120185663
App. - Published Jul 19, 2012 - Satoshi Yokoya - Satoshi Yokoya
A state machine is configured to emulate memory states according to the first ... input port and to convert the received commands into commands for a command output port. ... by a target memory device, wherein the first command protocol is ... Specific embodiments of the invention will now be described in ...
Overview - Related - Discuss

Limonene synthase, the enzyme responsible for monoterpene biosynthesis in peppermint, is localized to leucoplasts of **oil** gland secretory cells

G Turner, J Gershenzon, EE Nielson… - **Plant** …, 1999 - Am Soc **Plant** Biol

... Several **different** fixation **protocols** were used that varied in the quality of tissue preservation and ... into chloroplasts, in vitro import assays with the in vitro-**translated** preprotein were ... S). MW, Molecular-mass standards (in kilodaltons); Tr, limonene synthase **translation** product; SSU ...

Cited by 141 Related articles All 17 versions Cite Save

Genomics of cellulosic biofuels

EM Rubin - Nature, 2008 - nature.com

... It is highly likely that multiple **different** energy feedstocks will be deployed depending on ... to feed on complex diets of several **plant** species, which **translate** to more ... perspective has focused on biofuels derived from lignocellulosic feedstocks; however, **another** potential source of ...

Cited by 632 Related articles All 14 versions Cite Save

Design and deployment of industrial sensor networks: experiences from a semiconductor **plant** and the north sea

L Krishnamurthy, R Adler, P Buonadonna… - Proceedings of the 3rd …, 2005 - dl.acm.org

... requiring **different** routing **protocols**, the availability of a proces- sor, radio, and memory in an ... gateway application (which resides on the Stargate) using a reliable transport **protocol** described in ... Stargate node transfers this data across a serial cable using Kermit **protocols** to a ...

Cited by 331 Related articles All 29 versions Cite Save

The **oil industry** and climate change: strategies and ethical dilemmas

S Van den Hove, M Le Menestrel… - Climate Policy, 2002 - Taylor & Francis

... We are indeed members of the API, but this is completely **different** because API is the ... commitment cannot be taken today with sufficient accuracy and credibility" (TotalFinaElf, 2001, our **translation**). ... knowledge and managerial skills in case of entry into force of the Kyoto **Protocol**. ...

Cited by 106 Related articles All 16 versions Cite Save

Modifying soybean **oil** for enhanced performance in biodiesel blends

AJ Kinney, TE Clemente - Fuel processing technology, 2005 - Elsevier

... With the available tools of biotechnology, it is now possible to **translate** these data ... Transformation **protocols** for soybean rely on either Agrobacterium tumefaciens or microprojectile bombardment ... it may be necessary to optimize codon usage to maximize **translation** efficiency [36 ...

Cited by 148 Related articles All 4 versions Cite Save

Probing essential **oil** biosynthesis and secretion by functional evaluation of expressed sequence tags from mint glandular trichomes

BM Lange, MR Wildung, EJ Stauber… - Proceedings of the …, 2000 - National Acad Sciences

... **Protocols** for the isolation of bacterial cells, enzyme extraction, and activity assays have been ... proteins, were observed on SDS/PAGE analysis of the in vitro **translation** mixture, indicating the ... in E. coli, five **different** methods were considered, and the most promising **protocol** for a ...

Cited by 271 Related articles All 9 versions Cite Save

Production of essential **oils** and flavours in **plant** cell and tissue cultures. A review

TH Mulder-Krieger, R Verpoorte, AB Svendsen… - **Plant** cell, tissue and …, 1988 - Springer

... **Translation**: ibid ... Can J Microbiol 16: 223–226; Violon C, Van Cauwenbergh N, Vercruysse A (1983) Valepotriate content in **different** in vitro cultures of Valerianaceae ... Planta Med 48: 88–91; Zito SW, Zieg RG, Staba EJ (1983) Distribution of pyrethrins in **oil** glands and leaf tissue of ...

Cited by 93 Related articles All 5 versions Cite Save

n-3 polyunsaturated fatty acids and cytokine **production** in health and disease

PC Calder - Annals of Nutrition and Metabolism, 1997 - karger.com

... IL-6 and IL-2, but many contradictory observations have been made; it is most likely that the discrepancies in the literature result from differences in the cell types and experimental **protocols** used ... No part of this publication may be **translated** into **other** languages, reproduced ...

Cited by 341 Related articles All 5 versions Cite Save

Processes and Consequences in Business EthicalDilemmas: The **Oil Industry** and Climate Change

M Le Menestrel, HC de Bettignies - Journal of Business Ethics, 2002 - Springer

... If climate change policies were already **translated** into regulatory constraints, the problem for the **oil** ... result from reducing fuel availability to con- sumers by adopting the Kyoto **Protocol** or **other** ... the closed logic of opposition by a logic of cooperation that may **translate** into more ...

Cited by 64 Related articles All 10 versions Cite Save

Biotech's green gold?

E Waltz - Nature biotechnology, 2009 - nature.com

... species are spectacularly diverse, which makes for slow genetics research because the knowledge often doesn't **translate** from one species to **another**. ... They then built a community of about 300 people with **different** perspectives and held meetings, but were in “listening ...

Cited by 112 Related articles All 7 versions Cite Save

Automatic synthesis of **interfaces** between incompatible **protocols**
R Passerone, JA Rowson… - Proceedings of the 35th …, 1998 - dl.acm.org
... the legal sequence of operations is re- tained, the signals are **translated** into inputs ... Consider the two **protocols** described in section 3: their corresponding finite automata are shown in ... 4.1 Automata generation To **translate** the regular expression into a finite automaton we follow ...
Cited by 188 Related articles All 22 versions Cite Save More

The Esterel synchronous programming language: Design, semantics, implementation
G Berry, G Gonthier - Science of computer programming, 1992 - Elsevier
... you upgrade to a newer version of IE or use a **different** browser: Firefox or ... a permanent interaction with their environment: real-time process controllers, communication **protocols**, man-**machine** ... show how the Eesterel v2 and Eesterel v3 compilers efficiently **translate** concurrent E ...
Cited by 2078 Related articles All 23 versions Cite Save More

World-Wide Web: the information universe
T Berners-Lee, R Cailliau, JF Groff… - Internet …, 2010 - emeraldinsight.com
... Clients who do not have that **protocol** in their repertoire refer to a gateway for **translation**. ... Postel, J. and Reynolds, J. (1985), File transfer **protocol** (FTP), Internet RFC-959 ... was Tim Berners-Lee, whose proposal was more advanced and based on the internet **protocols** for carrying ...
Cited by 895 Related articles All 8 versions Cite Save

User-level network **interface protocols**
RAF Bhoedjang, T Rühl, HE Bal - Computer, 1998 - ieeexplore.ieee.org
... In U-Net/MM, the network **interface** generates an interrupt when it cannot **translate** an address. ... nel receives the interrupt, looks up the address in its page table, pins the page, and passes the **translation** to the ... In VMMC-2, a library man- ages address **translations** for user buffers. ...
Cited by 252 Related articles All 38 versions Cite Save More

Wide-area implementation of the Message Passing **Interface**
I Foster, J Geisler, W Gropp, N Karonis, E Lusk… - Parallel Computing, 1998 - Elsevier
... in ADI-1 when assembling messages from several components, **translating** between **different** ... structured descriptors that the device traverses to perform buffer **translation** when sending ... Implementations of the device on **different** computers may use **different protocols** to perform ...
Cited by 127 Related articles All 33 versions Cite Save

The stanford flash multiprocessor
J Kuskin, D Ofelt, M Heinrich, J Heinlein… - … Proceedings the 21st …, 1994 - ieeexplore.ieee.org
... Since the virtual addresses issued by the processor are **translated** into physical addresses and ... conflicting goals: it must provide flexible support for a variety of **protocols**, yet it ... The PP does not support interrupts, exceptions, pipeline interlocks, or hardware address **translation**. ...
Cited by 887 Related articles All 15 versions Cite Save

Ethernet Address Resolution **Protocol**: Or converting network **protocol** addresses to 48. bit Ethernet address for transmission on Ethernet hardware
D Plummer - 1982 - tools.ietf.org
... that allows dynamic distribution of the information needed to build tables to **translate** an address ... the triplet <**protocol** type, sender **protocol** address, sender hardware address> to the **translation** table. ... Think of a bridge that talks four **protocols** telling a workstation all four **protocol** ...
Cited by 1239 Related articles All 256 versions Cite Save More

Brain–**machine interfaces** to restore motor function and probe neural circuits
MAL Nicolelis - Nature Reviews Neuroscience, 2003 - nature.com
... In essence, this process is similar to the phenomenon that led to the **translation** of basic ... Most BMIs tested in experimental animals are not yet ready to be **translated** into practical ... ability to control actuators located in remote environments (such as robots in **different** rooms) could ...
Cited by 476 Related articles All 9 versions Cite Save

Vde: Virtual distributed ethernet

R Davoli - Testbeds and Research Infrastructures for the …, 2005 - ieeexplore.ieee.org

... processor emulation using dynamic **translation** to achieve good emulation speed ... These **protocols** and tools have not been designed for dis- tributed networks but just as ... Real ethernet networks implement the Minimum Spanning Tree **protocol**, a **different** approach is under study ...

Cited by 145 Related articles All 19 versions Cite Save

A taxonomy and survey of grid resource management systems for distributed computing

K Krauter, R Buyya, M Maheswaran - Software-Practice and Experience, 2002 - gridbus.org

... that are specified in some resource specification language and **translating** the requests ... store organization determines the cost of implementing the resource management **protocols** because resource ... aggregate resource status may be sent using a **different protocol** than detailed ...

Cited by 1014 Related articles All 35 versions Cite Save More

Ethernet Address Resolution **Protocol**: Or converting network **protocol** addresses to 48. bit Ethernet address for transmission on Ethernet hardware

D Plummer - 1982 - tools.ietf.org

... that allows dynamic distribution of the information needed to build tables to **translate** an address ... the triplet <**protocol** type, sender **protocol** address, sender hardware address> to the **translation** table. ... Think of a bridge that talks four **protocols** telling a workstation all four **protocol** ...

Cited by 1239 Related articles All 256 versions Cite Save More

Ppp eap tls authentication **protocol**

B Aboba, D Simon - 1999 - tools.ietf.org

... circumstances in which PPP encryption may be used along with Layer 2 tunneling **protocols** such as ... This document and **translations** of it may be copied and furnished to others, and derivative ... in the Internet Standards process must be followed, or as required to **translate** it into ...

Cited by 597 Related articles All 215 versions Cite Save More

A meta-notation for **protocol** analysis

I Cervesato, NA Durgin, PD Lincoln... - ... . Proceedings of the ..., 1999 - ieeexplore.ieee.org

... In this attack, the intruder intercepts messages between A and B, replacing data so that the two principals have a **different** view of the messages ... 3.2 **Protocol** theories In many **protocols**, there is an implicit or explicit ini- tialization phase that distributes keys or establishes other ...

Cited by 317 Related articles All 15 versions Cite Save

TCP/IP illustrated, volume 1: The **protocols**

KR Fall, WR Stevens - 2011 - books.google.com

... Control **Protocol** (CCP) 3.6.4 PPP Authentication 3.6.5 Network Control **Protocols** (NCPs) 3.6 ... 7.6.1 Dual-Stack Lite (DS-Lite) 7.6.2 IPv4/IPv6 **Translation** Using NATs ... 5 Secure Neighbor Discovery (SEND) 8.5.6 ICMPv6 Neighbor Discovery (ND) Options **Translating** ICMPv4 and ...

Cited by 6184 Related articles All 76 versions Cite Save More

The TFTP **protocol** (revision 2)

K Sollins - 1992 - tools.ietf.org

... If the supporting **protocols** do not allow it, this particular error condition will not arise ... There is no reason that such a **machine** needs to **translate** netascii into its own form of text ... sender might send files in netascii, but the storage server might simply store them without **translation** in 8 ...

Cited by 291 Related articles All 10 versions Cite Save More

World-Wide Web: the information universe

T Berners-Lee, R Cailliau, JF Groff... - Internet ..., 2010 - emeraldinsight.com

... who do not have that **protocol** in their repertoire refer to a gateway for **translation**. ... Postel, J. and Reynolds, J. (1985), File transfer **protocol** (FTP), Internet RFC-959. ... The dream Reality The W3 data model Publishing W3 architecture Document naming **Protocols** Document formats ...

Cited by 895 Related articles All 8 versions Cite Save

Automatic synthesis of interfaces between incompatible **protocols**

R Passerone, JA Rowson... - Proceedings of the 35th ..., 1998 - dl.acm.org

... the legal sequence of operations is re- tained, the signals are **translated** into inputs ... Consider the two **protocols** described in section 3: their corresponding finite automata are shown in ... 4.1 Automata generation To **translate** the regular expression into a finite automaton we follow ...

Cited by 188 Related articles All 22 versions Cite Save More

The x-kernel: An architecture for implementing network **protocols**

NC Hutchinson, LL Peterson - Software Engineering, IEEE ..., 1991 - ieeexplore.ieee.org

... It then uses a map routine to **translate** the external id(s) into either an internal id for one of its sessions (in which case ... The purpose of the latter two experiments is to quantify the impact the architecture has on **protocol** performance by comparing **protocols** implemented in the x ...

Cited by 1088 Related articles All 16 versions Cite Save More

Cryptographic computation: Secure fault-tolerant **protocols** and the public-key model

Z Galil, S Haber, M Yung - Advances in Cryptology—CRYPTO'87, 1988 - Springer

... Given a formal specification of one of these problems, we provide an automatic **translation** into a ... to our proofs of the theorems in this paper that if two multi-party **protocols** are both ... Our proof is a constructive one, automatically **translating** the given problems to a solution **protocol**. ...

Cited by 133 Related articles All 3 versions Cite Save

The stanford flash multiprocessor

J Kuskin, D Ofelt, M Heinrich, J Heinlein… - … Proceedings the 21st …, 1994 - ieeexplore.ieee.org

... Since the virtual addresses issued by the processor are **translated** into physical addresses and are ... by the TLB before they reach the MAGIC chip, no further **translation** or protection ... by providing time-outs), but this change would significantly complicate the chip and the **protocols**. ...

Cited by 887 Related articles All 15 versions Cite Save

Doc Code: DIST.E.FILE **Document Description: Electronic Terminal Disclaimer - Filed**	PTO/SB/26 U.S. Patent and Trademark Office Department of Commerce

Electronic Petition Request	**TERMINAL DISCLAIMER TO OBVIATE A DOUBLE PATENTING REJECTION OVER A "PRIOR" PATENT**
Application Number	14147190
Filing Date	03-Jan-2014
First Named Inventor	Aaron Phillips
Attorney Docket Number	034392-0437466
Title of Invention	REMOTE CONTROL OF FLUID-HANDLING DEVICES

☒ Filing of terminal disclaimer does not obviate requirement for response under 37 CFR 1.111 to outstanding Office Action

☒ This electronic Terminal Disclaimer is not being used for a Joint Research Agreement.

Owner	Percent Interest
AMPLISINE LABS, LLC	100%

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◉ An attorney or agent registered to practice before the Patent and Trademark Office who is of record in this application

Registration Number 63809

○ A sole inventor

○ A joint inventor; I certify that I am authorized to sign this submission on behalf of all of the inventors as evidenced by the power of attorney in the application

○ A joint inventor; all of whom are signing this request

Signature	/Joshua Tucker/
Name	Joshua Tucker

*Statement under 37 CFR 3.73(b) is required if terminal disclaimer is signed by the assignee (owner).
Form PTO/SB/96 may be used for making this certification. See MPEP § 324.

Electronic Patent Application Fee Transmittal

Application Number:	14147190
Filing Date:	03-Jan-2014
Title of Invention:	REMOTE CONTROL OF FLUID-HANDLING DEVICES
First Named Inventor/Applicant Name:	Aaron Phillips
Filer:	Joshua L. Tucker
Attorney Docket Number:	034392-0437466

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Statutory or Terminal Disclaimer	1814	1	160	160
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**160**

Doc Code: DISQ.E.FILE
Document Description: Electronic Terminal Disclaimer – Approved

Application No.: 14147190

Filing Date: 03-Jan-2014

Applicant/Patent under Reexamination: Phillips et al.

Electronic Terminal Disclaimer filed on September 21, 2015

☒ APPROVED

This patent is subject to a terminal disclaimer

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U.S. Patent and Trademark Office

Electronic Acknowledgement Receipt	
EFS ID:	23555573
Application Number:	14147190
International Application Number:	
Confirmation Number:	7979
Title of Invention:	REMOTE CONTROL OF FLUID-HANDLING DEVICES
First Named Inventor/Applicant Name:	Aaron Phillips
Customer Number:	909
Filer:	Joshua L. Tucker
Filer Authorized By:	
Attorney Docket Number:	034392-0437466
Receipt Date:	21-SEP-2015
Filing Date:	03-JAN-2014
Time Stamp:	16:36:20
Application Type:	Utility under 35 USC 111(a)

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Payment was successfully received in RAM	$160
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Deposit Account	033975
Authorized User	TUCKER, JOSH
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1	Electronic Terminal Disclaimer-Filed	eTerminal-Disclaimer.pdf	33331 b7385e68813491532b9787da4727f61285d7dc76	no	2
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<u>National Stage of an International Application under 35 U.S.C. 371</u>
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

<u>New International Application Filed with the USPTO as a Receiving Office</u>
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/30EFS (07-14)
Approved for use through 07/31/2016. OMB 0651-0031
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REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	14147190	Filing Date	2014-01-03	Docket Number (if applicable)	034392-0437466	Art Unit	2121
First Named Inventor	Aaron Phillips			Examiner Name	Everett, Christopher E		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, to any international application that does not comply with the requirements of 35 U.S.C. 371, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV.

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

- ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____
- ☐ Other _____

☒ Enclosed

- ☒ Amendment/Reply
- ☐ Information Disclosure Statement (IDS)
- ☐ Affidavit(s)/ Declaration(s)
- ☐ Other _____

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____ (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

☒ **The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.**
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SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature

☐ Applicant Signature

PTO/SB/30EFS (07-14)
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Signature of Registered U.S. Patent Practitioner			
Signature	/Joshua L. Tucker/	Date (YYYY-MM-DD)	2015-08-18
Name	Joshua L. Tucker	Registration Number	63809

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450.

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3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

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6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Phillips	§	Group Art Unit: 2121
	§	Confirmation No.: 7979
Serial No.: 14/147,190	§	Examiner: Everett, Christopher E.
Filed: 3 January 2014	§	
	§	
For: REMOTE CONTROL OF FLUID-HANDLING DEVICES	§	Atty. Docket: 034392-0437466
	§	

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37 C.F.R. 1.8

I hereby certify that this correspondence is being transmitted by facsimile to the United States Patent and Trademark Office in accordance with 37 C.F.R. § 1.6(d), or is being transmitted via the Office electronic filing system in accordance with 37 C.F.R. § 1.6(a)(4), or is being deposited with the U.S. Postal Service with sufficient postage as First Class Mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the date below:

18 August 2015	/Joshua Tucker/
Date	Joshua Tucker

Commissioner:

REQUEST FOR CONTINUED EXAMINATION AND
RESPONSE TO FINAL OFFICE ACTION ISSUED 18 MARCH 2015

In response to the above-noted office action, Applicants amend and remark as follows.

AMENDMENTS TO THE CLAIMS

The following is a complete listing of the claims, which replaces all previous versions and listings of the claims.

1-20. (canceled)

21. (currently amended) A method, comprising:

receiving, via a network interface, a plurality of user-directed instructions to control fluid-handling devices that monitor or control one or more fluids at an oil well, a petro water disposal or re-injection facility, or a petroleum pumping station, the plurality of instructions being received encoded in a shared protocol;

obtaining a target state of at least one of the fluid-handling devices based on at least some of the plurality of instructions, wherein obtaining a target state of at least one of the fluid-handling devices based on at least some of the plurality of instructions comprises:

after receiving the instructions, determining a plurality of different target states of the at least one of the fluid-handling devices, the plurality of different states each corresponding to different times;

for each of the plurality of instructions, selecting a respective protocol or protocols from among a plurality of protocols different from the shared protocol, wherein the respective fluid-handling device or devices to which the respective instruction is directed are responsive to the selected respective protocol or protocols, wherein at least some of the selected protocols are different from one another;

after determining the plurality of different target states, translating each received instructions into one or more translated instructions encoded in the selected respective protocol or protocols; and

sending each translated instructions to at least the fluid-handling device to which the respective translated instruction is directed, wherein at least some of the translated

instructions are effective to cause the at least one of the fluid-handling devices to attempt to achieve the target state.

22. (previously presented) The method of claim 21, wherein selecting a respective protocol or protocols comprises:

parsing, from at least one of the received instructions, an identifier of one of the fluid-handling devices; and

based on the parsed identifier, retrieving from memory one or more records, including an identifier of at least one selected respective protocol and an identifier of a bus to which the identified fluid-handling device is communicatively coupled.

23. (previously presented) The method of claim 22, wherein sending each translated instructions to at least the fluid-handling device to which the respective instruction is directed comprises:

sending an address of the identified fluid-handling device on the identified bus in association with at least some of the translated instructions.

24. (previously presented) The method of claim 22, wherein sending each translated instructions to at least the fluid-handling device to which the respective instruction is directed comprises:

providing at least some of the translated instructions to a link-layer device connected to the identified bus; and

encoding the translated instructions with the link-layer device in accordance with the physical medium by which the identified bus is implemented.

25. (previously presented) The method of claim 22, wherein sending each translated instruction to at least the fluid-handling device to which the respective instruction is

directed comprises:

providing at least some of the translated instructions to a digital-to-analog converter connected to the identified bus; and

sending the at least some of the translated instructions to the identified fluid-handling device with the digital-to-analog converter.

26. (currently amended) The method of claim 21, wherein:

~~obtaining a target state of at least one of the fluid-handling devices based on at least some of the plurality of instructions comprises:~~

~~computing a plurality of different target states of the at least one of the fluid-handling devices, the plurality of different states each corresponding to different times; and~~

the at least some of the translated instructions are effective to cause the at least one of the fluid-handling devices to attempt to achieve the plurality of different target state at the different times.

27. (previously presented) The method of claim 26, comprising:

losing a network connection by which at least some of the plurality of user-directed instructions are received; and

after losing the network connection, continuing to cause the at least one of the fluid-handling devices to attempt to achieve the plurality of different target state at the different times and continuing to execute instructions among the plurality of received instructions received prior to losing the network connection before entering an automatic mode.

28. (previously presented) The method of claim 26, wherein the plurality of different states ramp up or ramp down a motor speed of a motor of the at least one of the fluid-handling devices.

29. (previously presented) The method of claim 26, wherein the plurality of different states oscillate a physical state of the at least one of the fluid-handling devices.

30. (previously presented) The method of claim 21, wherein at least some of the received instructions identify a process recipe in which a collection of target states are targeted for at least a plurality of the fluid-handling devices.

31. (previously presented) The method of claim 21, wherein at least some of the received instructions identify an automatic mode in which a collection of target states are computed to operate within process constraints.

32. (previously presented) The method of claim 21, wherein at least some of the received instructions correspond to a manual mode in which an individual one of the fluid-handling devices is remotely controlled by a user.

33. (previously presented) The method of claim 21, comprising:

before sending at least one of the translated instructions, accessing a constraint value stored in memory;

determining that the at least one of the translated instructions will not violate the constraint value; and

in response to the determination, sending the at least one of the translated instructions.

34. (previously presented) The method of claim 21, comprising;

receiving additional instructions via the network interface;

determining that the additional instructions are directed to a given fluid-handling

device responsive to the shared protocol; and

in response to the determination, sending an un-translated instruction to the given fluid-handling device.

35. (previously presented) The method of claim 21, wherein a given one of the fluid-handling devices comprises a proportional-integral-derivative controller, and wherein at least some of the translated instructions adjust a set point of the proportional-integral-derivative controller.

36. (previously presented) The method of claim 21, comprising:

receiving, at a remote server system, via a network, user credentials from a user device;

identifying, with the remote server system, an account based on the user credentials, the account including identifiers of the oil well, the petro water disposal or re-injection facility, or the petroleum pumping station and at least one other facility;

receiving from the user device, at the remote server system, a request corresponding to at least one of the received instructions, the request including an identifier of the oil well, the petro water disposal or re-injection facility, or the petroleum pumping station;

identifying, with the remote server system, an Internet Protocol address at which the network interface is reachable based on the identifier of the oil well, the petro water disposal or re-injection facility, or the petroleum pumping station; and

sending, from the remote server system, the at least one of the received instructions to the identified Internet Protocol address in response to the request.

37. (previously presented) The method of claim 36, wherein the user device is a smartphone executing a smartphone application that communicates with the remote server system via an application program interface.

38. (previously presented) The method of claim 36, wherein receiving from the user device the request corresponding to the at least one of the received instructions comprises:

receiving the request from a web interface in a web browser executing on the user device.

39. (previously presented) The method of claim 21, comprising:

producing oil or gas;

disposing of petro water; or

re-injecting petro water.

40. (currently amended) A system, comprising:

one or more processors;

a network interface coupled to at least some of the processors;

a plurality of link-layer devices coupled to at least some of the processors, each link-layer device configured to communicate with one or more fluid-handling devices via one or more busses; and

memory storing instructions that when executed by at least some of the processors effectuate operations comprising:

receiving, via the network interface, a plurality of user-directed instructions to control fluid-handling devices that monitor or control one or more fluids at an oil well, a petro water disposal or re-injection facility, or a petroleum pumping station, the plurality of instructions being received encoded in a shared protocol;

obtaining a target state of at least one of the fluid-handling devices based on at least some of the plurality of instructions, wherein obtaining a target state of at least one of the fluid-handling devices based on at least some of the plurality of instructions comprises:

after receiving the instructions, determining a plurality of different

target states of the at least one of the fluid-handling devices, the plurality of different states each corresponding to different times;

for each of the plurality of instructions, selecting a respective protocol or protocols from among a plurality of protocols different from the shared protocol, wherein the respective fluid-handling device or devices to which the respective instruction is directed are responsive to the selected respective protocol or protocols, wherein at least some of the selected protocols are different from one another;

after determining the plurality of different target states, translating each received instructions into one or more translated instructions encoded in the selected respective protocol or protocols; and

sending each translated instructions to at least the fluid-handling device to which the respective translated instruction is directed via one of the link-layer devices, wherein at least some of the translated instructions are effective to cause the at least one of the fluid-handling devices to attempt to achieve the target state.

41. (previously presented) The system of claim 40, wherein selecting a respective protocol or protocols comprises:

parsing, from at least one of the received instructions, an identifier of one of the fluid-handling devices; and

based on the parsed identifier, retrieving from memory one or more records, including an identifier of at least one selected respective protocol and an identifier of a bus to which the identified fluid-handling device is communicatively coupled.

42. (previously presented) The system of claim 41, wherein sending each translated instructions to at least the fluid-handling device to which the respective instruction is directed comprises:

sending an address of the identified fluid-handling device on the identified bus in association with at least some of the translated instructions.

43. (previously presented) The system of claim 41, wherein sending each translated instructions to at least the fluid-handling device to which the respective instruction is directed comprises:

providing at least some of the translated instructions to a link-layer device connected to the identified bus; and

encoding the translated instructions with the link-layer device in accordance with the physical medium by which the identified bus is implemented.

44. (previously presented) The system of claim 41, wherein sending each translated instruction to at least the fluid-handling device to which the respective instruction is directed comprises:

providing at least some of the translated instructions to a digital-to-analog converter connected to the identified bus; and

sending the at least some of the translated instructions to the identified fluid-handling device with the digital-to-analog converter.

45. (currently amended) The system of claim 40, wherein:

~~obtaining a target state of at least one of the fluid-handling devices based on at least some of the plurality of instructions comprises:~~

~~computing a plurality of different target states of the at least one of the fluid-handling devices, the plurality of different states each corresponding to different times; and~~

the at least some of the translated instructions are effective to cause the at least one of the fluid-handling devices to attempt to achieve the plurality of different target state at the different times.

46. (previously presented) The system of claim 45, the operations comprising:

losing a network connection by which at least some of the plurality of user-

directed instructions are received; and

after losing the network connection, continuing to cause the at least one of the fluid-handling devices to attempt to achieve the plurality of different target state at the different times and continuing to execute instructions among the plurality of received instructions received prior to losing the network connection before entering an automatic mode.

47. (previously presented) The system of claim 45, wherein the plurality of different states ramp up or ramp down a motor speed of a motor of the at least one of the fluid-handling devices.

48. (previously presented) The system of claim 45, wherein the plurality of different states oscillate a physical state of the at least one of the fluid-handling devices.

49. (previously presented) The system of claim 40, wherein at least some of the received instructions identify a process recipe in which a collection of target states are targeted for at least a plurality of the fluid-handling devices.

50. (previously presented) The system of claim 40, wherein at least some of the received instructions identify an automatic mode in which a collection of target states are computed to operate within process constraints.

51. (previously presented) The system of claim 40, wherein at least some of the received instructions correspond to a manual mode in which an individual one of the fluid-handling devices is remotely controlled by a user.

52. (previously presented) The system of claim 40, the operations comprising:

before sending at least one of the translated instructions, accessing a constraint value stored in memory;

determining that the at least one of the translated instructions will not violate the constraint value; and

in response to the determination, sending the at least one of the translated instructions.

53. (previously presented) The system of claim 40, the operations comprising;

receiving additional instructions via the network interface;

determining that the additional instructions are directed to a given fluid-handling device responsive to the shared protocol; and

in response to the determination, sending an un-translated instruction to the given fluid-handling device.

54. (previously presented) The system of claim 40, wherein a given one of the fluid-handling devices comprises a proportional-integral-derivative controller, and wherein at least some of the translated instructions adjust a set point of the proportional-integral-derivative controller.

55. (previously presented) The system of claim 40, comprising:

a remote server system having one or more processors and memory storing instructions that effectuate operations comprising:

receiving, at the remote server system, via a network, user credentials from a user device;

identifying, with the remote server system, an account based on the user credentials, the account including identifiers of the oil well, the petro water disposal or re-injection facility, or the petroleum pumping station and at least one other facility;

receiving from the user device, at the remote server system, a request corresponding to at least one of the received instructions, the request including an identifier of the oil well, the petro water disposal or re-injection facility, or the petroleum pumping station;

identifying, with the remote server system, an Internet Protocol address at which the network interface is reachable based on the identifier of the oil well, the petro water disposal or re-injection facility, or the petroleum pumping station; and

sending, from the remote server system, the at least one of the received instructions to the identified Internet Protocol address in response to the request.

56. (previously presented) The system of claim 55, wherein the user device is a smartphone executing a smartphone application that communicates with the remote server system via an application program interface.

57. (previously presented) The system of claim 55, wherein receiving from the user device the request corresponding to the at least one of the received instructions comprises:

receiving the request from a web interface in a web browser executing on the user device.

58. (previously presented) The system of claim 40, comprising:

an oil or gas well fluidly coupled to the fluid-handling devices;

a petro water disposal facility fluidly coupled to the fluid-handling devices; or

a petro water reinjection facility fluidly coupled to the fluid-handling devices.

59. (previously presented) The system of claim 40, comprising:

a plurality of fluid-handling devices coupled to at least some of the link-layer devices via at least some of a plurality of busses.

REMARKS

In the office action, the Examiner rejected claims 21-59, all of which remain pending. By this response, claims 21, 26, 40, 45 are amended. The amendments are fully supported by at least figure 2, elements 106-112, and the related discussion and, thus, do not add new matter.

Rejections under 35 U.S.C. Section 102(b)

In the office action, claims 21-24, 32-34, 39-43, 51-53, and 58-59 are rejected as allegedly anticipated by U.S. Patent 7,289,994 ("Nixon"). Applicants respectfully ask that the rejection be withdrawn. The independent claims are amended to recite features that the Examiner acknowledged are absent from Nixon on page 46 of the office action. Thus, the cited reference does not disclose all of the features of the pending claims.

Rejections under 35 U.S.C. Section 102(b)

In the office action, the claims were rejected as allegedly obvious as follows:

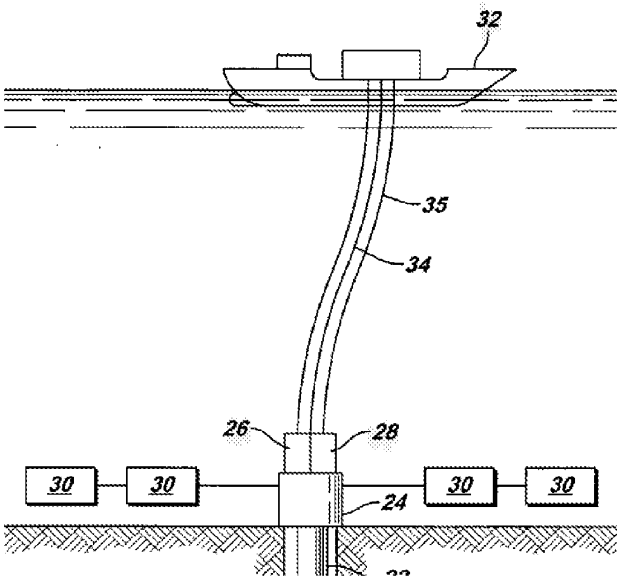
- claims 25 and 44 are rejected as allegedly obvious over Nixon and U.S. Pat. Pub. 20090055029 ("Roberson");
- claims 26-28, 30-31, 36, 45-47, 49-50, and 55 are rejected as allegedly obvious over Nixon and U.S. Pat. Pub. 20040262008 ("Deans");
- claims 29 and 48 are rejected as allegedly obvious over Nixon, Deans, and U.S. Pat. Pub. 20010032518 ("Boger");
- claims 35 and 54 are rejected as allegedly obvious over Nixon and U.S. Pat. Pub. 20090149969 ("Slupphaug"); and
- claims 37-38 and 56-57 are rejected as allegedly obvious over Nixon, Deans, and Roberson.

Applicants respectfully ask that the rejection be withdrawn. The independent claims are amended to recite features that are absent from the cited references. As noted above, Nixon does not disclose the amended features. Further, this distinction is not cured by the secondary references.

The amended features that are, at least in part, similar to those formerly recited by claim 26. To reject this claim, the examiner cited to Deans for the similar features. The features added to the independent claims, however, are not disclosed or suggested by Deans.

As shown by figure 1 below, Deans teaches two sub-sea pods 26 and 28 that communicate with the surface facility 32. In Deans, the pod 26 is referred to as a control system, and the pod 28 is referred to as a subsea communication hub. Deans, paragraph 20.

FIG. 1



The rejection asserts "the plurality of different target states

Deans, however, does not teach or suggest, even when considered in hypothetical combination with the other references, the claim feature of "after determining the plurality of different target states, translating each received instructions into one or more translated instructions encoded in the selected respective protocol or protocols," as recited by each independent claim. Moreover, the other cited references do not cure this distinction, and the distinction is incorporated into each of the dependent claims. In view

of this difference from the claimed subject matter, Applicants respectfully ask that the rejections under Section 103 be withdrawn.

Reservation of Arguments

Above, Applicants identify reasons why the present rejections should not be applied to the pending claims. This explanation, however, should not be construed as an admission that other features of the claims beyond those discussed, including the combination of claim features, are taught or suggested by the cited art, or that the rejections are otherwise proper. In the interest of brevity, Applicants have refrained from providing an exhaustive explanation of every basis for allowing the claims. Accordingly, Applicants reserve the right to identify other grounds for overcoming the present rejections and the cited art, and Applicants reiterate that the amendments and arguments above are made without prejudice, including to rights available under the doctrine of equivalents.

Conclusion

Applicants respectfully submit that all pending claims should be in condition for allowance. However, if the Examiner believes certain amendments are necessary to clarify the present claims or if the Examiner wishes to resolve any other issues by way of a telephone conference, the Examiner is kindly invited to contact the undersigned attorney at the telephone number indicated below.

Respectfully submitted,

Date: 18 August 2015

/Joshua Tucker/
Joshua Tucker
Registration No. 63809
Pillsbury Winthrop Shaw Pittman LLP
P.O. Box 10500
McLean, VA 22102
Phone No. 512-375-4928

Electronic Patent Application Fee Transmittal	
Application Number:	14147190
Filing Date:	03-Jan-2014
Title of Invention:	REMOTE CONTROL OF FLUID-HANDLING DEVICES
First Named Inventor/Applicant Name:	Aaron Phillips
Filer:	Joshua L. Tucker/Kathryn Seeman
Attorney Docket Number:	034392-0437466
Filed as Small Entity	
Filing Fees for Utility under 35 USC 111(a)	

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension - 2 months with $0 paid	2252	1	300	300
Miscellaneous:				
Request for Continued Examination	2801	1	600	600
		Total in USD ($)		**900**

Electronic Acknowledgement Receipt	
EFS ID:	23241037
Application Number:	14147190
International Application Number:	
Confirmation Number:	7979
Title of Invention:	REMOTE CONTROL OF FLUID-HANDLING DEVICES
First Named Inventor/Applicant Name:	Aaron Phillips
Customer Number:	909
Filer:	Joshua L. Tucker/Kathryn Seeman
Filer Authorized By:	Joshua L. Tucker
Attorney Docket Number:	034392-0437466
Receipt Date:	18-AUG-2015
Filing Date:	03-JAN-2014
Time Stamp:	16:20:10
Application Type:	Utility under 35 USC 111(a)

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Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$900
RAM confirmation Number	2847
Deposit Account	033975
Authorized User	TUCKER, JOSH
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request for Continued Examination (RCE)	RCE_034392_0437466.pdf	1350120 41f772e2aed82850553e6910ac524d0013cf2d97	no	3
Warnings:					
Information:					
2		rce_8_18_15_034392_0437466.pdf	124347 ca1e8531e38f672b0aeda21b4711095246e0d5a8	yes	17

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Response After Final Action	1	1
	Claims	2	13
	Applicant Arguments/Remarks Made in an Amendment	14	17

Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	32595 1f084e7f9cff8a6e4f5ce6dac751027a69bd5bbd	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	1507062		

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New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/30EFS (07-14)
Approved for use through 07/31/2016. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	14147190	Filing Date	2014-01-03	Docket Number (if applicable)	034392-0437466	Art Unit	2121
First Named Inventor	Aaron Phillips			Examiner Name	Everett, Christopher E		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, to any international application that does not comply with the requirements of 35 U.S.C. 371, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV.

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

- ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____
- ☐ Other _____

☒ Enclosed

- ☒ Amendment/Reply
- ☐ Information Disclosure Statement (IDS)
- ☐ Affidavit(s)/ Declaration(s)
- ☐ Other _____

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____ (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

☒ **The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.**
The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 033975

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature

☐ Applicant Signature

PTO/SB/30EFS (07-14)
Approved for use through 07/31/2016. OMB 0651-0031
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Signature of Registered U.S. Patent Practitioner			
Signature	/Joshua L. Tucker/	Date (YYYY-MM-DD)	2015-08-18
Name	Joshua L. Tucker	Registration Number	63809

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 14/147,190	Filing Date 01/03/2014	☐ To be Mailed

ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	08/18/2015	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 39	Minus	** 39	= 0	X $40 =	0
	Independent (37 CFR 1.16(h))	* 2	Minus	***3	= 0	X $210 =	0
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	0

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/LAVINIA JOHNSON/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PTO/SB/06 (09-11)
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 14/147,190	Filing Date 01/03/2014	☐ To be Mailed

ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	08/18/2015	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 39	Minus	** 39	= 0	X $40 =	0
	Independent (37 CFR 1.16(h))	* 2	Minus	***3	= 0	X $210 =	0
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	0

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/LAVINIA JOHNSON/

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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/147,190	01/03/2014	Aaron Phillips	000314.000010

CONFIRMATION NO. 7979

909
Pillsbury Winthrop Shaw Pittman, LLP (NV)
PO Box 10500
McLean, VA 22102

POA ACCEPTANCE LETTER

OC000000074367590

Date Mailed: 04/02/2015

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 03/27/2015.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/atesfai/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

Doc Code: PA..
Document Description: Power of Attorney

PTO/AIA/82B (07-13)
Approved for use through 11/30/2014. OMB 0651-0051
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number	Filing Date
14/147,190	2014-01-03

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)

☑ I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above: 00909

OR

☐ I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above to:

☑ The address associated with the above-mentioned Customer Number

OR

☐ The address associated with Customer Number: 00909

OR

Firm or Individual Name					
Address					
City		State		Zip	
Country					
Telephone		Email			

I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

AmpliSine Labs LLC

☐ Inventor or Joint Inventor (title not required below)

☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)

☑ Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)

☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature		Date (Optional)	2-19-15
Name			
Title	Chief Financial & Chief Business Officer		

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

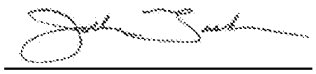
☑ Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

General Authorization for Payment of Fees

The Commissioner is authorized to charge any additional fees that may be required to Deposit Account No. 033975.



Josh Tucker
Reg. No. 63809

Electronic Acknowledgement Receipt	
EFS ID:	21895636
Application Number:	14147190
International Application Number:	
Confirmation Number:	7979
Title of Invention:	REMOTE CONTROL OF FLUID-HANDLING DEVICES
First Named Inventor/Applicant Name:	Aaron Phillips
Customer Number:	35979
Filer:	Joshua L. Tucker/Kathryn Seeman
Filer Authorized By:	Joshua L. Tucker
Attorney Docket Number:	000314.000010
Receipt Date:	27-MAR-2015
Filing Date:	03-JAN-2014
Time Stamp:	15:59:26
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	034392_0437466_POA.pdf	1046460 5b58ed4b12e328527c56228a024efa52286d4af4	no	1

Warnings:
Information:

2	Miscellaneous Incoming Letter	General_Auth_for_Payment_034392_0437466.pdf	189065 4d7851f5d76326bbf15deecba27557a14d43bf97	no	1
Warnings:					
Information:					
			Total Files Size (in bytes):	1235525	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/147,190	01/03/2014	Aaron Phillips	000314.000010	7979

35979 7590 03/18/2015

Bracewell & Giuliani LLP
P.O. Box 61389
Houston, TX 77208-1389

EXAMINER	
EVERETT, CHRISTOPHER E	

ART UNIT	PAPER NUMBER
2121	

NOTIFICATION DATE	DELIVERY MODE
03/18/2015	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docketing@bgllp.com

Office Action Summary	Application No.	Applicant(s)	
	14/147,190	PHILLIPS, AARON	
	Examiner	Art Unit	
	Christopher E. Everett	2121	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 February 2015*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *21-59* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *21-59* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

DETAILED ACTION

1. The present application is being examined under the pre-AIA first to invent provisions.

2. The Office Action is responsive to the communication filed on 2/5/2015.

3. Claims 21-59 are pending.

Response to Amendment

4. Claims 1-20 have been cancelled. As such, the claim objections to claims 1, 15-17, and 19-20 are now moot.

Response to Arguments

5. Applicant's arguments filed 2/5/2015 have been fully considered but they are not persuasive.

With respect to claims 21-59, the applicant generically argues that claims are clearly patentable over the combination of the cited prior art. The Examiner respectfully disagrees. The cited prior art describes the limitations of the claims as described below with respect to the rejections of the claims. Accordingly, applicant's generic arguments are not persuasive since the cited prior art describes the limitations in claims.

For at least these reasons, the rejection of the claims is asserted.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. ***Claims 21-24, 32-34, 39-43, 51-53, and 58-59*** are rejected under 35 U.S.C. 102(b) as being unpatentable by U.S. Patent No. 7,289,994 (Nixon et al.).

Claim 21:

Regarding claim 21, Nixon et al. describes a method, comprising: **(Nixon et al.: "A process control system includes multiple zones containing process control network communicatively interconnected to exchange information necessary to monitor the system and to perform process control. Each zone may include an inter-zone server that controls the exchange of information between the zones via communication links. In addition to controlling the routing of information between the zones, the inter-zone servers may perform additional processing on the information being exchanged, such as security monitoring, language translation and version control." Abstract; "The present invention relates generally to process control systems and, more particularly, to a process control network made up of plurality of communicatively interconnected process control networks that can exchange data." Col. 1, lines 17-20; col. 4, lines 1-19; col. 4, lines 33-54; col. 5, lines 14-35; col. 7, lines 1-25; figures 1, 2)**

- receiving, via a network interface, a plurality of user-directed instructions to control fluid-handling devices that monitor or control one or more fluids at an oil well, a petro water disposal or re-injection facility, or a petroleum pumping station, the plurality of instructions being received encoded in a shared protocol; **(Nixon et al.: see the receiving of communication to an inter-zone server 32, 56 via a shared protocol 16 as illustrated in figure 1; "The inter-zone server 32 also receives the inbound messages from remote zones 14, 66 and 68 transmitted over the communication links 16 and 74, respectively. As with the outbound messages, the inter-zone server 32 may be configured to perform processing on the information in the inbound messages, such as performing security checks, translation, version control, and the like as discussed above. The inbound messages contain information identifying the component or components of the local zone 12 to which the inbound message is directed. After performing any necessary processing of the inbound message, the inter-zone server transmits the inbound message to the component or components of the local zone 12 over the bus 34." Col. 7, line 57 through col. 8, line 2; "As will be understood, the inter-zone servers 32 and 56 operate to provide a communication connection between the two buses 34 and 58 to thereby enable communication between the devices within the local zone 12 and the remote zone 14." Col. 5, lines 36-40; "In another example, a user may wish to integrate an oil well located on a platform many miles out in the ocean with an oil refinery process control system having numerous controllers, user interfaces, etc. located on the mainland. In this case, it is desirable to enable a user at the oil refinery site to reconfigure or effect the**

configuration of the devices on the oil well platform without actually having to fly out to the platform, connect a user interface to a terminal on the oil well platform and reconfigure the oil well controller, as is typically necessary now. Still further, with the integration of multiple process control sites, the number of user interfaces which may be used to simultaneously access the configuration databases of these sites increases significantly." Col. 2, lines 28-41; col. 1, lines 24-51; col. 3, line 46 through col. 4, line 19; col. 5, lines 36-67; figures 1, 2)

- obtaining a target state of at least one of the fluid-handling devices based on at least some of the plurality of instructions; **(Nixon et al.: "Generally speaking, the controllers 24 and 26 receive signals from the field devices 38 and 40, execute process control routines and provide control signals to the devices 38 and 40 to thereby implement control of the process 10." Col. 5, lines 9-13; see the monitoring application of the instructions transmitted to the devices as described in col. 14, lines 53-59 and as illustrated in figure 1; "Other applications incorporated in process control networks will have utility across inter-connected zones in a process control system. For example, condition monitoring applications, such as loop monitoring, device monitoring and equipment monitoring applications, that automatically collect and store data pertaining to different function blocks of devices and loops within the process control network." Col. 14, lines 53-59; col. 17, lines 40-41; col. 1, lines 24-51; figures 1, 2)**
- for each of the plurality of instructions, selecting a respective protocol or protocols from among a plurality of protocols different from the shared protocol, wherein the respective

fluid-handling device or devices to which the respective instruction is directed are responsive to the selected respective protocol or protocols, wherein at least some of the selected protocols are different from one another; **(Nixon et al.: see the selection of a protocol that can communicate with the device (e.g., CAN) as illustrated in figure 1 and described in Col. 4, line 55 to col. 5, line 3; "The inter-zone server 32 also receives the inbound messages from remote zones 14, 66 and 68 transmitted over the communication links 16 and 74, respectively. As with the outbound messages, the inter-zone server 32 may be configured to perform processing on the information in the inbound messages, such as performing security checks, translation, version control, and the like as discussed above. The inbound messages contain information identifying the component or components of the local zone 12 to which the inbound message is directed. After performing any necessary processing of the inbound message, the inter-zone server transmits the inbound message to the component or components of the local zone 12 over the bus 34." Col. 7, line 57 through col. 8, line 2; "As will be understood, the inter-zone servers 32 and 56 operate to provide a communication connection between the two buses 34 and 58 to thereby enable communication between the devices within the local zone 12 and the remote zone 14." Col. 5, lines 36-40; "Each of the controllers 24 and 26 is connected to one or more input/output (I/O) devices 36 which, in turn are connected to field devices which may be any desired type of field devices, such as conventional 4 20 milliamp devices 38 or any smart field devices 40 like HART.RTM., PROFIBUS.RTM., Actuator Sensor Interface (AS-Interface), WORLDFIP.RTM., Device-Net.RTM.,**

CAN, FOUNDATION.TM. Fieldbus (hereinafter "Fieldbus") etc., devices. Of course, the devices 38 and 40 may be any desired types of devices such as sensors, transmitters, valves, fans, mixers, positioners, etc. which may perform any control, measurement or other function within the process control system 10. The controllers 24 and 26 may communicate with the field devices 38 and 40 using any known or desired type of I/O devices 36 and communication protocols such as the protocols associated with any of the above-identified types of devices." Col. 4, line 55 to col. 5, line 3; col. 1, lines 24-51; col. 3, line 46 through col. 4, line 19; col. 5, lines 36-67; figures 1, 2)

- translating each received instructions into one or more translated instructions encoded in the selected respective protocol or protocols; and **(Nixon et al.: see the translation of the messages from a shared protocol on the bus 34, 58 or other communication medium 16 to the protocol of the device (e.g., CAN) as illustrated in figure 1 and described in Col. 4, line 55 to col. 5, line 3; "As with the outbound messages, the inter-zone server 32 may be configured to perform processing on the information in the inbound messages, such as performing security checks, translation, version control, and the like as discussed above. The inbound messages contain information identifying the component or components of the local zone 12 to which the inbound message is directed. After performing any necessary processing of the inbound message, the inter-zone server transmits the inbound message to the component or components of the local zone 12 over the bus 34." Col. 7, line 59 through col. 8, line 2; "Each of the controllers 24 and 26 is connected to one or more input/output (I/O)**

devices 36 which, in turn are connected to field devices which may be any desired type of field devices, such as conventional 4 20 milliamp devices 38 or any smart field devices 40 like HART.RTM., PROFIBUS.RTM., Actuator Sensor Interface (AS-Interface), WORLDFIP.RTM., Device-Net.RTM., CAN, FOUNDATION.TM. Fieldbus (hereinafter "Fieldbus") etc., devices. Of course, the devices 38 and 40 may be any desired types of devices such as sensors, transmitters, valves, fans, mixers, positioners, etc. which may perform any control, measurement or other function within the process control system 10. The controllers 24 and 26 may communicate with the field devices 38 and 40 using any known or desired type of I/O devices 36 and communication protocols such as the protocols associated with any of the above-identified types of devices." Col. 4, line 55 to col. 5, line 3; Col. 5, lines 36-40; col. 1, lines 24-51; col. 3, line 46 through col. 4, line 19; col. 5, lines 36-67; col. 7, lines 1-25; figures 1, 2)

- sending each translated instructions to at least the fluid-handling device to which the respective translated instruction is directed, wherein at least some of the translated instructions are effective to cause the at least one of the fluid-handling devices to attempt to achieve the target state. **(Nixon et al.: "Generally speaking, the controllers 24 and 26 receive signals from the field devices 38 and 40, execute process control routines and provide control signals to the devices 38 and 40 to thereby implement control of the process 10." Col. 5, lines 9-13; "As with the outbound messages, the inter-zone server 32 may be configured to perform processing on the information in the inbound messages, such as performing security checks, translation, version control,**

and the like as discussed above. The inbound messages contain information identifying the component or components of the local zone 12 to which the inbound message is directed. After performing any necessary processing of the inbound message, the inter-zone server transmits the inbound message to the component or components of the local zone 12 over the bus 34." Col. 7, line 59 through col. 8, line 2; col. 3, line 46 through col. 4, line 19; figures 1, 2)

Claim 22:

Regarding claim 22, Nixon et al. describes the method of claim 21, wherein selecting a respective protocol or protocols comprises:

- parsing, from at least one of the received instructions, an identifier of one of the fluid-handling devices; and **(Nixon et al.: "To route a message to the appropriate device in a remote zone, the message must contain the unique information necessary to route the message. For example, at the time a device is configured to transmit messages to devices in remote zones, the remote zone name and device name may be stored at the device so that the device in the local zone 12 can include the entire path for routing the message to the device in the remote zone. Upon receiving the message at the inter-zone server 32, the communication module 82 uses the path information in the message to route the message to the device in the appropriate remote zone 14, 66 or 68." Col. 8, lines 39-49; Col. 7, lines 64 through col. 8, line 2; col. 8, lines 20-37; col. 8, lines 39-56; figures 1, 2)**

- based on the parsed identifier, retrieving from memory one or more records, including an identifier of at least one selected respective protocol and an identifier of a bus to which the identified fluid-handling device is communicatively coupled. **(Nixon et al.: see the identifier of the bus and the subsequent identification of the protocol of the bus through the identifier of the bus as described in col. 8, lines 24-28; "The inbound messages contain information identifying the component or components of the local zone 12 to which the inbound message is directed. After performing any necessary processing of the inbound message, the inter-zone server transmits the inbound message to the component or components of the local zone 12 over the bus 34." Col. 7, lines 64 through col. 8, line 2; "The reference information may take the form of, for example, "//ZoneName/NodeName/ . . . ," or any other desired form. It will be understood that zone names must be unique within the process control system 10 to resolve any inter-zone references without conflict." Col. 8, lines 24-28; col. 8, lines 20-37; col. 8, lines 39-56; figures 1, 2)**

Claim 23:

Regarding claim 23, Nixon et al. describes the method of claim 22, wherein sending each translated instructions to at least the fluid-handling device to which the respective instruction is directed comprises: sending an address of the identified fluid-handling device on the identified bus in association with at least some of the translated instructions. **(Nixon et al.: "The inbound messages contain information identifying the component or components of the local zone 12 to which the inbound message is directed. After performing any necessary processing of**

the inbound message, the inter-zone server transmits the inbound message to the component or components of the local zone 12 over the bus 34." Col. 7, lines 64 through col. 8, line 2; "The reference information may take the form of, for example, "//ZoneName/NodeName/ . . . ," or any other desired form. It will be understood that zone names must be unique within the process control system 10 to resolve any inter-zone references without conflict." Col. 8, lines 24-28; "Each of the controllers 24 and 26 is connected to one or more input/output (I/O) devices 36 which, in turn are connected to field devices which may be any desired type of field devices, such as conventional 4 20 milliamp devices 38 or any smart field devices 40 like HART.RTM., PROFIBUS.RTM., Actuator Sensor Interface (AS-Interface), WORLDFIP.RTM., Device-Net.RTM., CAN, FOUNDATION.TM. Fieldbus (hereinafter "Fieldbus") etc., devices. Of course, the devices 38 and 40 may be any desired types of devices such as sensors, transmitters, valves, fans, mixers, positioners, etc. which may perform any control, measurement or other function within the process control system 10. The controllers 24 and 26 may communicate with the field devices 38 and 40 using any known or desired type of I/O devices 36 and communication protocols such as the protocols associated with any of the above-identified types of devices." Col. 4, line 55 to col. 5, line 3; col. 8, lines 20-37; col. 8, lines 39-56; figures 1, 2)

Claim 24:

Regarding claim 24, Nixon et al. describes the method of claim 22, wherein sending each translated instructions to at least the fluid-handling device to which the respective instruction is directed comprises:

- providing at least some of the translated instructions to a link-layer device connected to the identified bus; and **(Nixon et al.: "The inbound messages contain information identifying the component or components of the local zone 12 to which the inbound message is directed. After performing any necessary processing of the inbound message, the inter-zone server transmits the inbound message to the component or components of the local zone 12 over the bus 34." Col. 7, lines 64 through col. 8, line 2; "The reference information may take the form of, for example, "//ZoneName/NodeName/ . . . ," or any other desired form. It will be understood that zone names must be unique within the process control system 10 to resolve any inter-zone references without conflict." Col. 8, lines 24-28; "Each of the controllers 24 and 26 is connected to one or more input/output (I/O) devices 36 which, in turn are connected to field devices which may be any desired type of field devices, such as conventional 4 20 milliamp devices 38 or any smart field devices 40 like HART.RTM., PROFIBUS.RTM., Actuator Sensor Interface (AS-Interface), WORLDFIP.RTM., Device-Net.RTM., CAN, FOUNDATION.TM. Fieldbus (hereinafter "Fieldbus") etc., devices. Of course, the devices 38 and 40 may be any desired types of devices such as sensors, transmitters, valves, fans, mixers, positioners, etc. which may perform any control, measurement or other function within the process control system 10. The controllers 24 and 26 may communicate**

with the field devices 38 and 40 using any known or desired type of I/O devices 36 and communication protocols such as the protocols associated with any of the above-identified types of devices." Col. 4, line 55 to col. 5, line 3; col. 8, lines 20-37; col. 8, lines 39-56; figures 1, 2)

- encoding the translated instructions with the link-layer device in accordance with the physical medium by which the identified bus is implemented. **(Nixon et al.: "The inbound messages contain information identifying the component or components of the local zone 12 to which the inbound message is directed. After performing any necessary processing of the inbound message, the inter-zone server transmits the inbound message to the component or components of the local zone 12 over the bus 34." Col. 7, lines 64 through col. 8, line 2; "The reference information may take the form of, for example, "//ZoneName/NodeName/ . . . ," or any other desired form. It will be understood that zone names must be unique within the process control system 10 to resolve any inter-zone references without conflict." Col. 8, lines 24-28; "Each of the controllers 24 and 26 is connected to one or more input/output (I/O) devices 36 which, in turn are connected to field devices which may be any desired type of field devices, such as conventional 4 20 milliamp devices 38 or any smart field devices 40 like HART.RTM., PROFIBUS.RTM., Actuator Sensor Interface (AS-Interface), WORLDFIP.RTM., Device-Net.RTM., CAN, FOUNDATION.TM. Fieldbus (hereinafter "Fieldbus") etc., devices. Of course, the devices 38 and 40 may be any desired types of devices such as sensors, transmitters, valves, fans, mixers, positioners, etc. which may perform any control, measurement or other**

function within the process control system 10. The controllers 24 and 26 may communicate with the field devices 38 and 40 using any known or desired type of I/O devices 36 and communication protocols such as the protocols associated with any of the above-identified types of devices." Col. 4, line 55 to col. 5, line 3; col. 8, lines 20-37; col. 8, lines 39-56; figures 1, 2)

Claim 32:

Regarding claim 32, Nixon et al. describes the method of claim 21, wherein at least some of the received instructions correspond to a manual mode in which an individual one of the fluid-handling devices is remotely controlled by a user. **(Nixon et al.: "Information from the field devices and the controller is typically made available during runtime to one or more applications executed by the operator workstation to enable an operator to perform any desired function with respect to the process, such as viewing the current state of the process. Additionally, configuration applications executed on a user interface, such as a host device, workstation, laptop computer, etc. may be used to modify the operation of the process, configure the process, view the configuration of the process, document the process configuration, etc." col. 1, lines 41-51; "The inter-zone server 32 also receives the inbound messages from remote zones 14, 66 and 68 transmitted over the communication links 16 and 74, respectively. As with the outbound messages, the inter-zone server 32 may be configured to perform processing on the information in the inbound messages, such as performing security checks, translation, version control, and the like as discussed above. The inbound messages contain information identifying the component or components of**

the local zone 12 to which the inbound message is directed. After performing any necessary processing of the inbound message, the inter-zone server transmits the inbound message to the component or components of the local zone 12 over the bus 34." Col. 7, line 57 through col. 8, line 2; "As will be understood, the inter-zone servers 32 and 56 operate to provide a communication connection between the two buses 34 and 58 to thereby enable communication between the devices within the local zone 12 and the remote zone 14." Col. 5, lines 36-40; "In another example, a user may wish to integrate an oil well located on a platform many miles out in the ocean with an oil refinery process control system having numerous controllers, user interfaces, etc. located on the mainland. In this case, it is desirable to enable a user at the oil refinery site to reconfigure or effect the configuration of the devices on the oil well platform without actually having to fly out to the platform, connect a user interface to a terminal on the oil well platform and reconfigure the oil well controller, as is typically necessary now. Still further, with the integration of multiple process control sites, the number of user interfaces which may be used to simultaneously access the configuration databases of these sites increases significantly." Col. 2, lines 28-41; col. 1, lines 24-51; col. 3, line 46 through col. 4, line 19; col. 5, lines 36-67; figures 1, 2)

Claim 33:

Regarding claim 33, Nixon et al. describes the method of claim 21, comprising: before sending at least one of the translated instructions,

- accessing a constraint value stored in memory; **(Nixon et al.: see the checking of access value – i.e., constraint value – as described in col. 7, lines 15-25; "Depending on the**

configuration of the process control system 10, the inter-zone server 32 may be configured to perform processing on the information in the message before transmitting the message to the designated remote zone or zones, such as performing a security check to ensure that the type of access being sought in the message (read access, read/write access) is authorized for the local zone 12 or the user transmitting the message, translating the message into a language that is used in the remote zone, converting the message to an older or newer software version, and the like." Col. 7, lines 15-25)

- determining that the at least one of the translated instructions will not violate the constraint value; and **(Nixon et al.: see the checking of access value – i.e., constraint value – for access by the message as described in col. 7, lines 15-25; "Depending on the configuration of the process control system 10, the inter-zone server 32 may be configured to perform processing on the information in the message before transmitting the message to the designated remote zone or zones, such as performing a security check to ensure that the type of access being sought in the message (read access, read/write access) is authorized for the local zone 12 or the user transmitting the message, translating the message into a language that is used in the remote zone, converting the message to an older or newer software version, and the like." Col. 7, lines 15-25)**
- in response to the determination, sending the at least one of the translated instructions. **(Nixon et al.: see the sending of the message after checking as described in col. 7, lines 26-30; "Once the remote zone or zones are identified and any necessary**

processing is performed on the message, the inter-zone server 32 transmits the message to the remote zone or zones on the appropriate communication link 16 or 74." Col. 7, lines 26-30; "Depending on the configuration of the process control system 10, the inter-zone server 32 may be configured to perform processing on the information in the message before transmitting the message to the designated remote zone or zones, such as performing a security check to ensure that the type of access being sought in the message (read access, read/write access) is authorized for the local zone 12 or the user transmitting the message, translating the message into a language that is used in the remote zone, converting the message to an older or newer software version, and the like." Col. 7, lines 15-25)

Claim 34:

Regarding claim 34, Nixon et al. describes the method of claim 21, comprising;

- receiving additional instructions via the network interface; **(Nixon et al.: see the receiving of communication to an inter-zone server 32, 56 via a shared protocol 16 as illustrated in figure 1; "The inter-zone server 32 also receives the inbound messages from remote zones 14, 66 and 68 transmitted over the communication links 16 and 74, respectively. As with the outbound messages, the inter-zone server 32 may be configured to perform processing on the information in the inbound messages, such as performing security checks, translation, version control, and the like as discussed above. The inbound messages contain information identifying the component or components of the local zone 12 to which the inbound message is**

directed. After performing any necessary processing of the inbound message, the inter-zone server transmits the inbound message to the component or components of the local zone 12 over the bus 34." Col. 7, line 57 through col. 8, line 2; "As will be understood, the inter-zone servers 32 and 56 operate to provide a communication connection between the two buses 34 and 58 to thereby enable communication between the devices within the local zone 12 and the remote zone 14." Col. 5, lines 36-40; "In another example, a user may wish to integrate an oil well located on a platform many miles out in the ocean with an oil refinery process control system having numerous controllers, user interfaces, etc. located on the mainland. In this case, it is desirable to enable a user at the oil refinery site to reconfigure or effect the configuration of the devices on the oil well platform without actually having to fly out to the platform, connect a user interface to a terminal on the oil well platform and reconfigure the oil well controller, as is typically necessary now. Still further, with the integration of multiple process control sites, the number of user interfaces which may be used to simultaneously access the configuration databases of these sites increases significantly." Col. 2, lines 28-41; col. 1, lines 24-51; col. 3, line 46 through col. 4, line 19; col. 5, lines 36-67; figures 1, 2)

- determining that the additional instructions are directed to a given fluid-handling device responsive to the shared protocol; and **(Nixon et al.: see the selection of a protocol that can communicate with the device (e.g., CAN) and in some cases, the networks between the zones use the same protocol – i.e., shared protocol – so no translation is needed as illustrated in figure 1 and described in Col. 4, line 55 to col. 5, line 3; "The**

inter-zone server 32 also receives the inbound messages from remote zones 14, 66 and 68 transmitted over the communication links 16 and 74, respectively. As with the outbound messages, the inter-zone server 32 may be configured to perform processing on the information in the inbound messages, such as performing security checks, translation, version control, and the like as discussed above. The inbound messages contain information identifying the component or components of the local zone 12 to which the inbound message is directed. After performing any necessary processing of the inbound message, the inter-zone server transmits the inbound message to the component or components of the local zone 12 over the bus 34." Col. 7, line 57 through col. 8, line 2; "As will be understood, the inter-zone servers 32 and 56 operate to provide a communication connection between the two buses 34 and 58 to thereby enable communication between the devices within the local zone 12 and the remote zone 14." Col. 5, lines 36-40; "Each of the controllers 24 and 26 is connected to one or more input/output (I/O) devices 36 which, in turn are connected to field devices which may be any desired type of field devices, such as conventional 4 20 milliamp devices 38 or any smart field devices 40 like HART.RTM., PROFIBUS.RTM., Actuator Sensor Interface (AS-Interface), WORLDFIP.RTM., Device-Net.RTM., CAN, FOUNDATION.TM. Fieldbus (hereinafter "Fieldbus") etc., devices. Of course, the devices 38 and 40 may be any desired types of devices such as sensors, transmitters, valves, fans, mixers, positioners, etc. which may perform any control, measurement or other function within the process control system 10. The controllers 24 and 26 may communicate with the field devices 38

and 40 using any known or desired type of I/O devices 36 and communication protocols such as the protocols associated with any of the above-identified types of devices." Col. 4, line 55 to col. 5, line 3; col. 1, lines 24-51; col. 3, line 46 through col. 4, line 19; col. 5, lines 36-67; figures 1, 2)

- in response to the determination, sending an un-translated instruction to the given fluid-handling device. **(Nixon et al.: see the communication between the zones that use the same protocol – i.e., shared protocol – as illustrated in figure 1 and described in Col. 4, line 55 to col. 5, line 3; "Generally speaking, the controllers 24 and 26 receive signals from the field devices 38 and 40, execute process control routines and provide control signals to the devices 38 and 40 to thereby implement control of the process 10." Col. 5, lines 9-13; "As with the outbound messages, the inter-zone server 32 may be configured to perform processing on the information in the inbound messages, such as performing security checks, translation, version control, and the like as discussed above. The inbound messages contain information identifying the component or components of the local zone 12 to which the inbound message is directed. After performing any necessary processing of the inbound message, the inter-zone server transmits the inbound message to the component or components of the local zone 12 over the bus 34." Col. 7, line 59 through col. 8, line 2; col. 3, line 46 through col. 4, line 19; figures 1, 2)**

Claim 39:

Regarding claim 39, Nixon et al. describes the method of claim 21, comprising: producing oil or gas; disposing of petro water; or re-injecting petro water. **(Nixon et al.: "In another example, a user may wish to integrate an oil well located on a platform many miles out in the ocean with an oil refinery process control system having numerous controllers, user interfaces, etc. located on the mainland. In this case, it is desirable to enable a user at the oil refinery site to reconfigure or effect the configuration of the devices on the oil well platform without actually having to fly out to the platform, connect a user interface to a terminal on the oil well platform and reconfigure the oil well controller, as is typically necessary now. Still further, with the integration of multiple process control sites, the number of user interfaces which may be used to simultaneously access the configuration databases of these sites increases significantly." Col. 2, lines 28-41; Col. 5, lines 36-40; Col. 7, line 57 through col. 8, line 2; col. 1, lines 24-51; col. 3, line 46 through col. 4, line 19; col. 5, lines 36-67; figures 1, 2)**

Claim 40:

Regarding claim 40, Nixon et al. describes a system, comprising: **(Nixon et al.: "A process control system includes multiple zones containing process control network communicatively interconnected to exchange information necessary to monitor the system and to perform process control. Each zone may include an inter-zone server that controls the exchange of information between the zones via communication links. In addition to controlling the routing of information between the zones, the inter-zone servers may perform additional processing on the information being exchanged, such as security**

monitoring, language translation and version control." Abstract; "The present invention relates generally to process control systems and, more particularly, to a process control network made up of plurality of communicatively interconnected process control networks that can exchange data." Col. 1, lines 17-20; col. 4, lines 1-19; col. 4, lines 33-54; col. 5, lines 14-35; col. 7, lines 1-25; figures 1, 2)

- one or more processors; **(Nixon et al.: see inter-zone servers as illustrated in figure 1)**
- a network interface coupled to at least some of the processors; **(Nixon et al.: see the receiving of communication to an inter-zone server 32, 56 via a shared protocol 16 as illustrated in figure 1; "The inter-zone server 32 also receives the inbound messages from remote zones 14, 66 and 68 transmitted over the communication links 16 and 74, respectively. As with the outbound messages, the inter-zone server 32 may be configured to perform processing on the information in the inbound messages, such as performing security checks, translation, version control, and the like as discussed above. The inbound messages contain information identifying the component or components of the local zone 12 to which the inbound message is directed. After performing any necessary processing of the inbound message, the inter-zone server transmits the inbound message to the component or components of the local zone 12 over the bus 34." Col. 7, line 57 through col. 8, line 2; "As will be understood, the inter-zone servers 32 and 56 operate to provide a communication connection between the two buses 34 and 58 to thereby enable communication between the devices within the local zone 12 and the remote zone 14." Col. 5, lines 36-40; "In another example, a user may wish to integrate an oil well located on a**

platform many miles out in the ocean with an oil refinery process control system having numerous controllers, user interfaces, etc. located on the mainland. In this case, it is desirable to enable a user at the oil refinery site to reconfigure or effect the configuration of the devices on the oil well platform without actually having to fly out to the platform, connect a user interface to a terminal on the oil well platform and reconfigure the oil well controller, as is typically necessary now. Still further, with the integration of multiple process control sites, the number of user interfaces which may be used to simultaneously access the configuration databases of these sites increases significantly." Col. 2, lines 28-41; col. 1, lines 24-51; col. 3, line 46 through col. 4, line 19; col. 5, lines 36-67; figures 1, 2)

- a plurality of link-layer devices coupled to at least some of the processors, each link-layer device configured to communicate with one or more fluid-handling devices via one or more busses; and **(Nixon et al.: see controllers and input/output (I/O) and field devices (F.D.) and busses (34, 58) as illustrated in figure 1; "Generally speaking, the controllers 24 and 26 receive signals from the field devices 38 and 40, execute process control routines and provide control signals to the devices 38 and 40 to thereby implement control of the process 10." Col. 5, lines 9-13; see the monitoring application of the instructions transmitted to the devices as described in col. 14, lines 53-59 and as illustrated in figure 1; "Other applications incorporated in process control networks will have utility across inter-connected zones in a process control system. For example, condition monitoring applications, such as loop monitoring, device monitoring and equipment monitoring applications, that automatically**

collect and store data pertaining to different function blocks of devices and loops within the process control network." Col. 14, lines 53-59; col. 17, lines 40-41; col. 1, lines 24-51; figures 1, 2)

- memory storing instructions that when executed by at least some of the processors effectuate operations comprising: **(Nixon et al.: see inter-zone servers as illustrated in figure 1 and the components of the servers as illustrated in figure 2)**
    - receiving, via the network interface, a plurality of user-directed instructions to control fluid-handling devices that monitor or control one or more fluids at an oil well, a petro water disposal or re-injection facility, or a petroleum pumping station, the plurality of instructions being received encoded in a shared protocol; **(Nixon et al.: see the receiving of communication to an inter-zone server 32, 56 via a shared protocol 16 as illustrated in figure 1; "The inter-zone server 32 also receives the inbound messages from remote zones 14, 66 and 68 transmitted over the communication links 16 and 74, respectively. As with the outbound messages, the inter-zone server 32 may be configured to perform processing on the information in the inbound messages, such as performing security checks, translation, version control, and the like as discussed above. The inbound messages contain information identifying the component or components of the local zone 12 to which the inbound message is directed. After performing any necessary processing of the inbound message, the inter-zone server transmits the inbound message to the component or components of the local zone 12 over the bus 34." Col. 7, line**

57 through col. 8, line 2; "As will be understood, the inter-zone servers 32 and 56 operate to provide a communication connection between the two buses 34 and 58 to thereby enable communication between the devices within the local zone 12 and the remote zone 14." Col. 5, lines 36-40; "In another example, a user may wish to integrate an oil well located on a platform many miles out in the ocean with an oil refinery process control system having numerous controllers, user interfaces, etc. located on the mainland. In this case, it is desirable to enable a user at the oil refinery site to reconfigure or effect the configuration of the devices on the oil well platform without actually having to fly out to the platform, connect a user interface to a terminal on the oil well platform and reconfigure the oil well controller, as is typically necessary now. Still further, with the integration of multiple process control sites, the number of user interfaces which may be used to simultaneously access the configuration databases of these sites increases significantly." Col. 2, lines 28-41; col. 1, lines 24-51; col. 3, line 46 through col. 4, line 19; col. 5, lines 36-67; figures 1, 2)

- obtaining a target state of at least one of the fluid-handling devices based on at least some of the plurality of instructions; **(Nixon et al.: "Generally speaking, the controllers 24 and 26 receive signals from the field devices 38 and 40, execute process control routines and provide control signals to the devices 38 and 40 to thereby implement control of the process 10." Col. 5, lines 9-13; see the monitoring application of the instructions transmitted to the devices as**

described in col. 14, lines 53-59 and as illustrated in figure 1; "Other applications incorporated in process control networks will have utility across inter-connected zones in a process control system. For example, condition monitoring applications, such as loop monitoring, device monitoring and equipment monitoring applications, that automatically collect and store data pertaining to different function blocks of devices and loops within the process control network." Col. 14, lines 53-59; col. 17, lines 40-41; col. 1, lines 24-51; figures 1, 2)

- for each of the plurality of instructions, selecting a respective protocol or protocols from among a plurality of protocols different from the shared protocol, wherein the respective fluid-handling device or devices to which the respective instruction is directed are responsive to the selected respective protocol or protocols, wherein at least some of the selected protocols are different from one another; **(Nixon et al.: see the selection of a protocol that can communicate with the device (e.g., CAN) as illustrated in figure 1 and described in Col. 4, line 55 to col. 5, line 3; "The inter-zone server 32 also receives the inbound messages from remote zones 14, 66 and 68 transmitted over the communication links 16 and 74, respectively. As with the outbound messages, the inter-zone server 32 may be configured to perform processing on the information in the inbound messages, such as performing security checks, translation, version control, and the like as discussed above. The inbound messages contain information identifying the component or**

components of the local zone 12 to which the inbound message is directed. After performing any necessary processing of the inbound message, the inter-zone server transmits the inbound message to the component or components of the local zone 12 over the bus 34." Col. 7, line 57 through col. 8, line 2; "As will be understood, the inter-zone servers 32 and 56 operate to provide a communication connection between the two buses 34 and 58 to thereby enable communication between the devices within the local zone 12 and the remote zone 14." Col. 5, lines 36-40; "Each of the controllers 24 and 26 is connected to one or more input/output (I/O) devices 36 which, in turn are connected to field devices which may be any desired type of field devices, such as conventional 4 20 milliamp devices 38 or any smart field devices 40 like HART.RTM., PROFIBUS.RTM., Actuator Sensor Interface (AS-Interface), WORLDFIP.RTM., Device-Net.RTM., CAN, FOUNDATION.TM. Fieldbus (hereinafter "Fieldbus") etc., devices. Of course, the devices 38 and 40 may be any desired types of devices such as sensors, transmitters, valves, fans, mixers, positioners, etc. which may perform any control, measurement or other function within the process control system 10. The controllers 24 and 26 may communicate with the field devices 38 and 40 using any known or desired type of I/O devices 36 and communication protocols such as the protocols associated with any of the above-identified types of devices." Col. 4, line 55 to col. 5, line 3; col. 1, lines 24-51; col. 3, line 46 through col. 4, line 19; col. 5, lines 36-67; figures 1, 2)

- translating each received instructions into one or more translated instructions encoded in the selected respective protocol or protocols; and **(Nixon et al.: see the translation of the messages from a shared protocol on the bus 34, 58 or other communication medium 16 to the protocol of the device (e.g., CAN) as illustrated in figure 1 and described in Col. 4, line 55 to col. 5, line 3; "As with the outbound messages, the inter-zone server 32 may be configured to perform processing on the information in the inbound messages, such as performing security checks, translation, version control, and the like as discussed above. The inbound messages contain information identifying the component or components of the local zone 12 to which the inbound message is directed. After performing any necessary processing of the inbound message, the inter-zone server transmits the inbound message to the component or components of the local zone 12 over the bus 34." Col. 7, line 59 through col. 8, line 2; "Each of the controllers 24 and 26 is connected to one or more input/output (I/O) devices 36 which, in turn are connected to field devices which may be any desired type of field devices, such as conventional 4 20 milliamp devices 38 or any smart field devices 40 like HART.RTM., PROFIBUS.RTM., Actuator Sensor Interface (AS-Interface), WORLDFIP.RTM., Device-Net.RTM., CAN, FOUNDATION.TM. Fieldbus (hereinafter "Fieldbus") etc., devices. Of course, the devices 38 and 40 may be any desired types of devices such as sensors, transmitters, valves, fans, mixers, positioners, etc. which may perform any control, measurement or**

other function within the process control system 10. The controllers 24 and 26 may communicate with the field devices 38 and 40 using any known or desired type of I/O devices 36 and communication protocols such as the protocols associated with any of the above-identified types of devices." Col. 4, line 55 to col. 5, line 3; Col. 5, lines 36-40; col. 1, lines 24-51; col. 3, line 46 through col. 4, line 19; col. 5, lines 36-67; col. 7, lines 1-25; figures 1, 2)

- sending each translated instructions to at least the fluid-handling device to which the respective translated instruction is directed via one of the link-layer devices, wherein at least some of the translated instructions are effective to cause the at least one of the fluid-handling devices to attempt to achieve the target state. **(Nixon et al.: "Generally speaking, the controllers 24 and 26 receive signals from the field devices 38 and 40, execute process control routines and provide control signals to the devices 38 and 40 to thereby implement control of the process 10." Col. 5, lines 9-13; "As with the outbound messages, the inter-zone server 32 may be configured to perform processing on the information in the inbound messages, such as performing security checks, translation, version control, and the like as discussed above. The inbound messages contain information identifying the component or components of the local zone 12 to which the inbound message is directed. After performing any necessary processing of the inbound message, the inter-zone server transmits the inbound message to the component or components of the local**

zone 12 over the bus 34." Col. 7, line 59 through col. 8, line 2; col. 3, line 46 through col. 4, line 19; figures 1, 2)

Claim 41:

Regarding claim 41, Nixon et al. describes the system of claim 40, wherein selecting a respective protocol or protocols comprises:

- parsing, from at least one of the received instructions, an identifier of one of the fluid-handling devices; and **(Nixon et al.: "To route a message to the appropriate device in a remote zone, the message must contain the unique information necessary to route the message. For example, at the time a device is configured to transmit messages to devices in remote zones, the remote zone name and device name may be stored at the device so that the device in the local zone 12 can include the entire path for routing the message to the device in the remote zone. Upon receiving the message at the inter-zone server 32, the communication module 82 uses the path information in the message to route the message to the device in the appropriate remote zone 14, 66 or 68." Col. 8, lines 39-49; Col. 7, lines 64 through col. 8, line 2; col. 8, lines 20-37; col. 8, lines 39-56; figures 1, 2)**
- based on the parsed identifier, retrieving from memory one or more records, including an identifier of at least one selected respective protocol and an identifier of a bus to which the identified fluid-handling device is communicatively coupled. **(Nixon et al.: see the identifier of the bus and the subsequent identification of the protocol of the bus through the identifier of the bus as described in col. 8, lines 24-28; "The inbound**

messages contain information identifying the component or components of the local zone 12 to which the inbound message is directed. After performing any necessary processing of the inbound message, the inter-zone server transmits the inbound message to the component or components of the local zone 12 over the bus 34." Col. 7, lines 64 through col. 8, line 2; "The reference information may take the form of, for example, "//ZoneName/NodeName/ . . . ," or any other desired form. It will be understood that zone names must be unique within the process control system 10 to resolve any inter-zone references without conflict." Col. 8, lines 24-28; col. 8, lines 20-37; col. 8, lines 39-56; figures 1, 2)

Claim 42:

Regarding claim 42, Nixon et al. describes the system of claim 41, wherein sending each translated instructions to at least the fluid-handling device to which the respective instruction is directed comprises: sending an address of the identified fluid-handling device on the identified bus in association with at least some of the translated instructions. **(Nixon et al.: "The inbound messages contain information identifying the component or components of the local zone 12 to which the inbound message is directed. After performing any necessary processing of the inbound message, the inter-zone server transmits the inbound message to the component or components of the local zone 12 over the bus 34." Col. 7, lines 64 through col. 8, line 2; "The reference information may take the form of, for example, "//ZoneName/NodeName/ . . . ," or any other desired form. It will be understood that zone names must be unique within the process control system 10 to resolve any inter-zone**

references without conflict." Col. 8, lines 24-28; "Each of the controllers 24 and 26 is connected to one or more input/output (I/O) devices 36 which, in turn are connected to field devices which may be any desired type of field devices, such as conventional 4 20 milliamp devices 38 or any smart field devices 40 like HART.RTM., PROFIBUS.RTM., Actuator Sensor Interface (AS-Interface), WORLDFIP.RTM., Device-Net.RTM., CAN, FOUNDATION.TM. Fieldbus (hereinafter "Fieldbus") etc., devices. Of course, the devices 38 and 40 may be any desired types of devices such as sensors, transmitters, valves, fans, mixers, positioners, etc. which may perform any control, measurement or other function within the process control system 10. The controllers 24 and 26 may communicate with the field devices 38 and 40 using any known or desired type of I/O devices 36 and communication protocols such as the protocols associated with any of the above-identified types of devices." Col. 4, line 55 to col. 5, line 3; col. 8, lines 20-37; col. 8, lines 39-56; figures 1, 2)

Claim 43:

Regarding claim 43, Nixon et al. describes the system of claim 41, wherein sending each translated instructions to at least the fluid-handling device to which the respective instruction is directed comprises:

- providing at least some of the translated instructions to a link-layer device connected to the identified bus; and **(Nixon et al.: "The inbound messages contain information identifying the component or components of the local zone 12 to which the inbound message is directed. After performing any necessary processing of the inbound**

message, the inter-zone server transmits the inbound message to the component or components of the local zone 12 over the bus 34." Col. 7, lines 64 through col. 8, line 2; "The reference information may take the form of, for example, "//ZoneName/NodeName/ . . . ," or any other desired form. It will be understood that zone names must be unique within the process control system 10 to resolve any inter-zone references without conflict." Col. 8, lines 24-28; "Each of the controllers 24 and 26 is connected to one or more input/output (I/O) devices 36 which, in turn are connected to field devices which may be any desired type of field devices, such as conventional 4 20 milliamp devices 38 or any smart field devices 40 like HART.RTM., PROFIBUS.RTM., Actuator Sensor Interface (AS-Interface), WORLDFIP.RTM., Device-Net.RTM., CAN, FOUNDATION.TM. Fieldbus (hereinafter "Fieldbus") etc., devices. Of course, the devices 38 and 40 may be any desired types of devices such as sensors, transmitters, valves, fans, mixers, positioners, etc. which may perform any control, measurement or other function within the process control system 10. The controllers 24 and 26 may communicate with the field devices 38 and 40 using any known or desired type of I/O devices 36 and communication protocols such as the protocols associated with any of the above-identified types of devices." Col. 4, line 55 to col. 5, line 3; col. 8, lines 20-37; col. 8, lines 39-56; figures 1, 2)

- encoding the translated instructions with the link-layer device in accordance with the physical medium by which the identified bus is implemented. **(Nixon et al.: "The inbound messages contain information identifying the component or components of**

the local zone 12 to which the inbound message is directed. After performing any necessary processing of the inbound message, the inter-zone server transmits the inbound message to the component or components of the local zone 12 over the bus 34." Col. 7, lines 64 through col. 8, line 2; "The reference information may take the form of, for example, "//ZoneName/NodeName/ . . . ," or any other desired form. It will be understood that zone names must be unique within the process control system 10 to resolve any inter-zone references without conflict." Col. 8, lines 24-28; "Each of the controllers 24 and 26 is connected to one or more input/output (I/O) devices 36 which, in turn are connected to field devices which may be any desired type of field devices, such as conventional 4 20 milliamp devices 38 or any smart field devices 40 like HART.RTM., PROFIBUS.RTM., Actuator Sensor Interface (AS-Interface), WORLDFIP.RTM., Device-Net.RTM., CAN, FOUNDATION.TM. Fieldbus (hereinafter "Fieldbus") etc., devices. Of course, the devices 38 and 40 may be any desired types of devices such as sensors, transmitters, valves, fans, mixers, positioners, etc. which may perform any control, measurement or other function within the process control system 10. The controllers 24 and 26 may communicate with the field devices 38 and 40 using any known or desired type of I/O devices 36 and communication protocols such as the protocols associated with any of the above-identified types of devices." Col. 4, line 55 to col. 5, line 3; col. 8, lines 20-37; col. 8, lines 39-56; figures 1, 2)

Claim 51:

Regarding claim 51, Nixon et al. describes the system of claim 40, wherein at least some of the received instructions correspond to a manual mode in which an individual one of the fluid-handling devices is remotely controlled by a user. **(Nixon et al.: "Information from the field devices and the controller is typically made available during runtime to one or more applications executed by the operator workstation to enable an operator to perform any desired function with respect to the process, such as viewing the current state of the process. Additionally, configuration applications executed on a user interface, such as a host device, workstation, laptop computer, etc. may be used to modify the operation of the process, configure the process, view the configuration of the process, document the process configuration, etc." col. 1, lines 41-51; "The inter-zone server 32 also receives the inbound messages from remote zones 14, 66 and 68 transmitted over the communication links 16 and 74, respectively. As with the outbound messages, the inter-zone server 32 may be configured to perform processing on the information in the inbound messages, such as performing security checks, translation, version control, and the like as discussed above. The inbound messages contain information identifying the component or components of the local zone 12 to which the inbound message is directed. After performing any necessary processing of the inbound message, the inter-zone server transmits the inbound message to the component or components of the local zone 12 over the bus 34." Col. 7, line 57 through col. 8, line 2; "As will be understood, the inter-zone servers 32 and 56 operate to provide a communication connection between the two buses 34 and 58 to thereby enable communication between the devices within the local zone 12 and the remote zone 14." Col. 5, lines 36-40; "In another example, a user may wish to integrate an oil well located on a**

platform many miles out in the ocean with an oil refinery process control system having numerous controllers, user interfaces, etc. located on the mainland. In this case, it is desirable to enable a user at the oil refinery site to reconfigure or effect the configuration of the devices on the oil well platform without actually having to fly out to the platform, connect a user interface to a terminal on the oil well platform and reconfigure the oil well controller, as is typically necessary now. Still further, with the integration of multiple process control sites, the number of user interfaces which may be used to simultaneously access the configuration databases of these sites increases significantly." Col. 2, lines 28-41; col. 1, lines 24-51; col. 3, line 46 through col. 4, line 19; col. 5, lines 36-67; figures 1, 2)

Claim 52:

Regarding claim 52, Nixon et al. describes the system of claim 40, the operations comprising: before sending at least one of the translated instructions,

- accessing a constraint value stored in memory; **(Nixon et al.: see the checking of access value – i.e., constraint value – as described in col. 7, lines 15-25; "Depending on the configuration of the process control system 10, the inter-zone server 32 may be configured to perform processing on the information in the message before transmitting the message to the designated remote zone or zones, such as performing a security check to ensure that the type of access being sought in the message (read access, read/write access) is authorized for the local zone 12 or the user transmitting the message, translating the message into a language that is used**

in the remote zone, converting the message to an older or newer software version, and the like." Col. 7, lines 15-25)

- determining that the at least one of the translated instructions will not violate the constraint value; and **(Nixon et al.: see the checking of access value – i.e., constraint value – for access by the message as described in col. 7, lines 15-25; "Depending on the configuration of the process control system 10, the inter-zone server 32 may be configured to perform processing on the information in the message before transmitting the message to the designated remote zone or zones, such as performing a security check to ensure that the type of access being sought in the message (read access, read/write access) is authorized for the local zone 12 or the user transmitting the message, translating the message into a language that is used in the remote zone, converting the message to an older or newer software version, and the like." Col. 7, lines 15-25)**
- in response to the determination, sending the at least one of the translated instructions. **(Nixon et al.: see the sending of the message after checking as described in col. 7, lines 26-30; "Once the remote zone or zones are identified and any necessary processing is performed on the message, the inter-zone server 32 transmits the message to the remote zone or zones on the appropriate communication link 16 or 74." Col. 7, lines 26-30; "Depending on the configuration of the process control system 10, the inter-zone server 32 may be configured to perform processing on the information in the message before transmitting the message to the designated remote zone or zones, such as performing a security check to ensure that the type of**

access being sought in the message (read access, read/write access) is authorized for the local zone 12 or the user transmitting the message, translating the message into a language that is used in the remote zone, converting the message to an older or newer software version, and the like." Col. 7, lines 15-25)

Claim 53:

Regarding claim 53, Nixon et al. describes the system of claim 40, the operations comprising;

- receiving additional instructions via the network interface; **(Nixon et al.: see the receiving of communication to an inter-zone server 32, 56 via a shared protocol 16 as illustrated in figure 1; "The inter-zone server 32 also receives the inbound messages from remote zones 14, 66 and 68 transmitted over the communication links 16 and 74, respectively. As with the outbound messages, the inter-zone server 32 may be configured to perform processing on the information in the inbound messages, such as performing security checks, translation, version control, and the like as discussed above. The inbound messages contain information identifying the component or components of the local zone 12 to which the inbound message is directed. After performing any necessary processing of the inbound message, the inter-zone server transmits the inbound message to the component or components of the local zone 12 over the bus 34." Col. 7, line 57 through col. 8, line 2; "As will be understood, the inter-zone servers 32 and 56 operate to provide a communication connection between the two buses 34 and 58 to thereby enable communication**

between the devices within the local zone 12 and the remote zone 14." Col. 5, lines 36-40; "In another example, a user may wish to integrate an oil well located on a platform many miles out in the ocean with an oil refinery process control system having numerous controllers, user interfaces, etc. located on the mainland. In this case, it is desirable to enable a user at the oil refinery site to reconfigure or effect the configuration of the devices on the oil well platform without actually having to fly out to the platform, connect a user interface to a terminal on the oil well platform and reconfigure the oil well controller, as is typically necessary now. Still further, with the integration of multiple process control sites, the number of user interfaces which may be used to simultaneously access the configuration databases of these sites increases significantly." Col. 2, lines 28-41; col. 1, lines 24-51; col. 3, line 46 through col. 4, line 19; col. 5, lines 36-67; figures 1, 2)

- determining that the additional instructions are directed to a given fluid-handling device responsive to the shared protocol; and **(Nixon et al.: see the selection of a protocol that can communicate with the device (e.g., CAN) and in some cases, the networks between the zones use the same protocol – i.e., shared protocol – so no translation is needed as illustrated in figure 1 and described in Col. 4, line 55 to col. 5, line 3; "The inter-zone server 32 also receives the inbound messages from remote zones 14, 66 and 68 transmitted over the communication links 16 and 74, respectively. As with the outbound messages, the inter-zone server 32 may be configured to perform processing on the information in the inbound messages, such as performing security checks, translation, version control, and the like as discussed above. The inbound**

messages contain information identifying the component or components of the local zone 12 to which the inbound message is directed. After performing any necessary processing of the inbound message, the inter-zone server transmits the inbound message to the component or components of the local zone 12 over the bus 34." Col. 7, line 57 through col. 8, line 2; "As will be understood, the inter-zone servers 32 and 56 operate to provide a communication connection between the two buses 34 and 58 to thereby enable communication between the devices within the local zone 12 and the remote zone 14." Col. 5, lines 36-40; "Each of the controllers 24 and 26 is connected to one or more input/output (I/O) devices 36 which, in turn are connected to field devices which may be any desired type of field devices, such as conventional 4 20 milliamp devices 38 or any smart field devices 40 like HART.RTM., PROFIBUS.RTM., Actuator Sensor Interface (AS-Interface), WORLDFIP.RTM., Device-Net.RTM., CAN, FOUNDATION.TM. Fieldbus (hereinafter "Fieldbus") etc., devices. Of course, the devices 38 and 40 may be any desired types of devices such as sensors, transmitters, valves, fans, mixers, positioners, etc. which may perform any control, measurement or other function within the process control system 10. The controllers 24 and 26 may communicate with the field devices 38 and 40 using any known or desired type of I/O devices 36 and communication protocols such as the protocols associated with any of the above-identified types of devices." Col. 4, line 55 to col. 5, line 3; col. 1, lines 24-51; col. 3, line 46 through col. 4, line 19; col. 5, lines 36-67; figures 1, 2)

- in response to the determination, sending an un-translated instruction to the given fluid-handling device. **(Nixon et al.: see the communication between the zones that use the same protocol – i.e., shared protocol – as illustrated in figure 1 and described in Col. 4, line 55 to col. 5, line 3; "Generally speaking, the controllers 24 and 26 receive signals from the field devices 38 and 40, execute process control routines and provide control signals to the devices 38 and 40 to thereby implement control of the process 10." Col. 5, lines 9-13; "As with the outbound messages, the inter-zone server 32 may be configured to perform processing on the information in the inbound messages, such as performing security checks, translation, version control, and the like as discussed above. The inbound messages contain information identifying the component or components of the local zone 12 to which the inbound message is directed. After performing any necessary processing of the inbound message, the inter-zone server transmits the inbound message to the component or components of the local zone 12 over the bus 34." Col. 7, line 59 through col. 8, line 2; col. 3, line 46 through col. 4, line 19; figures 1, 2)**

Claim 58:

Regarding claim 58, Nixon et al. describes the system of claim 40, comprising: an oil or gas well fluidly coupled to the fluid-handling devices; a petro water disposal facility fluidly coupled to the fluid-handling devices; or a petro water reinjection facility fluidly coupled to the fluid-handling devices. **(Nixon et al.: "In another example, a user may wish to integrate an oil well located on a platform many miles out in the ocean with an oil refinery process**

control system having numerous controllers, user interfaces, etc. located on the mainland. In this case, it is desirable to enable a user at the oil refinery site to reconfigure or effect the configuration of the devices on the oil well platform without actually having to fly out to the platform, connect a user interface to a terminal on the oil well platform and reconfigure the oil well controller, as is typically necessary now. Still further, with the integration of multiple process control sites, the number of user interfaces which may be used to simultaneously access the configuration databases of these sites increases significantly." Col. 2, lines 28-41; Col. 5, lines 36-40; Col. 7, line 57 through col. 8, line 2; col. 1, lines 24-51; col. 3, line 46 through col. 4, line 19; col. 5, lines 36-67; figures 1, 2)

Claim 59:

Regarding claim 59, Nixon et al. describes the system of claim 40, comprising: a plurality of fluid-handling devices coupled to at least some of the link-layer devices via at least some of a plurality of busses. **(Nixon et al.: see controllers and input/output (I/O) and field devices (F.D.) and busses (34, 58) as illustrated in figure 1; "Generally speaking, the controllers 24 and 26 receive signals from the field devices 38 and 40, execute process control routines and provide control signals to the devices 38 and 40 to thereby implement control of the process 10." Col. 5, lines 9-13; see the monitoring application of the instructions transmitted to the devices as described in col. 14, lines 53-59 and as illustrated in figure 1; "Other applications incorporated in process control networks will have utility across inter-connected zones in a process control system. For example, condition monitoring applications, such as loop monitoring, device monitoring and equipment monitoring applications, that automatically**

collect and store data pertaining to different function blocks of devices and loops within the process control network." Col. 14, lines 53-59; col. 17, lines 40-41; col. 1, lines 24-51; figures 1, 2)

8. ***Claims 25 and 44*** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 7,289,994 (Nixon et al.) in view of U.S. Patent Publication No. 2009/0055029 (Roberson et al.).

Claim 25:

Nixon et al. does not explicitly describe a digital to analog converter as described below. However, Roberson et al. teaches the digital to analog converter as described below.

Regarding claim 25, Nixon et al. and Roberson et al. describe the method of claim 22, wherein sending each translated instruction to at least the fluid-handling device to which the respective instruction is directed comprises:

- providing at least some of the translated instructions to a digital-to-analog converter connected to the identified bus; and **(Roberson et al.: "one or more digital-to-analog converters (DAC) 113 for generating analog output signals and a number of digital logic output gates 114" paragraph 0059; paragraphs 0058, 0059, 0060; figures 5, 7)**
- sending the at least some of the translated instructions to the identified fluid- handling device with the digital-to-analog converter. **(Roberson et al.: "The output control circuitry 112 preferably includes one or more digital-to-analog converters (DAC)**

113 for generating analog output signals and a number of digital logic output gates 114 for outputting digital signals so that well manager 100 can be connected to almost any analog or digital device in the field for control purposes. An output control line 92 for providing a control signal to regulate the speed of variable speed motor 12 is shown in FIGS. 5 and 7." Paragraph 0059; paragraphs 0058, 0059, 0060; figures 5, 7; Nixon et al.: Col. 4, line 55 to col. 5, line 3; col. 8, lines 20-37; col. 8, lines 39-56; figures 1, 2)

One of ordinary skill in the art would have recognized that applying the known technique of Nixon et al., namely, communication between multiple zones of a process control system, with the known techniques of Roberson et al., namely, well control and monitoring system, would have yielded predictable results and resulted in an improved system. Accordingly, applying the teachings of Nixon et al. to provide communication and control mechanisms for the communication between process control zones with the teachings of Roberson et al.to automated control and monitoring of pump controllers in an oil field would have been recognized by those of ordinary skill in the art as resulting in an improved process communication and control system (i.e., controlling fluid control devices using digital to analog converters of Nixon et al. based on the teachings of using digital to analog converters in Roberson et al.).

Claim 44:

Nixon et al. does not explicitly describe a digital to analog converter as described below. However, Roberson et al. teaches the digital to analog converter as described below.

Regarding claim 44, Nixon et al. and Roberson et al. describe the system of claim 41, wherein sending each translated instruction to at least the fluid-handling device to which the respective instruction is directed comprises:

- providing at least some of the translated instructions to a digital-to-analog converter connected to the identified bus; and **(Roberson et al.: "one or more digital-to-analog converters (DAC) 113 for generating analog output signals and a number of digital logic output gates 114" paragraph 0059; paragraphs 0058, 0059, 0060; figures 5, 7)**
- sending the at least some of the translated instructions to the identified fluid-handling device with the digital-to-analog converter. **(Roberson et al.: "The output control circuitry 112 preferably includes one or more digital-to-analog converters (DAC) 113 for generating analog output signals and a number of digital logic output gates 114 for outputting digital signals so that well manager 100 can be connected to almost any analog or digital device in the field for control purposes. An output control line 92 for providing a control signal to regulate the speed of variable speed motor 12 is shown in FIGS. 5 and 7." Paragraph 0059; paragraphs 0058, 0059, 0060; figures 5, 7; Nixon et al.: Col. 4, line 55 to col. 5, line 3; col. 8, lines 20-37; col. 8, lines 39-56; figures 1, 2)**

Nixon et al. and Roberson et al. are combinable for the same rationale as set forth above with respect to claim 25.

9. ***Claims 26-28, 30-31, 36, 45-47, 49-50, and 55*** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 7,289,994 (Nixon et al.) in view of U.S. Patent Publication No. 2004/0262008 (Deans et al.).

Claim 26:

Nixon et al. does not explicitly describe different target states and achieving the states as described below. However, Deans et al. teaches the different target states and achieving the states as described below.

Regarding claim 26, Deans et al. describes the method of claim 21, wherein: obtaining a target state of at least one of the fluid-handling devices based on at least some of the plurality of instructions comprises:

- computing a plurality of different target states of the at least one of the fluid-handling devices, the plurality of different states each corresponding to different times; and **(Deans et al.: see the different target states that can be achieved based on the input of different instruments as described in paragraphs 0035 and 0037; "As a result, the subsea communication hub 28 can be removed from operation for service or repair without detrimental effects upon ongoing well production." Paragraph 0035; "In addition, the subsea communication hub 28 can be configured to conduct autonomous processing of data and control based upon input from a single or multiple instruments." Paragraph 0037; "Also, the subsea communication hub 28 has the capability of subsea data storage should be communications link to the**

surface facility 32 be temporarily disabled." Paragraph 0036; paragraphs 0035, 0036, 0037, 0038, 0041, 0042, 0062, 0063, 0064, 0065, 0069, 0070; figures 1, 1b, 5, 6, 7)

- the at least some of the translated instructions are effective to cause the at least one of the fluid-handling devices to attempt to achieve the plurality of different target state at the different times. **(Deans et al.: see the control using the different target states that can be achieved based on the input of different instruments as described in paragraphs 0035 and 0037; "As a result, the subsea communication hub 28 can be removed from operation for service or repair without detrimental effects upon ongoing well production." Paragraph 0035; "In addition, the subsea communication hub 28 can be configured to conduct autonomous processing of data and control based upon input from a single or multiple instruments." Paragraph 0037; "Also, the subsea communication hub 28 has the capability of subsea data storage should be communications link to the surface facility 32 be temporarily disabled." Paragraph 0036; paragraphs 0035, 0036, 0037, 0038, 0041, 0042, 0062, 0063, 0064, 0065, 0069, 0070; figures 1, 1b, 5, 6, 7)**

One of ordinary skill in the art would have recognized that applying the known technique of Nixon et al., namely, communication between multiple zones of a process control system, with the known techniques of Deans et al., namely, communication and control of a subsea oil well from a surface facility, would have yielded predictable results and resulted in an improved system. Accordingly, applying the teachings of Nixon et al. to provide communication and control mechanisms for the communication between process control zones with the teachings of

Deans et al. to provide communication and control mechanisms for the automatic control and maintenance of an underwater oil platform would have been recognized by those of ordinary skill in the art as resulting in an improved process communication and control system (i.e., controlling fluid control devices using into different states of Nixon et al. based on the teachings of using controlling devices into different states in Deans et al.).

Claim 27:

Nixon et al. does not explicitly describe a losing a network connection and continuing operation as described below. However, Deans et al. teaches the losing a network connection and continuing operation as described below.

Regarding claim 27, Deans et al. describes the method of claim 26, comprising:

- losing a network connection by which at least some of the plurality of user- directed instructions are received; and **(Deans et al.: "As a result, the subsea communication hub 28 can be removed from operation for service or repair without detrimental effects upon ongoing well production." Paragraph 0035; "In addition, the subsea communication hub 28 can be configured to conduct autonomous processing of data and control based upon input from a single or multiple instruments." Paragraph 0037; "Also, the subsea communication hub 28 has the capability of subsea data storage should be communications link to the surface facility 32 be temporarily disabled." Paragraph 0036; paragraphs 0035, 0036, 0037, 0038, 0041, 0042, 0062, 0063, 0064, 0065, 0069, 0070; figures 1, 1b, 5, 6, 7)**

- after losing the network connection, continuing to cause the at least one of the fluid-handling devices to attempt to achieve the plurality of different target state at the different times and continuing to execute instructions among the plurality of received instructions received prior to losing the network connection before entering an automatic mode. **(Deans et al.: "For example, the subsea communication hub 28 can be configured to trigger on predefined subsea events, such as choke adjustments or valve closures. The subsea communication hub 28 will recognize the event and activate a trigger without operator intervention (based on a predefined activity matrix)." Paragraph 0038; "As a result, the subsea communication hub 28 can be removed from operation for service or repair without detrimental effects upon ongoing well production." Paragraph 0035; "In addition, the subsea communication hub 28 can be configured to conduct autonomous processing of data and control based upon input from a single or multiple instruments." Paragraph 0037; paragraphs 0035, 0036, 0037, 0038, 0041, 0042, 0062, 0063, 0064, 0065, 0069, 0070; figures 1, 1b, 5, 6, 7)**

Nixon et al. and Deans et al. are combinable for the same rationale as set forth above with respect to claim 26.

Claim 28:

Nixon et al. does not explicitly describe different states of a motor as described below. However, Deans et al. teaches the different states of a motor as described below.

Regarding claim 28, Deans et al. describes the method of claim 26, wherein the plurality of different states ramp up or ramp down a motor speed of a motor of the at least one of the fluid-handling devices. **(Roberson et al.: "providing a control signal to regulate the speed of variable speed motor 12" page 18, lines 11-12; "actuates or regulates a set of outputs for actuating hardware such as solenoids and variable speed motor drive circuitry." page 18, lines 6-7; page 18, lines 5-12; figures 5, 7)**

Nixon et al. and Deans et al. are combinable for the same rationale as set forth above with respect to claim 26.

Claim 30:

Nixon et al. does not explicitly describe a process recipe as described below. However, Deans et al. teaches the process recipe as described below.

Regarding claim 30, Deans et al. describes the method of claim 21, wherein at least some of the received instructions identify a process recipe in which a collection of target states are targeted for at least a plurality of the fluid-handling devices. **(Deans et al.: "For example, the subsea communication hub 28 can be configured to trigger on predefined subsea events, such as choke adjustments or valve closures. The subsea communication hub 28 will recognize the event and activate a trigger without operator intervention (based on a predefined activity matrix)." Paragraph 0038; "In addition, the subsea communication hub 28 can be configured to conduct autonomous processing of data and control based upon input from a single or multiple instruments." Paragraph 0037; "As a result, the subsea communication hub 28 can be removed from operation for service or repair without**

detrimental effects upon ongoing well production." Paragraph 0035; paragraphs 0035, 0036, 0037, 0038, 0041, 0042, 0062, 0063, 0064, 0065, 0069, 0070; figures 1, 1b, 5, 6, 7)

Nixon et al. and Deans et al. are combinable for the same rationale as set forth above with respect to claim 26.

Claim 31:

Nixon et al. does not explicitly describe automatic mode as described below. However, Deans et al. teaches the automatic mode as described below.

Regarding claim 31, Deans et al. describes the method of claim 21, wherein at least some of the received instructions identify an automatic mode in which a collection of target states are computed to operate within process constraints. **(Deans et al.: "In addition, the subsea communication hub 28 can be configured to conduct autonomous processing of data and control based upon input from a single or multiple instruments." Paragraph 0037; "For example, the subsea communication hub 28 can be configured to trigger on predefined subsea events, such as choke adjustments or valve closures. The subsea communication hub 28 will recognize the event and activate a trigger without operator intervention (based on a predefined activity matrix)." Paragraph 0038; "As a result, the subsea communication hub 28 can be removed from operation for service or repair without detrimental effects upon ongoing well production." Paragraph 0035; paragraphs 0035, 0036, 0037, 0038, 0041, 0042, 0062, 0063, 0064, 0065, 0069, 0070; figures 1, 1b, 5, 6, 7)**

Nixon et al. and Deans et al. are combinable for the same rationale as set forth above with respect to claim 26.

Claim 36:

Regarding claim 36, Nixon et al. describes the method of claim 21, comprising:

- receiving, at a remote server system, via a network, user credentials from a user device; **(Nixon et al.: "In some process control systems, it will be necessary to implement security measures to limit inter-zone access and inter-zone operations. Security procedures will typically exist within the process control network of each individual zone 12, 14, 66 and 68, with such security controlling access to and updates of information within the zones. An extension of the intra-zone security to inter-zone communications may be implemented by a security module 86 at the inter-zone server 32. The security module 86 stores information regarding individual users or groups of users with authority for sending and receiving messages to and from the local zone 12. Upon receiving a message at the inter-zone server 32, which may include both inbound messages from remote zones 14, 66 and 68 and outbound messages from devices in the local zone 12, the communication module 82 accesses the security module 86 with identification information for the user obtained from the message. The security module 86 determines whether the user is authorized to access the target zone and may also determine whether the type of access sought is a type for which the user is authorized (e.g., read only authority, read/write authority, and the like). Authorized messages are transmitted by the communication module 82, while unauthorized messages are denied access, and the security module may cause the communication module to transmit notifications or alarm messages to the**

user sending the message, to the system administration of the local and/or remote zone, or to other locations, users or devices as dictated by the requirements of the process control system 10." Col. 9, line 46 through col. 10, line 7)

- identifying, with the remote server system, an account based on the user credentials, the account including identifiers of the oil well, the petro water disposal or re- injection facility, or the petroleum pumping station and at least one other facility; **(Nixon et al.: see the account information for each user and the security information for various zones – i.e., facilities – that the user can access as described in col. 10, lines 8-23; "In some process control systems, it will be necessary to implement security measures to limit inter-zone access and inter-zone operations. Security procedures will typically exist within the process control network of each individual zone 12, 14, 66 and 68, with such security controlling access to and updates of information within the zones. An extension of the intra-zone security to inter-zone communications may be implemented by a security module 86 at the inter-zone server 32. The security module 86 stores information regarding individual users or groups of users with authority for sending and receiving messages to and from the local zone 12. Upon receiving a message at the inter-zone server 32, which may include both inbound messages from remote zones 14, 66 and 68 and outbound messages from devices in the local zone 12, the communication module 82 accesses the security module 86 with identification information for the user obtained from the message. The security module 86 determines whether the user is authorized to access the target zone and may also determine whether the type of access sought is a type for which**

the user is authorized (e.g., read only authority, read/write authority, and the like). Authorized messages are transmitted by the communication module 82, while unauthorized messages are denied access, and the security module may cause the communication module to transmit notifications or alarm messages to the user sending the message, to the system administration of the local and/or remote zone, or to other locations, users or devices as dictated by the requirements of the process control system 10." Col. 9, line 46 through col. 10, line 7; col. 10, lines 8-23; col. 10, lines 24-44; col. 10, lines 45-67; Col. 2, lines 28-41; col. 1, lines 24-51)

- receiving from the user device, at the remote server system, a request corresponding to at least one of the received instructions, the request including an identifier of the oil well, the petro water disposal or re-injection facility, or the petroleum pumping station; **(Nixon et al.: "In some process control systems, it will be necessary to implement security measures to limit inter-zone access and inter-zone operations. Security procedures will typically exist within the process control network of each individual zone 12, 14, 66 and 68, with such security controlling access to and updates of information within the zones. An extension of the intra-zone security to inter-zone communications may be implemented by a security module 86 at the inter-zone server 32. The security module 86 stores information regarding individual users or groups of users with authority for sending and receiving messages to and from the local zone 12. Upon receiving a message at the inter-zone server 32, which may include both inbound messages from remote zones 14, 66 and 68 and outbound messages from devices in the local zone 12, the communication module 82 accesses**

the security module 86 with identification information for the user obtained from the message. The security module 86 determines whether the user is authorized to access the target zone and may also determine whether the type of access sought is a type for which the user is authorized (e.g., read only authority, read/write authority, and the like). Authorized messages are transmitted by the communication module 82, while unauthorized messages are denied access, and the security module may cause the communication module to transmit notifications or alarm messages to the user sending the message, to the system administration of the local and/or remote zone, or to other locations, users or devices as dictated by the requirements of the process control system 10." Col. 9, line 46 through col. 10, line 7; col. 10, lines 8-23; col. 10, lines 24-44; col. 10, lines 45-67; Col. 2, lines 28-41; col. 1, lines 24-51)

Nixon et al. does not explicitly describe an Internet Protocol address as described below. However, Deans et al. teaches the Internet Protocol address as described below.

- identifying, with the remote server system, an Internet Protocol address at which the network interface is reachable based on the identifier of the oil well, the petro water disposal or re-injection facility, or the petroleum pumping station; and **(Deans et al.: "Each sensor and/or control device can be considered an independent network node on an IP network, with the sensor and/or control device assigned an IP address for purposes of communications." Paragraph 0030; "The source IP address specifies the IP address of the source node (the node that originates the message) and the destination IP address specifies the IP address of the destination node (the node**

receiving a packet). Routing of packets between a source node and a destination node is based on the source and destination addresses." Paragraph 0026; paragraphs 0026, 0028, 0029, 0030, 0031; Nixon et al.: "The inbound messages contain information identifying the component or components of the local zone 12 to which the inbound message is directed. After performing any necessary processing of the inbound message, the inter-zone server transmits the inbound message to the component or components of the local zone 12 over the bus 34." Col. 7, lines 64 through col. 8, line 2; "The reference information may take the form of, for example, "//ZoneName/NodeName/ . . . ," or any other desired form. It will be understood that zone names must be unique within the process control system 10 to resolve any inter-zone references without conflict." Col. 8, lines 24-28; col. 8, lines 20-37; col. 8, lines 39-56; figures 1, 2)

- sending, from the remote server system, the at least one of the received instructions to the identified Internet Protocol address in response to the request. **(Deans et al.: "Each sensor and/or control device can be considered an independent network node on an IP network, with the sensor and/or control device assigned an IP address for purposes of communications." Paragraph 0030; "The source IP address specifies the IP address of the source node (the node that originates the message) and the destination IP address specifies the IP address of the destination node (the node receiving a packet). Routing of packets between a source node and a destination node is based on the source and destination addresses." Paragraph 0026; paragraphs 0026, 0028, 0029, 0030, 0031; Nixon et al.: "Generally speaking, the**

controllers 24 and 26 receive signals from the field devices 38 and 40, execute process control routines and provide control signals to the devices 38 and 40 to thereby implement control of the process 10." Col. 5, lines 9-13; "As with the outbound messages, the inter-zone server 32 may be configured to perform processing on the information in the inbound messages, such as performing security checks, translation, version control, and the like as discussed above. The inbound messages contain information identifying the component or components of the local zone 12 to which the inbound message is directed. After performing any necessary processing of the inbound message, the inter-zone server transmits the inbound message to the component or components of the local zone 12 over the bus 34." Col. 7, line 59 through col. 8, line 2; col. 3, line 46 through col. 4, line 19; figures 1, 2)

Nixon et al. and Deans et al. are combinable for the same rationale as set forth above with respect to claim 26.

Claim 45:

Nixon et al. does not explicitly describe different target states and achieving the states as described below. However, Deans et al. teaches the different target states and achieving the states as described below.

Regarding claim 45, Deans et al. describes the system of claim 40, wherein: obtaining a target state of at least one of the fluid-handling devices based on at least some of the plurality of instructions comprises:

- computing a plurality of different target states of the at least one of the fluid-handling devices, the plurality of different states each corresponding to different times; and **(Deans et al.: see the different target states that can be achieved based on the input of different instruments as described in paragraphs 0035 and 0037; "As a result, the subsea communication hub 28 can be removed from operation for service or repair without detrimental effects upon ongoing well production." Paragraph 0035; "In addition, the subsea communication hub 28 can be configured to conduct autonomous processing of data and control based upon input from a single or multiple instruments." Paragraph 0037; "Also, the subsea communication hub 28 has the capability of subsea data storage should be communications link to the surface facility 32 be temporarily disabled." Paragraph 0036; paragraphs 0035, 0036, 0037, 0038, 0041, 0042, 0062, 0063, 0064, 0065, 0069, 0070; figures 1, 1b, 5, 6, 7)**
- the at least some of the translated instructions are effective to cause the at least one of the fluid-handling devices to attempt to achieve the plurality of different target state at the different times. **(Deans et al.: see the control using the different target states that can be achieved based on the input of different instruments as described in paragraphs 0035 and 0037; "As a result, the subsea communication hub 28 can be removed from operation for service or repair without detrimental effects upon ongoing well production." Paragraph 0035; "In addition, the subsea communication hub 28 can be configured to conduct autonomous processing of data and control based upon input from a single or multiple instruments." Paragraph 0037; "Also, the subsea**

communication hub 28 has the capability of subsea data storage should be communications link to the surface facility 32 be temporarily disabled." Paragraph 0036; paragraphs 0035, 0036, 0037, 0038, 0041, 0042, 0062, 0063, 0064, 0065, 0069, 0070; figures 1, 1b, 5, 6, 7)

Nixon et al. and Deans et al. are combinable for the same rationale as set forth above with respect to claim 26.

Claim 46:

Nixon et al. does not explicitly describe a losing a network connection and continuing operation as described below. However, Deans et al. teaches the losing a network connection and continuing operation as described below.

Regarding claim 46, Deans et al. describes the system of claim 45, the operations comprising:

- losing a network connection by which at least some of the plurality of user- directed instructions are received; and **(Deans et al.: "As a result, the subsea communication hub 28 can be removed from operation for service or repair without detrimental effects upon ongoing well production." Paragraph 0035; "In addition, the subsea communication hub 28 can be configured to conduct autonomous processing of data and control based upon input from a single or multiple instruments." Paragraph 0037; "Also, the subsea communication hub 28 has the capability of subsea data storage should be communications link to the surface facility 32 be temporarily**

disabled." Paragraph 0036; paragraphs 0035, 0036, 0037, 0038, 0041, 0042, 0062, 0063, 0064, 0065, 0069, 0070; figures 1, 1b, 5, 6, 7)

- after losing the network connection, continuing to cause the at least one of the fluid-handling devices to attempt to achieve the plurality of different target state at the different times and continuing to execute instructions among the plurality of received instructions received prior to losing the network connection before entering an automatic mode. **(Deans et al.: "For example, the subsea communication hub 28 can be configured to trigger on predefined subsea events, such as choke adjustments or valve closures. The subsea communication hub 28 will recognize the event and activate a trigger without operator intervention (based on a predefined activity matrix)." Paragraph 0038; "As a result, the subsea communication hub 28 can be removed from operation for service or repair without detrimental effects upon ongoing well production." Paragraph 0035; "In addition, the subsea communication hub 28 can be configured to conduct autonomous processing of data and control based upon input from a single or multiple instruments." Paragraph 0037; paragraphs 0035, 0036, 0037, 0038, 0041, 0042, 0062, 0063, 0064, 0065, 0069, 0070; figures 1, 1b, 5, 6, 7)**

Nixon et al. and Deans et al. are combinable for the same rationale as set forth above with respect to claim 26.

Claim 47:

Nixon et al. does not explicitly describe different states of a motor as described below. However, Deans et al. teaches the different states of a motor as described below.

Regarding claim 47, Deans et al. describes the system of claim 45, wherein the plurality of different states ramp up or ramp down a motor speed of a motor of the at least one of the fluid-handling devices. **(Roberson et al.: "providing a control signal to regulate the speed of variable speed motor 12" page 18, lines 11-12; "actuates or regulates a set of outputs for actuating hardware such as solenoids and variable speed motor drive circuitry." page 18, lines 6-7; page 18, lines 5-12; figures 5, 7)**

Nixon et al. and Deans et al. are combinable for the same rationale as set forth above with respect to claim 26.

Claim 49:

Nixon et al. does not explicitly describe a process recipe as described below. However, Deans et al. teaches the process recipe as described below.

Regarding claim 49, Deans et al. describes the system of claim 40, wherein at least some of the received instructions identify a process recipe in which a collection of target states are targeted for at least a plurality of the fluid-handling devices. **(Deans et al.: "For example, the subsea communication hub 28 can be configured to trigger on predefined subsea events, such as choke adjustments or valve closures. The subsea communication hub 28 will recognize the event and activate a trigger without operator intervention (based on a predefined activity matrix)." Paragraph 0038; "In addition, the subsea communication hub 28 can be configured to conduct autonomous processing of data and control based upon**

input from a single or multiple instruments." Paragraph 0037; "As a result, the subsea communication hub 28 can be removed from operation for service or repair without detrimental effects upon ongoing well production." Paragraph 0035; paragraphs 0035, 0036, 0037, 0038, 0041, 0042, 0062, 0063, 0064, 0065, 0069, 0070; figures 1, 1b, 5, 6, 7)

Nixon et al. and Deans et al. are combinable for the same rationale as set forth above with respect to claim 26.

Claim 50:

Nixon et al. does not explicitly describe automatic mode as described below. However, Deans et al. teaches the automatic mode as described below.

Regarding claim 50, Deans et al. describes the system of claim 40, wherein at least some of the received instructions identify an automatic mode in which a collection of target states are computed to operate within process constraints. **(Deans et al.: "In addition, the subsea communication hub 28 can be configured to conduct autonomous processing of data and control based upon input from a single or multiple instruments." Paragraph 0037; "For example, the subsea communication hub 28 can be configured to trigger on predefined subsea events, such as choke adjustments or valve closures. The subsea communication hub 28 will recognize the event and activate a trigger without operator intervention (based on a predefined activity matrix)." Paragraph 0038; "As a result, the subsea communication hub 28 can be removed from operation for service or repair without detrimental effects upon ongoing well production." Paragraph 0035; paragraphs 0035, 0036, 0037, 0038, 0041, 0042, 0062, 0063, 0064, 0065, 0069, 0070; figures 1, 1b, 5, 6, 7)**

Nixon et al. and Deans et al. are combinable for the same rationale as set forth above with respect to claim 26.

Claim 55:

Regarding claim 55, Nixon et al. describes the system of claim 40, comprising:

- a remote server system having one or more processors and memory storing instructions that effectuate operations comprising: (**Nixon et al.: see servers as illustrated in figure 1 and components thereof as illustrated in figure 2; "In some process control systems, it will be necessary to implement security measures to limit inter-zone access and inter-zone operations. Security procedures will typically exist within the process control network of each individual zone 12, 14, 66 and 68, with such security controlling access to and updates of information within the zones. An extension of the intra-zone security to inter-zone communications may be implemented by a security module 86 at the inter-zone server 32. The security module 86 stores information regarding individual users or groups of users with authority for sending and receiving messages to and from the local zone 12. Upon receiving a message at the inter-zone server 32, which may include both inbound messages from remote zones 14, 66 and 68 and outbound messages from devices in the local zone 12, the communication module 82 accesses the security module 86 with identification information for the user obtained from the message. The security module 86 determines whether the user is authorized to access the target zone and may also determine whether the type of access sought is a type for which the user is**

authorized (e.g., read only authority, read/write authority, and the like). Authorized messages are transmitted by the communication module 82, while unauthorized messages are denied access, and the security module may cause the communication module to transmit notifications or alarm messages to the user sending the message, to the system administration of the local and/or remote zone, or to other locations, users or devices as dictated by the requirements of the process control system 10." Col. 9, line 46 through col. 10, line 7)

- receiving, at the remote server system, via a network, user credentials from a user device; **(Nixon et al.: "In some process control systems, it will be necessary to implement security measures to limit inter-zone access and inter-zone operations. Security procedures will typically exist within the process control network of each individual zone 12, 14, 66 and 68, with such security controlling access to and updates of information within the zones. An extension of the intra-zone security to inter-zone communications may be implemented by a security module 86 at the inter-zone server 32. The security module 86 stores information regarding individual users or groups of users with authority for sending and receiving messages to and from the local zone 12. Upon receiving a message at the inter-zone server 32, which may include both inbound messages from remote zones 14, 66 and 68 and outbound messages from devices in the local zone 12, the communication module 82 accesses the security module 86 with identification information for the user obtained from the message. The security module 86 determines**

whether the user is authorized to access the target zone and may also determine whether the type of access sought is a type for which the user is authorized (e.g., read only authority, read/write authority, and the like). Authorized messages are transmitted by the communication module 82, while unauthorized messages are denied access, and the security module may cause the communication module to transmit notifications or alarm messages to the user sending the message, to the system administration of the local and/or remote zone, or to other locations, users or devices as dictated by the requirements of the process control system 10." Col. 9, line 46 through col. 10, line 7)

- identifying, with the remote server system, an account based on the user credentials, the account including identifiers of the oil well, the petro water disposal or re- injection facility, or the petroleum pumping station and at least one other facility; **(Nixon et al.: see the account information for each user and the security information for various zones – i.e., facilities – that the user can access as described in col. 10, lines 8-23; "In some process control systems, it will be necessary to implement security measures to limit inter-zone access and inter-zone operations. Security procedures will typically exist within the process control network of each individual zone 12, 14, 66 and 68, with such security controlling access to and updates of information within the zones. An extension of the intra-zone security to inter-zone communications may be implemented by a security module 86 at the inter-zone server 32. The**

security module 86 stores information regarding individual users or groups of users with authority for sending and receiving messages to and from the local zone 12. Upon receiving a message at the inter-zone server 32, which may include both inbound messages from remote zones 14, 66 and 68 and outbound messages from devices in the local zone 12, the communication module 82 accesses the security module 86 with identification information for the user obtained from the message. The security module 86 determines whether the user is authorized to access the target zone and may also determine whether the type of access sought is a type for which the user is authorized (e.g., read only authority, read/write authority, and the like). Authorized messages are transmitted by the communication module 82, while unauthorized messages are denied access, and the security module may cause the communication module to transmit notifications or alarm messages to the user sending the message, to the system administration of the local and/or remote zone, or to other locations, users or devices as dictated by the requirements of the process control system 10." Col. 9, line 46 through col. 10, line 7; col. 10, lines 8-23; col. 10, lines 24-44; col. 10, lines 45-67; Col. 2, lines 28-41; col. 1, lines 24-51)

- receiving from the user device, at the remote server system, a request corresponding to at least one of the received instructions, the request including an identifier of the oil well, the petro water disposal or re-injection facility, or the petroleum pumping station; **(Nixon et al.: "In some process control systems, it**

will be necessary to implement security measures to limit inter-zone access and inter-zone operations. Security procedures will typically exist within the process control network of each individual zone 12, 14, 66 and 68, with such security controlling access to and updates of information within the zones. An extension of the intra-zone security to inter-zone communications may be implemented by a security module 86 at the inter-zone server 32. The security module 86 stores information regarding individual users or groups of users with authority for sending and receiving messages to and from the local zone 12. Upon receiving a message at the inter-zone server 32, which may include both inbound messages from remote zones 14, 66 and 68 and outbound messages from devices in the local zone 12, the communication module 82 accesses the security module 86 with identification information for the user obtained from the message. The security module 86 determines whether the user is authorized to access the target zone and may also determine whether the type of access sought is a type for which the user is authorized (e.g., read only authority, read/write authority, and the like). Authorized messages are transmitted by the communication module 82, while unauthorized messages are denied access, and the security module may cause the communication module to transmit notifications or alarm messages to the user sending the message, to the system administration of the local and/or remote zone, or to other locations, users or devices as dictated by the requirements of the process control system 10." Col. 9, line 46 through col.

10, line 7; col. 10, lines 8-23; col. 10, lines 24-44; col. 10, lines 45-67; Col. 2, lines 28-41; col. 1, lines 24-51)

Nixon et al. does not explicitly describe an Internet Protocol address as described below. However, Deans et al. teaches the Internet Protocol address as described below.

- identifying, with the remote server system, an Internet Protocol address at which the network interface is reachable based on the identifier of the oil well, the petro water disposal or re-injection facility, or the petroleum pumping station; and **(Deans et al.: "Each sensor and/or control device can be considered an independent network node on an IP network, with the sensor and/or control device assigned an IP address for purposes of communications." Paragraph 0030; "The source IP address specifies the IP address of the source node (the node that originates the message) and the destination IP address specifies the IP address of the destination node (the node receiving a packet). Routing of packets between a source node and a destination node is based on the source and destination addresses." Paragraph 0026; paragraphs 0026, 0028, 0029, 0030, 0031; Nixon et al.: "The inbound messages contain information identifying the component or components of the local zone 12 to which the inbound message is directed. After performing any necessary processing of the inbound message, the inter-zone server transmits the inbound message to the component or components of the local zone 12 over the bus 34." Col. 7, lines 64 through col. 8, line 2; "The reference information may take the form**

of, for example, "//ZoneName/NodeName/ . . .," or any other desired form. It will be understood that zone names must be unique within the process control system 10 to resolve any inter-zone references without conflict." Col. 8, lines 24-28; col. 8, lines 20-37; col. 8, lines 39-56; figures 1, 2)

- sending, from the remote server system, the at least one of the received instructions to the identified Internet Protocol address in response to the request. **(Deans et al.: "Each sensor and/or control device can be considered an independent network node on an IP network, with the sensor and/or control device assigned an IP address for purposes of communications." Paragraph 0030; "The source IP address specifies the IP address of the source node (the node that originates the message) and the destination IP address specifies the IP address of the destination node (the node receiving a packet). Routing of packets between a source node and a destination node is based on the source and destination addresses." Paragraph 0026; paragraphs 0026, 0028, 0029, 0030, 0031; Nixon et al.: "Generally speaking, the controllers 24 and 26 receive signals from the field devices 38 and 40, execute process control routines and provide control signals to the devices 38 and 40 to thereby implement control of the process 10." Col. 5, lines 9-13; "As with the outbound messages, the inter-zone server 32 may be configured to perform processing on the information in the inbound messages, such as performing security checks, translation, version control, and the like as discussed above. The inbound messages contain information identifying the component or**

components of the local zone 12 to which the inbound message is directed. After performing any necessary processing of the inbound message, the inter-zone server transmits the inbound message to the component or components of the local zone 12 over the bus 34." Col. 7, line 59 through col. 8, line 2; col. 3, line 46 through col. 4, line 19; figures 1, 2)

Nixon et al. and Deans et al. are combinable for the same rationale as set forth above with respect to claim 26.

10. ***Claims 29 and 48*** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 7,289,994 (Nixon et al.) in view of U.S. Patent Publication No. 2004/0262008 (Deans et al.) and further in view of U.S. Patent Publication No. 2001/0032518 (Boger et al.).

Claim 29:

Nixon et al. and Deans et al. do not explicitly describe oscillating a physical state as described below. However, Boger et al. teaches the oscillating a physical state as described below.

Regarding claim 29, Boger et al. describes the method of claim 26, wherein the plurality of different states oscillate a physical state of the at least one of the fluid-handling devices. **(Boger et al.: "Problems often occur when the controller is constantly adjusting the BIAS to keep it correct. For example, if the valve 10 sticks in a certain position (such as when there is an obstacle in the valve or a problem exists with the air 32), the controller tries to**

move the valve without success. Attempting to move the valve, the controller continually adjusts the BIAS towards zero. Once the valve 10 becomes unstuck, the BIAS (which is at or near zero) is wrong. The controller must then adjust the BIAS to its proper position, which may take a long time. As a result, the valve 10 would stay closed for some length of time before the BIAS was corrected." Paragraph 0077; paragraphs 0003, 0004, 0076, 0077, 0132, 0133, 0147, 0227; figure 1)

One of ordinary skill in the art would have recognized that applying the known technique of Nixon et al., namely, communication between multiple zones of a process control system, and the known techniques of Deans et al., namely, communication and control of a subsea oil well from a surface facility, with the known techniques of Boger et al., namely, a valve positioning system, would have yielded predictable results and resulted in an improved system. Accordingly, applying the teachings of Nixon et al. to provide communication and control mechanisms for the communication between process control zones and the teachings of Deans et al. to provide communication and control mechanisms for the automatic control and maintenance of an underwater oil platform with the teachings of Boger et al. to provide various control techniques for valves would have been recognized by those of ordinary skill in the art as resulting in an improved process communication and control system (i.e., controlling fluid control devices using into different states and valve control mechanisms of Nixon et al. based on the teachings of using controlling devices into different states in Deans et al. and different valve control mechanisms in Boger et al.).

Claim 48:

Nixon et al. and Deans et al. do not explicitly describe oscillating a physical state as described below. However, Boger et al. teaches the oscillating a physical state as described below.

Regarding claim 48, Boger et al. describes the system of claim 45, wherein the plurality of different states oscillate a physical state of the at least one of the fluid-handling devices. **(Boger et al.: "Problems often occur when the controller is constantly adjusting the BIAS to keep it correct. For example, if the valve 10 sticks in a certain position (such as when there is an obstacle in the valve or a problem exists with the air 32), the controller tries to move the valve without success. Attempting to move the valve, the controller continually adjusts the BIAS towards zero. Once the valve 10 becomes unstuck, the BIAS (which is at or near zero) is wrong. The controller must then adjust the BIAS to its proper position, which may take a long time. As a result, the valve 10 would stay closed for some length of time before the BIAS was corrected." Paragraph 0077; paragraphs 0003, 0004, 0076, 0077, 0132, 0133, 0147, 0227; figure 1)**

Nixon et al., Deans et al., and Boger et al. are combinable for the same rationale as set forth above with respect to claim 29.

11. ***Claims 35 and 54*** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 7,289,994 (Nixon et al.) in view of U.S. Patent Publication No. 2009/0149969 (Slupphaug et al.).

Claim 35:

Nixon et al. does not explicitly describe a proportional-integral-derivative controller as described below. However, Slupphaug et al. teaches the proportional-integral-derivative controller as described below.

Regarding claim 35, Slupphaug et al. and Nixon et al. describe the method of claim 21, wherein a given one of the fluid-handling devices comprises a proportional-integral-derivative controller, and wherein at least some of the translated instructions adjust a set point of the proportional-integral-derivative controller. **(Slupphaug et al.: "a set of PID (Proportional+Integral+Derivative) controllers." paragraph 0066; "The algorithms may be based on dynamic and/or steady state components, such as PID controllers, dynamic and/or steady-state mass-, energy-, and momentum balances." Paragraph 0107; paragraphs 0010, 0066, 0107; figure 2; Nixon et al.: "A process control system includes multiple zones containing process control network communicatively interconnected to exchange information necessary to monitor the system and to perform process control. Each zone may include an inter-zone server that controls the exchange of information between the zones via communication links. In addition to controlling the routing of information between the zones, the inter-zone servers may perform additional processing on the information being exchanged, such as security monitoring, language translation and version control." Abstract; "The present invention relates generally to process control systems and, more particularly, to a process control network made up of plurality of communicatively interconnected process control networks that can exchange data." Col. 1,**

lines 17-20; col. 4, lines 1-19; col. 4, lines 33-54; col. 5, lines 14-35; col. 7, lines 1-25; figures 1, 2)

One of ordinary skill in the art would have recognized that applying the known technique of Nixon et al., namely, communication between multiple zones of a process control system, with the known techniques of Slupphaug et al., namely, control and monitoring system for an oil and/or gas system, would have yielded predictable results and resulted in an improved system. Accordingly, applying the teachings of Nixon et al. to provide communication and control mechanisms for the communication between process control zones with the teachings of Slupphaug et al.to use various control mechanisms for an oil and gas control system would have been recognized by those of ordinary skill in the art as resulting in an improved process communication and control system (i.e., controlling fluid control devices using various control mechanisms of Nixon et al. based on the teachings of using various control mechanisms for an oil/gas control system in Slupphaug et al.).

Claim 54:

Nixon et al. does not explicitly describe a proportional-integral-derivative controller as described below. However, Slupphaug et al. teaches the proportional-integral-derivative controller as described below.

Regarding claim 54, Slupphaug et al. and Nixon et al. describe the system of claim 40, wherein a given one of the fluid-handling devices comprises a proportional-integral-derivative controller, and wherein at least some of the translated instructions adjust a set point of the proportional-integral-derivative controller. **(Slupphaug et al.: "a set of PID**

(Proportional+Integral+Derivative) controllers." paragraph 0066; "The algorithms may be based on dynamic and/or steady state components, such as PID controllers, dynamic and/or steady-state mass-, energy-, and momentum balances." Paragraph 0107; paragraphs 0010, 0066, 0107; figure 2; Nixon et al.: "A process control system includes multiple zones containing process control network communicatively interconnected to exchange information necessary to monitor the system and to perform process control. Each zone may include an inter-zone server that controls the exchange of information between the zones via communication links. In addition to controlling the routing of information between the zones, the inter-zone servers may perform additional processing on the information being exchanged, such as security monitoring, language translation and version control." Abstract; "The present invention relates generally to process control systems and, more particularly, to a process control network made up of plurality of communicatively interconnected process control networks that can exchange data." Col. 1, lines 17-20; col. 4, lines 1-19; col. 4, lines 33-54; col. 5, lines 14-35; col. 7, lines 1-25; figures 1, 2)

Nixon et al. and Slupphaug et al. are combinable for the same rationale as set forth above with respect to claim 35.

12. ***Claims 37-38 and 56-57*** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 7,289,994 (Nixon et al.) in view of U.S. Patent Publication No. 2004/0262008 (Deans et al.) and further in view of U.S. Patent Publication No. 2009/0055029 (Roberson et al.).

Claim 37:

Nixon et al. and Deans et al. do not explicitly describe a smartphone as described below. However, Roberson et al. teaches the smartphone as described below.

Regarding claim 37, Roberson et al. describes the method of claim 36, wherein the user device is a smartphone executing a smartphone application that communicates with the remote server system via an application program interface. **(Roberson et al.: "Remote computer 91 may be a personal computer, desktop computer, laptop computer, mini computer, or mainframe computer, for example, but remote computer 91 may also be a wireless personal digital assistant (PDA) such as a BlackBerry.RTM. or Palm.RTM. handheld device or cell phone that communicates with well manager 100 via a wireless internet or email connection." Paragraph 0070; paragraphs 0061, 0062, 0063, 0064; figures 8, 9)**

One of ordinary skill in the art would have recognized that applying the known technique of Nixon et al., namely, communication between multiple zones of a process control system, and the known techniques of Deans et al., namely, communication and control of a subsea oil well from a surface facility, with the known techniques of Roberson et al., namely, well control and monitoring system and method, would have yielded predictable results and resulted in an improved system. Accordingly, applying the teachings of Nixon et al. to provide communication and control mechanisms for the communication between process control zones and the teachings of Deans et al. to provide communication and control mechanisms for the automatic control and maintenance of an underwater oil platform with the teachings of Roberson et al. to provide various access mechanisms for a well control and monitoring system would have been

recognized by those of ordinary skill in the art as resulting in an improved process communication and control system (i.e., controlling fluid control devices using into different states and different user interfaces of Nixon et al. based on the teachings of using controlling devices into different states in Deans et al. and different user interfaces in Roberson et al.).

Claim 38:

Nixon et al. and Deans et al. do not explicitly describe a web interface as described below. However, Roberson et al. teaches the web interface as described below.

Regarding claim 38, Roberson et al. describes the method of claim 36, wherein receiving from the user device the request corresponding to the at least one of the received instructions comprises: receiving the request from a web interface in a web browser executing on the user device. **(Roberson et al.: "The graphical user interface 180 may be generated by a standard web browser application 240 such as Internet Explorer.RTM. or Netscape.RTM. running on computer system 102 that displays as a web page HyperText mark-up language (HTML) code generated concurrently by well manager application 220 and web server application 230, or alternatively, the graphical user interface 180 may be generated directly by well manager application 220 (using OS 210 resources as appropriate)." Paragraph 0063; paragraphs 0061, 0062, 0063, 0064, 0070; figures 8, 9)**

Nixon et al., Deans et al., and Roberson et al. are combinable for the same rationale as set forth above with respect to claim 37.

Claim 56:

Nixon et al. and Deans et al. do not explicitly describe a smartphone as described below. However, Roberson et al. teaches the smartphone as described below.

Regarding claim 56, Roberson et al. describes the system of claim 55, wherein the user device is a smartphone executing a smartphone application that communicates with the remote server system via an application program interface. **(Roberson et al.: "Remote computer 91 may be a personal computer, desktop computer, laptop computer, mini computer, or mainframe computer, for example, but remote computer 91 may also be a wireless personal digital assistant (PDA) such as a BlackBerry.RTM. or Palm.RTM. handheld device or cell phone that communicates with well manager 100 via a wireless internet or email connection." Paragraph 0070; paragraphs 0061, 0062, 0063, 0064; figures 8, 9)**

Nixon et al., Deans et al., and Roberson et al. are combinable for the same rationale as set forth above with respect to claim 37.

Claim 57:

Nixon et al. and Deans et al. do not explicitly describe a web interface as described below. However, Roberson et al. teaches the web interface as described below.

Regarding claim 57, Roberson et al. describes the system of claim 55, wherein receiving from the user device the request corresponding to the at least one of the received instructions comprises: receiving the request from a web interface in a web browser executing on the user device. **(Roberson et al.: "The graphical user interface 180 may be generated by a standard web browser application 240 such as Internet Explorer.RTM. or Netscape.RTM. running on computer system 102 that displays as a web page HyperText mark-up language**

(HTML) code generated concurrently by well manager application 220 and web server application 230, or alternatively, the graphical user interface 180 may be generated directly by well manager application 220 (using OS 210 resources as appropriate)." Paragraph 0063; paragraphs 0061, 0062, 0063, 0064, 0070; figures 8, 9)

Nixon et al., Deans et al., and Roberson et al. are combinable for the same rationale as set forth above with respect to claim 37.

Conclusion

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher E. Everett whose telephone number is (571)272-2851. The examiner can normally be reached on Monday through Friday from 8:00 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Lo can be reached on 571-272-9774. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/C. E. E./
Examiner, Art Unit 2121

/KENNETH LO/
Supervisory Patent Examiner, Art Unit 2121

Notice of References Cited	Application/Control No. 14/147,190	Applicant(s)/Patent Under Reexamination PHILLIPS, AARON	
	Examiner Christopher E. Everett	Art Unit 2121	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2009/0055029	02-2009	ROBERSON et al.	700/282
*	B	US-2001/0032518	10-2001	Boger et al.	73/861
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14147190	PHILLIPS, AARON
	Examiner	Art Unit
	CHRISTOPHER E EVERETT	2121

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
Search of EAST using classes, text, and inventor searches	7/22/2014	CEE
Search of sub-classes 340/853.3, 853.2, 856.3 (text search only - see search history printout)	7/22/2014	CEE
Search of sub-classes 166/336, 363, 250.1 (text search only - see search history printout)	7/22/2014	CEE
Search of PALM using inventor searches	7/22/2014	CEE
Search of sub-classes 700/1, 282, 275, 281, 42 (text search only - see search history printout)	7/22/2014	CEE
Search of sub-classes 702/6, 13, 183, 188 (text search only - see search history printout)	7/22/2014	CEE
Search of sub-class 709/224 (text search only - see search history printout)	7/22/2014	CEE
Search of CPC G05D7/0676;G05B9/02;E21B47/00;G05B2219/23472 using text	7/22/2014	CEE
Update of EAST and class searches described above	3/6/2015	CEE

INTERFERENCE SEARCH

/CHRISTOPHER E EVERETT/ Examiner.Art Unit 2121	

US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

/CHRISTOPHER E EVERETT/ Examiner.Art Unit 2121	

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L41	1	("20090055029").PN.	US-PGPUB; USPAT; EPO	OR	OFF	2015/03/06 14:23
L42	46	(US-20120316658-$ or US-20080208475-$ or US-20060271299-$ or US-20060240818-$ or US-20050092523-$ or US-20040231851-$ or US-20040088115-$ or US-20030182463-$ or US-20020169645-$ or US-20040262008-$ or US-20020112860-$ or US-20090149969-$ or US-20100147510-$ or US-20050096846-$ or US-20110231024-$ or US-20020161685-$ or US-20120310582-$ or US-20010032518-$ or US-20140163749-$ or US-20090055029-$).did. or (US-7148812-$ or US-7958938-$ or US-7967066-$ or US-7845404-$ or US-6913083-$ or US-5732776-$ or US-4052703-$ or US-8179279-$ or US-5149443-$ or US-8386059-$ or US-8131510-$ or US-7289994-$ or US-8373418-$ or US-8312320-$ or US-8290737-$ or US-7931090-$ or US-7921916-$ or US-6801135-$ or US-6061603-$ or US-6192980-$ or US-6435022-$ or US-4823749-$ or US-8208478-$ or US-7347271-$ or US-5959547-$).did. or (WO-2008124765-$).did.	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 14:45
L43	2	42 and pid	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 14:45
L44	5307	700/1,282,275,281,42.ccls.	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
L45	6733	702/6,13,183,188.ccls.	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
L46	24915	709/224.ccls.	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
L47	1044	166/336,363,250.1.ccls.	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
L48	530	340/853.3,853.2,856.3.ccls.	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
L49	38241	L44 L45 L46 L47 L48	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10

L50	197343	(oil hydrocarbon (hydro adj2 carbon) gas) near2 (well site disposal station)	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
L51	2561451	(controller control device) near2 (operate operat$4 adjust drive move close)	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
L52	39	((AARON) near2 (PHILLIPS)).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2015/03/06 16:10
L53	5	((AARON) near2 (PHILLIPS)).INV.	EPO; JPO; DERWENT	OR	ON	2015/03/06 16:10
L54	2	(AMPLISINE adj2 LABS).as.	EPO; JPO; DERWENT	OR	ON	2015/03/06 16:10
L55	6	real-time and onsite and internet and communication	EPO; JPO; DERWENT	OR	ON	2015/03/06 16:10
L56	20	(US-20040262008-$ or US-20120316658-$ or US-20080208475-$ or US-20060271299-$ or US-20060240818-$ or US-20050092523-$ or US-20040231851-$ or US-20040088115-$ or US-20030182463-$ or US-20020169645-$ or US-20020112860-$).did. or (US-7148812-$ or US-7958938-$ or US-7967066-$ or US-7845404-$ or US-6913083-$ or US-5732776-$ or US-4052703-$ or US-8179279-$).did. or (WO-2008124765-$).did.	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
L57	0	L56 and (oil near2 water near2 separation)	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
L58	7	L56 and (oil near2 water)	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
L59	5538	(oil near2 water near2 separation)	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
L60	2804	L59 and pump	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
L61	1031	L60 and (oil near2 well)	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
L62	287	L61 and (oil near2 level)	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
L63	4	L62 and ("700"/$.ccls. "702"/$.ccls.)	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
L64	1822	L49 and L50	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10

L65	2334181	(internet network (web adj2 server))	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
L66	19758	(local autonomous independent) near2 (controller control device) near2 (operate operat$4 adjust drive move close)	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
L67	846	L51 and L64	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
L68	432	L67 and L65	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
L69	411	L50 and L66	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
L70	10	L68 and L69	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
L71	17	L50 and L66 and L49	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
L72	652812	(remote internet network) near2 (control monitor control$4 monitor$4 command)	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
L73	11860	L72 and L50	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
L74	139	L73 and L66	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
L75	192	L52 L53 L54 L55 L57 L58 L63 L70 L71 L74	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
L76	192	L75	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
L77	192	L76	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
L78	2737	G05D7/0676;G05B9/02;E21B47/00;G05B2219/23472.cpc.	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
L79	706	L78 and L50	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10

L80	492	L79 and (oil near2 well)	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
L81	16	L80 and (oil near2 level)	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
L82	16	L78 and L66 and L65	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
L83	219	L81 L82 L77	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10
L84	219	L83	US-PGPUB; USPAT; EPO	OR	ON	2015/03/06 16:10

EAST Search History (Interference)

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3/6/2015 4:15:04 PM
C:\Users\ceverett\Documents\EAST\Workspaces\14147190.wsp

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14147190	PHILLIPS, AARON
	Examiner	Art Unit
	CHRISTOPHER E EVERETT	2121

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	07/22/2014	03/06/2015							
	1	✓	-							
	2	✓	-							
	3	✓	-							
	4	✓	-							
	5	✓	-							
	6	✓	-							
	7	✓	-							
	8	✓	-							
	9	✓	-							
	10	✓	-							
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	30		✓							
	31		✓							
	32		✓							
	33		✓							
	34		✓							
	35		✓							
	36		✓							

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14147190	PHILLIPS, AARON
	Examiner	Art Unit
	CHRISTOPHER E EVERETT	2121

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	07/22/2014	03/06/2015							
	37		✓							
	38		✓							
	39		✓							
	40		✓							
	41		✓							
	42		✓							
	43		✓							
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	53		✓							
	54		✓							
	55		✓							
	56		✓							
	57		✓							
	58		✓							
	59		✓							

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Phillips	§	Group Art Unit: 2121
	§	Confirmation No.: 7979
Serial No.: 14/147,190	§	Examiner: EVERETT, CHRISTOPHER E.
Filed: 3 January 2014	§	
	§	
For: REMOTE CONTROL OF FLUID-HANDLING DEVICES	§	Atty. Docket: 000314.000010
	§	

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

CERTIFICATE OF TRANSMISSION OR MAILING
37 C.F.R. 1.8

I hereby certify that this correspondence is being transmitted by facsimile to the United States Patent and Trademark Office in accordance with 37 C.F.R. § 1.6(d), or is being transmitted via the Office electronic filing system in accordance with 37 C.F.R. § 1.6(a)(4), or is being deposited with the U.S. Postal Service with sufficient postage as First Class Mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the date below:

5 February 2015	/Josh Tucker/
Date	Josh Tucker

Commissioner:

AMENDMENT AND RESPONSE
TO NON-FINAL OFFICE ACTION ISSUED ON 13 AUGUST 2014

In response to the above-noted office action, Applicants amend and remark as follows.

Authorization for Extensions of Time and Payment of Fees

In accordance with 37 C.F.R. § 1.136, Applicants hereby provide a general authorization to treat this and any future reply requiring an extension of time as incorporating a request thereof. The Commissioner is authorized to charge any additional fees that may be required to the credit card listed on the attached PTO-2038. However, if the PTO-2038 is missing, if the amount listed thereon is insufficient, or if the amount is unable to be charged to the credit card for any other reason, the Commissioner is authorized to charge Deposit Account No. 50-0259, referencing the above attorney docket number.

AMENDMENTS TO THE CLAIMS

The following is a complete listing of the claims, which replaces all previous versions and listings of the claims.

1-20. (canceled)

21. (new) A method, comprising:

receiving, via a network interface, a plurality of user-directed instructions to control fluid-handling devices that monitor or control one or more fluids at an oil well, a petro water disposal or re-injection facility, or a petroleum pumping station, the plurality of instructions being received encoded in a shared protocol;

obtaining a target state of at least one of the fluid-handling devices based on at least some of the plurality of instructions;

for each of the plurality of instructions, selecting a respective protocol or protocols from among a plurality of protocols different from the shared protocol, wherein the respective fluid-handling device or devices to which the respective instruction is directed are responsive to the selected respective protocol or protocols, wherein at least some of the selected protocols are different from one another;

translating each received instructions into one or more translated instructions encoded in the selected respective protocol or protocols; and

sending each translated instructions to at least the fluid-handling device to which the respective translated instruction is directed, wherein at least some of the translated instructions are effective to cause the at least one of the fluid-handling devices to attempt to achieve the target state.

22. (new) The method of claim 21, wherein selecting a respective protocol or protocols comprises:

parsing, from at least one of the received instructions, an identifier of one of the

fluid-handling devices; and

based on the parsed identifier, retrieving from memory one or more records, including an identifier of at least one selected respective protocol and an identifier of a bus to which the identified fluid-handling device is communicatively coupled.

23. (new) The method of claim 22, wherein sending each translated instructions to at least the fluid-handling device to which the respective instruction is directed comprises:

sending an address of the identified fluid-handling device on the identified bus in association with at least some of the translated instructions.

24. (new) The method of claim 22, wherein sending each translated instructions to at least the fluid-handling device to which the respective instruction is directed comprises:

providing at least some of the translated instructions to a link-layer device connected to the identified bus; and

encoding the translated instructions with the link-layer device in accordance with the physical medium by which the identified bus is implemented.

25. (new) The method of claim 22, wherein sending each translated instruction to at least the fluid-handling device to which the respective instruction is directed comprises:

providing at least some of the translated instructions to a digital-to-analog converter connected to the identified bus; and

sending the at least some of the translated instructions to the identified fluid-handling device with the digital-to-analog converter.

26. (new) The method of claim 21, wherein:

obtaining a target state of at least one of the fluid-handling devices based on at least some of the plurality of instructions comprises:

computing a plurality of different target states of the at least one of the fluid-handling devices, the plurality of different states each corresponding to different times; and

the at least some of the translated instructions are effective to cause the at least one of the fluid-handling devices to attempt to achieve the plurality of different target state at the different times.

27. (new) The method of claim 26, comprising:

losing a network connection by which at least some of the plurality of user-directed instructions are received; and

after losing the network connection, continuing to cause the at least one of the fluid-handling devices to attempt to achieve the plurality of different target state at the different times and continuing to execute instructions among the plurality of received instructions received prior to losing the network connection before entering an automatic mode.

28. (new) The method of claim 26, wherein the plurality of different states ramp up or ramp down a motor speed of a motor of the at least one of the fluid-handling devices.

29. (new) The method of claim 26, wherein the plurality of different states oscillate a physical state of the at least one of the fluid-handling devices.

30. (new) The method of claim 21, wherein at least some of the received instructions identify a process recipe in which a collection of target states are targeted for at least a plurality of the fluid-handling devices.

31. (new) The method of claim 21, wherein at least some of the received instructions identify an automatic mode in which a collection of target states are computed to operate within process constraints.

32. (new) The method of claim 21, wherein at least some of the received instructions correspond to a manual mode in which an individual one of the fluid-handling devices is remotely controlled by a user.

33. (new) The method of claim 21, comprising:

before sending at least one of the translated instructions, accessing a constraint value stored in memory;

determining that the at least one of the translated instructions will not violate the constraint value; and

in response to the determination, sending the at least one of the translated instructions.

34. (new) The method of claim 21, comprising;

receiving additional instructions via the network interface;

determining that the additional instructions are directed to a given fluid-handling device responsive to the shared protocol; and

in response to the determination, sending an un-translated instruction to the given fluid-handling device.

35. (new) The method of claim 21, wherein a given one of the fluid-handling devices comprises a proportional-integral-derivative controller, and wherein at least some of the translated instructions adjust a set point of the proportional-integral-derivative controller.

36. (new) The method of claim 21, comprising:

receiving, at a remote server system, via a network, user credentials from a user device;

identifying, with the remote server system, an account based on the user credentials, the account including identifiers of the oil well, the petro water disposal or re-injection facility, or the petroleum pumping station and at least one other facility;

receiving from the user device, at the remote server system, a request corresponding to at least one of the received instructions, the request including an identifier of the oil well, the petro water disposal or re-injection facility, or the petroleum pumping station;

identifying, with the remote server system, an Internet Protocol address at which the network interface is reachable based on the identifier of the oil well, the petro water disposal or re-injection facility, or the petroleum pumping station; and

sending, from the remote server system, the at least one of the received instructions to the identified Internet Protocol address in response to the request.

37. (new) The method of claim 36, wherein the user device is a smartphone executing a smartphone application that communicates with the remote server system via an application program interface.

38. (new) The method of claim 36, wherein receiving from the user device the request corresponding to the at least one of the received instructions comprises:

receiving the request from a web interface in a web browser executing on the user device.

39. (new) The method of claim 21, comprising:

producing oil or gas;

disposing of petro water; or

re-injecting petro water.

40. A system, comprising:

one or more processors;

a network interface coupled to at least some of the processors;

a plurality of link-layer devices coupled to at least some of the processors, each link-layer device configured to communicate with one or more fluid-handling devices via one or more busses; and

memory storing instructions that when executed by at least some of the processors effectuate operations comprising:

receiving, via the network interface, a plurality of user-directed instructions to control fluid-handling devices that monitor or control one or more fluids at an oil well, a petro water disposal or re-injection facility, or a petroleum pumping station, the plurality of instructions being received encoded in a shared protocol;

obtaining a target state of at least one of the fluid-handling devices based on at least some of the plurality of instructions;

for each of the plurality of instructions, selecting a respective protocol or protocols from among a plurality of protocols different from the shared protocol, wherein the respective fluid-handling device or devices to which the respective instruction is directed are responsive to the selected respective protocol or protocols, wherein at least some of the selected protocols are different from one another;

translating each received instructions into one or more translated instructions encoded in the selected respective protocol or protocols; and

sending each translated instructions to at least the fluid-handling device to which the respective translated instruction is directed via one of the link-layer devices, wherein at least some of the translated instructions are effective to cause the at least one of the fluid-handling devices to attempt to achieve the target state.

41. (new) The system of claim 40, wherein selecting a respective protocol or protocols comprises:

parsing, from at least one of the received instructions, an identifier of one of the fluid-handling devices; and

based on the parsed identifier, retrieving from memory one or more records, including an identifier of at least one selected respective protocol and an identifier of a bus to which the identified fluid-handling device is communicatively coupled.

42. (new) The system of claim 41, wherein sending each translated instructions to at least the fluid-handling device to which the respective instruction is directed comprises:

sending an address of the identified fluid-handling device on the identified bus in association with at least some of the translated instructions.

43. (new) The system of claim 41, wherein sending each translated instructions to at least the fluid-handling device to which the respective instruction is directed comprises:

providing at least some of the translated instructions to a link-layer device connected to the identified bus; and

encoding the translated instructions with the link-layer device in accordance with the physical medium by which the identified bus is implemented.

44. (new) The system of claim 41, wherein sending each translated instruction to at least the fluid-handling device to which the respective instruction is directed comprises:

providing at least some of the translated instructions to a digital-to-analog converter connected to the identified bus; and

sending the at least some of the translated instructions to the identified fluid-handling device with the digital-to-analog converter.

45. (new) The system of claim 40, wherein:

obtaining a target state of at least one of the fluid-handling devices based on at least some of the plurality of instructions comprises:

computing a plurality of different target states of the at least one of the fluid-handling devices, the plurality of different states each corresponding to different times; and

the at least some of the translated instructions are effective to cause the at least one of the fluid-handling devices to attempt to achieve the plurality of different target state at the different times.

46. (new) The system of claim 45, the operations comprising:

losing a network connection by which at least some of the plurality of user-directed instructions are received; and

after losing the network connection, continuing to cause the at least one of the fluid-handling devices to attempt to achieve the plurality of different target state at the different times and continuing to execute instructions among the plurality of received instructions received prior to losing the network connection before entering an automatic mode.

47. (new) The system of claim 45, wherein the plurality of different states ramp up or ramp down a motor speed of a motor of the at least one of the fluid-handling devices.

48. (new) The system of claim 45, wherein the plurality of different states oscillate a physical state of the at least one of the fluid-handling devices.

49. (new) The system of claim 40, wherein at least some of the received instructions identify a process recipe in which a collection of target states are targeted for at least a plurality of the fluid-handling devices.

50. (new) The system of claim 40, wherein at least some of the received instructions identify an automatic mode in which a collection of target states are computed to operate within process constraints.

51. (new) The system of claim 40, wherein at least some of the received instructions correspond to a manual mode in which an individual one of the fluid-handling devices is remotely controlled by a user.

52. (new) The system of claim 40, the operations comprising:

before sending at least one of the translated instructions, accessing a constraint value stored in memory;

determining that the at least one of the translated instructions will not violate the constraint value; and

in response to the determination, sending the at least one of the translated instructions.

53. (new) The system of claim 40, the operations comprising;

receiving additional instructions via the network interface;

determining that the additional instructions are directed to a given fluid-handling device responsive to the shared protocol; and

in response to the determination, sending an un-translated instruction to the given fluid-handling device.

54. (new) The system of claim 40, wherein a given one of the fluid-handling devices comprises a proportional-integral-derivative controller, and wherein at least some of the translated instructions adjust a set point of the proportional-integral-derivative controller.

55. (new) The system of claim 40, comprising:

a remote server system having one or more processors and memory storing instructions that effectuate operations comprising:

receiving, at the remote server system, via a network, user credentials from a user device;

identifying, with the remote server system, an account based on the user credentials, the account including identifiers of the oil well, the petro water disposal or re-injection facility, or the petroleum pumping station and at least one other facility;

receiving from the user device, at the remote server system, a request corresponding to at least one of the received instructions, the request including an identifier of the oil well, the petro water disposal or re-injection facility, or the petroleum pumping station;

identifying, with the remote server system, an Internet Protocol address at which the network interface is reachable based on the identifier of the oil well, the petro water disposal or re-injection facility, or the petroleum pumping station; and

sending, from the remote server system, the at least one of the received instructions to the identified Internet Protocol address in response to the request.

56. (new) The system of claim 55, wherein the user device is a smartphone executing a smartphone application that communicates with the remote server system via an application program interface.

57. (new) The system of claim 55, wherein receiving from the user device the request corresponding to the at least one of the received instructions comprises:

receiving the request from a web interface in a web browser executing on the user device.

58. (new) The system of claim 40, comprising:

an oil or gas well fluidly coupled to the fluid-handling devices;

a petro water disposal facility fluidly coupled to the fluid-handling devices; or

a petro water reinjection facility fluidly coupled to the fluid-handling devices.

59. (new) The system of claim 40, comprising:

a plurality of fluid-handling devices coupled to at least some of the link-layer devices via at least some of a plurality of busses.

REMARKS

In the office action, the Examiner rejected claims 1-20, all of which are canceled. By this response, new claims 21-59 are added. The new claims are fully supported by the application as filed and distinguish over the art of record.

Applicants respectfully request examination of the above newly added claims. The new claims are different from the previously argued and allowed claims in the application to which this application claims priority because Applicants believe the present disclosure describes additional patentable aspects of the present inventions. Applicants stress that the new claims are not intended to be coterminous with those claims previously presented in the parent applications, as indicated by differences in claim language. As such, arguments previously presented in the parent applications should not be assumed to apply to the new claims, and arguments presented in the present application should not be assumed to apply to the claims in the parent applications. Applicants further wish to note that the disclosure of the present application contains several inventions addressing the various problems described therein and that not all such inventions must solve all described problems, as the various advances are independently useful.

Applicants respectfully submit that the newly added claims overcome or moot each issue presented in the office action and respectfully request allowance of all pending claims.

Conclusion

Applicants respectfully submit that all pending claims should be in condition for allowance. However, if the Examiner believes certain amendments are necessary to clarify the present claims or if the Examiner wishes to resolve any other issues by way of a telephone conference, the Examiner is kindly invited to contact the undersigned attorney at the telephone number indicated below.

Respectfully submitted,

Date: 5 February 2015

/Josh Tucker/

Josh Tucker
Registration No. 63809
Bracewell & Giuliani LLP.
P.O. Box 61389
Houston, TX 77208-1389
Phone No. 512-494-3623

Electronic Patent Application Fee Transmittal	
Application Number:	14147190
Filing Date:	03-Jan-2014
Title of Invention:	REMOTE CONTROL OF FLUID-HANDLING DEVICES
First Named Inventor/Applicant Name:	Aaron Phillips
Filer:	Joshua L. Tucker
Attorney Docket Number:	000314.000010

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Claims in excess of 20	2202	19	40	760
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Extension - 3 months with $0 paid	2253	1	700	700
Miscellaneous:				
		Total in USD ($)		**1460**

Electronic Acknowledgement Receipt	
EFS ID:	21415771
Application Number:	14147190
International Application Number:	
Confirmation Number:	7979
Title of Invention:	REMOTE CONTROL OF FLUID-HANDLING DEVICES
First Named Inventor/Applicant Name:	Aaron Phillips
Customer Number:	35979
Filer:	Joshua L. Tucker
Filer Authorized By:	
Attorney Docket Number:	000314.000010
Receipt Date:	05-FEB-2015
Filing Date:	03-JAN-2014
Time Stamp:	17:33:49
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$1460
RAM confirmation Number	4507
Deposit Account	
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The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Amendment/Req. Reconsideration-After Non-Final Reject	rnfoa_8-13-14.pdf	231365 2325694aa81b315c693a0c2eb991b714d87dc42f	no	14
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	32320 baa4d89f9af5cc4144f630fc8c26857a225a6e19	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	263685		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

<u>New Applications Under 35 U.S.C. 111</u>
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

<u>National Stage of an International Application under 35 U.S.C. 371</u>
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

<u>New International Application Filed with the USPTO as a Receiving Office</u>
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 14/147,190	Filing Date 01/03/2014	☐ To be Mailed

ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT **02/05/2015**

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 20	Minus	** 20	= 0	X $40 =	0
Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X $210 =	0
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	0

AMENDMENT

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/DEANNA RORIE/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/147,190	01/03/2014	Aaron Phillips	000314.000010	7979

35979 7590 08/13/2014

Bracewell & Giuliani LLP
P.O. Box 61389
Houston, TX 77208-1389

EXAMINER	
EVERETT, CHRISTOPHER E	
ART UNIT	PAPER NUMBER
2121	

NOTIFICATION DATE	DELIVERY MODE
08/13/2014	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docketing@bgllp.com

Office Action Summary	Application No.	Applicant(s)	
	14/147,190	PHILLIPS, AARON	
	Examiner	Art Unit	
	Christopher E. Everett	2121	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 January 2014*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *1-20* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-20* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☒ The drawing(s) filed on *03 January 2014* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

DETAILED ACTION

1. The present application is being examined under the pre-AIA first to invent provisions.

2. Claims 1-20 are pending.

Claim Objections

3. Claims 1 and 17 are objected to because of the following informalities: "input/output" is ambiguous as to what limitations are included or excluded. Applicant is advised that the terminology should be clarified to remove the ambiguity (e.g., input or output module; input and output module). Appropriate correction is required.

4. Claims 15-16 are objected to because of the following informalities: "oil/water" is ambiguous as to what limitations are included or excluded. Applicant is advised that the terminology should be clarified to remove the ambiguity (e.g., oil or water; oil and water). Appropriate correction is required.

5. Claim 19 is objected to because of the following informalities: The limitation "the network interface" is recited. There is insufficient antecedent basis for this limitation in the claim. Appropriate correction is required.

6. Claim 19 is objected to because of the following informalities: The limitation "the fluid-handling device" is recited. There is insufficient antecedent basis for this limitation in the claim. Appropriate correction is required.

7. Claim 19 is objected to because of the following informalities: The limitation "the fluid-handling equipment" is recited. There is insufficient antecedent basis for this limitation in the claim. Appropriate correction is required.

8. Claim 19 is objected to because of the following informalities: The limitation "the command" is recited. There is insufficient antecedent basis for this limitation in the claim (e.g., Does the command refer back to the received command?; Does the command refer back to the translated command?). Appropriate correction is required.

9. Claim 20 is objected to because of the following informalities: The limitation "the network interface" is recited. There is insufficient antecedent basis for this limitation in the claim. Appropriate correction is required.

10. Claim 20 is objected to because of the following informalities: The limitation "the fluid-handling device" is recited. There is insufficient antecedent basis for this limitation in the claim. Appropriate correction is required.

11. Claim 20 is objected to because of the following informalities: The limitation "the fluid-handling equipment" is recited. There is insufficient antecedent basis for this limitation in the claim. Appropriate correction is required.

12. Claim 20 is objected to because of the following informalities: The limitation "the command" is recited. There is insufficient antecedent basis for this limitation in the claim (e.g., Does the command refer back to the received command?; Does the command refer back to the translated command?). Appropriate correction is required.

Claim Rejections - 35 USC § 102

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

14. Claims 1-8, 11-14, 17, and 19-20 are rejected under 35 U.S.C. 102(b) as being unpatentable by U.S. Patent Publication No. 2004/0262008 (Deans et al.).

Regarding claim 1, Deans et al. describes a system for remotely controlling fluid-handling device of an oil well, a petro water disposal or re-injection facility, or a petroleum pumping station, the system comprising: **(Deans et al.: "This invention relates to communications with a subsea well, and in particular, communications with sensors and/or control devices associated with the subsea well." Paragraph 0002; paragraphs 0002, 0007; figures 1, 1B, 5, 6, 7, 8, 9, 10)**

- an input/output module operable to communicate with a fluid-handling device; **(Deans et al.: "As shown in FIG. 5, a communication pod includes various components, including a device connector 200 that is connected to one or more communications lines to various subsea or downhole sensors and/or control devices." Paragraph 0062; "Examples of control devices 20 include a flow control device (e.g., a valve), a pump, and so forth." Paragraph 0019; paragraphs 0019, 0020, 0062; figures 1, 1B, 5, 6, 7, 8, 9, 10)**

- a network interface; **(Deans et al.: "The pod also has a network connector 202 for connection to the subsea network 34." Paragraph 0062; paragraphs 0019, 0020, 0062, 0063, 0064; figures 1, 1B, 5, 6, 7, 8, 9, 10)**
- memory; and **(Deans et al.: "The cards 204 are coupled to an electronics module 206. For example, the electronics module 206 can have slots to receive the multiple cards 204. The electronics module 206 includes a processor 208 and storage 210, such as random access memory (RAM), mass storage, and so forth. Also, the electronics module 206 may include software 214 that is executable on the processor 208. Alternatively, the tasks performed by the electronics module 206 can be implemented entirely in hardware without the use of software." Paragraph 0063; paragraphs 0062, 0063, 0064; figures 1, 5)**
- one or more processors communicatively coupled to the input/output module, the network interface, and the memory, wherein the memory stores instructions that when executed by the processors cause the processors to effectuate steps comprising: **(Deans et al.: "The cards 204 are coupled to an electronics module 206. For example, the electronics module 206 can have slots to receive the multiple cards 204. The electronics module 206 includes a processor 208 and storage 210, such as random access memory (RAM), mass storage, and so forth. Also, the electronics module 206 may include software 214 that is executable on the processor 208. Alternatively, the tasks performed by the electronics module 206 can be implemented entirely in hardware without the use of software." Paragraph 0063; paragraphs 0062, 0063, 0064; figures 1, 5)**

- receiving, via the network interface, from a remote user device, a command to change a state of the fluid-handling device to a target state; **(Deans et al.: "Data and control information can also be communicated from the surface facility 32 for receipt by the pod." Paragraph 0065; "The interface 212 enables the pod to communicate according to packet-based communications (e.g., TCP/IP-based communications) over the subsea network 34." Paragraph 0064; "Production management refers to the management of the production of one or more subsea wells. For example, a well operator may decide to increase or decrease the amount of production from one or more wells." Paragraph 0069; "The data network 310 enables convenient communication between remote users (such as those associated with the data handling module 314 or production management module 312) and the topside communication hub 300 (and ultimately the subsea communication hub 28)." Paragraph 0070; paragraphs 0062, 0063, 0064, 0065, 0069, 0070; figures 5, 6, 7)**
- translating the received command into a translated command operative to cause a local controller of the fluid-handling device to drive the fluid-handling equipment to the target state, the local controller being responsive to the command and feedback from the fluid-handling device indicative of whether the fluid-handling device is in the target state; and **(Deans et al.: "The triggers can include increased data sampling rates, and/or compilations of data sets to develop data products such as pressure build up curves as well as fault prediction**

and failure avoidance functionality. Also, the subsea communication hub 28 has the capability of accepting a software download from the surface facility 32 of autonomous processing and action criteria. Software downloads from the surface facility 32 to the subsea communication hub 28 can also be performed to revise instrumentation calibration factors." Paragraph 0038; "In the inbound direction (from surface facility to the pod), received IP packets are decapsulated by the interface 212 to extract the payload, which can contain control and/or data information to be communicated to subsea or downhole sensors and/or control devices." Paragraph 0067; paragraphs 0037, 0038, 0039, 0065, 0066, 0067; figures 1, 1b, 5)

- sending the translated command to the local controller. (**Deans et al.: "For example, the subsea communication hub 28 can be configured to trigger on predefined subsea events, such as choke adjustments or valve closures." Paragraph 0038; "In the inbound direction (from surface facility to the pod), received IP packets are decapsulated by the interface 212 to extract the payload, which can contain control and/or data information to be communicated to subsea or downhole sensors and/or control devices." Paragraph 0067; paragraphs 0036, 0037, 0038, 0065, 0066, 0067; figures 1, 1b, 5)**

Regarding claim 2, Deans et al. describes the system of claim 1, wherein the memory also stores instructions that when executed by the processors cause the processors to effectuate steps comprising:

- receiving, from the fluid-handling device, sensor data indicative of the operation of the fluid-handling equipment obtained by sensors of the fluid-handling device; and **(Deans et al.: "Also, various sensors 14, 16, 18 and control devices 20 are positioned downhole in the subsea well 10. Examples of sensors 14, 16, 18 include pressure sensors, temperature sensors, flow rate sensors, shock detectors, and so forth." Paragraph 0019; paragraphs 0019, 0020, 0021; figures 1, 1B, 5, 6, 7, 8, 9, 10)**
- sending, to a remote data store, the received sensor data. **(Deans et al.: "Periodically, or in response to some triggering event, the electronics module 206 (under control of the software 212 214 and/or processor 208) communicates the stored data through the interface 212 and the network connector 202 to the subsea network 34. The data is transferred over the subsea network 34 to the surface facility 32. Data and control information can also be communicated from the surface facility 32 for receipt by the pod." Paragraph 0065; paragraphs 0062, 0063, 0064, 0065, 0066, 0069; figures 1, 1b, 5, 6, 7)**

Regarding claim 3, Deans et al. describes the system of claim 2, comprising the remote data store and a web-server, wherein the web-server is operative to perform steps comprising: **(Deans et al.: "The data handling module 314 refers to a module for collection and storage of data associated with sensors of the various wells. This may be implemented in a database to**

enable convenient user query and retrieval of measurement data, such as those collected by sensors associated with subsea wells." Paragraph 0069; paragraph 0062, 0063, 0064, 0065, 0066, 0069; figure 1, 5, 6, 7)

- receiving, from a user device, a request for a data indicative of the operation of an oil well, a petro water disposal or re-injection facility, or a petroleum pumping station coupled to the fluid-handling device; **(Deans et al.: "The data network 310 enables convenient communication between remote users (such as those associated with the data handling module 314 or production management module 312) and the topside communication hub 300 (and ultimately the subsea communication hub 28)." Paragraph 0070; "The data handling module 314 refers to a module for collection and storage of data associated with sensors of the various wells. This may be implemented in a database to enable convenient user query and retrieval of measurement data, such as those collected by sensors associated with subsea wells." Paragraph 0069; paragraphs 0059, 0069, 0070; figures 1, 5, 6, 7)**
- retrieving, from the data store, data responsive to the request from the user device; and sending, to the user device, the retrieved data for presentation to the user. **(Deans et al.: "The data handling module 314 refers to a module for collection and storage of data associated with sensors of the various wells. This may be implemented in a database to enable convenient user query and retrieval of measurement data, such as those collected by sensors associated with subsea wells." Paragraph 0069; paragraph 0069; figure 7)**

Regarding claim 4, Deans et al. describes the system of claim 3, wherein the request is a request for data indicative of an amount of oil or other type of fluid extracted from, or injected into, an oil well, a petro water disposal or re-injection facility, or a petroleum pumping station to which the fluid-handling device is coupled, and wherein the retrieved data comprises data indicative of the amount of oil, produced fluid, or flowback fluid. **(Deans et al.: "Also, various sensors 14, 16, 18 and control devices 20 are positioned downhole in the subsea well 10. Examples of sensors 14, 16, 18 include pressure sensors, temperature sensors, flow rate sensors, shock detectors, and so forth." Paragraph 0019; "During operation, data acquired by sensors are received over a line at the device connector 200, with such data provided to the electronics module 206 for storing in the storage 210. Periodically, or in response to some triggering event, the electronics module 206 (under control of the software 212 214 and/or processor 208) communicates the stored data through the interface 212 and the network connector 202 to the subsea network 34." Paragraph 0065; paragraphs 0019, 0020, 0021, 0063, 0064, 0065, 0066; figures 1, 1B, 5, 6, 7, 8, 9, 10)**

Regarding claim 5, Deans et al. describes the system of claim 3, wherein the request is a request to view alarms issued by the fluid-handling device, and wherein the retrieved data comprises data indicative of the alarms. **(Deans et al.: "The data network 310 enables convenient communication between remote users (such as those associated with the data handling module 314 or production management module 312) and the topside communication hub 300 (and ultimately the subsea communication hub 28)." Paragraph 0070; "The data handling module 314 refers to a module for collection and storage of data**

associated with sensors of the various wells. This may be implemented in a database to enable convenient user query and retrieval of measurement data, such as those collected by sensors associated with subsea wells." Paragraph 0069; "The subsea communication hub 28 can also be configured to conduct autonomous processing of data and pass along warnings to the subsea production control system 26, based upon preset criteria." Paragraph 0037; "The subsea communication hub 28 also has on-board diagnostic capabilities at the seabed. On-board diagnostics can be configured to send alerts to the surface facility 32 or to trigger some automated subsea event such as a downhole flow control device actuation or increased data acquisition log in rates to due flow interruptions or restarting." Paragraph 0039; "The data handling module 314 refers to a module for collection and storage of data associated with sensors of the various wells. This may be implemented in a database to enable convenient user query and retrieval of measurement data, such as those collected by sensors associated with subsea wells." Paragraph 0069; paragraphs 0037, 0038, 0039, 0059, 0069, 0070; figures 1, 5, 6, 7)

Regarding claim 6, Deans et al. describes the system of claim 3, wherein the retrieved data comprises messages provided to the web-server regarding attempts to address the alarms. **(Deans et al.: "The subsea communication hub 28 can also be configured to conduct autonomous processing of data and pass along warnings to the subsea production control system 26, based upon preset criteria." Paragraph 0037; "The subsea communication hub 28 also has on-board diagnostic capabilities at the seabed. On-board diagnostics can be configured to send alerts to the surface facility 32 or to trigger some automated subsea event such as a**

downhole flow control device actuation or increased data acquisition log in rates to due flow interruptions or restarting." Paragraph 0039; "The data handling module 314 refers to a module for collection and storage of data associated with sensors of the various wells. This may be implemented in a database to enable convenient user query and retrieval of measurement data, such as those collected by sensors associated with subsea wells." Paragraph 0069; paragraphs 0037, 0038, 0039, 0059, 0069, 0070; figures 1, 5, 6, 7)

Regarding claim 7, Deans et al. describes the system of claim 2, comprising the remote data store and a web-server, wherein the web-server is operative to perform steps comprising: **(Deans et al.: "The data handling module 314 refers to a module for collection and storage of data associated with sensors of the various wells. This may be implemented in a database to enable convenient user query and retrieval of measurement data, such as those collected by sensors associated with subsea wells." Paragraph 0069; paragraph 0069; figure 7)**

- receiving, from a user device, the command to change the state of the fluid-handling device; and **(Deans et al.: "The data handling module 314 refers to a module for collection and storage of data associated with sensors of the various wells. This may be implemented in a database to enable convenient user query and retrieval of measurement data, such as those collected by sensors associated with subsea wells." Paragraph 0069; paragraph 0069; figure 7)**
- determining a network address of the network interface; and **(Deans et al.: "Each sensor and/or control device can be considered an independent network node on an IP network, with the sensor and/or control device assigned an IP address for purposes**

of communications." Paragraph 0030; "In addition to the payload, packet control information is inserted into each packet, including IP source and destination addresses as well as TCP control information." Paragraph 0066; paragraphs 0025, 0026, 0027, 0030, 0034, 0049, 0050, 0062, 0063, 0064, 0065, 0066; figures 1, 1B, 5)

- sending the command to the network interface. **(Deans et al.: "The fiber optic laser in the transmitter 404 transmits optical signals down the transmit fiber 406, with the optical signals modulated to be indicative of the data or commands that are being transmitted." Paragraph 0072; "In the inbound direction (from surface facility to the pod), received IP packets are decapsulated by the interface 212 to extract the payload, which can contain control and/or data information to be communicated to subsea or downhole sensors and/or control devices." Paragraph 0067; paragraphs 0062, 0063, 0064, 0065, 0066, 0071, 0072; figures 5, 6, 7)**

Regarding claim 8, Deans et al. describes the system of claim 1, wherein fluid-handling device comprises a pump, and wherein the command comprises a command to change a speed of the pump. **(Deans et al.: "Examples of control devices 20 include a flow control device (e.g., a valve), a pump, and so forth." Paragraph 0019; "Also, subsea instrumentation of a pump, such as an ESP pump, can be used to change frequency, monitor vibration, optimize speed at the seabed and extend pump life." Paragraph 0041; paragraphs 0019, 0020, 0041, 0062; figures 1, 1B, 5, 6, 7, 8, 9, 10)**

Regarding claim 11, Deans et al. describes the system of claim 1, wherein receiving the command comprises receiving the command via a first network socket, and wherein sending the translated command comprises sending the translated command via a second network socket. **(Deans et al.: "The pod also has a network connector 202 for connection to the subsea network 34." Paragraph 0062; "The device connector 200 is connected to one or more cards 204, with each card associated with a particular device. Thus, for example, if there re N subsea or downhole devices that the pod is coupled to, then there would be N cards 204 provided in the pod. Alternatively, one card can be provided to communicate with multiple sensors or control devices." paragraph 0062; paragraphs 0026, 0027, 0028, 0062, 0063, 0064, 0065, 0071, 0072, 0073; figures 5, 6, 7)**

Regarding claim 12, Deans et al. describes the system of claim 1, wherein translating the command comprises selecting among an Internet Protocol, a modbus protocol, and an analog output to convey the translated command. **(Deans et al.: "The interface 212 enables the pod to communicate according to packet-based communications (e.g., TCP/IP-based communications) over the subsea network 34. The interface 212 includes the various layers that enable communications over the network, such as a physical layer, a data link layer (e.g., Ethernet layer), an IP layer, and a transport layer (e.g., TCP or UDP). More specifically, according to one example implementation, the interface 212 includes an Ethernet switch and an optical modem, as well as the TCP/IP stack for implementing TCP/IP communications." Paragraph 0064; paragraphs 0007, 0025, 0026, 0027, 0062, 0063, 0064; figure 5)**

Regarding claim 13, Deans et al. describes the system of claim 1, wherein the local controller comprises a processor operative to execute the translated command after losing a network connection to the network interface and before the fluid-handling device is in the target state. **(Deans et al.: "As a result, the subsea communication hub 28 can be removed from operation for service or repair without detrimental effects upon ongoing well production." Paragraph 0035; "In addition, the subsea communication hub 28 can be configured to conduct autonomous processing of data and control based upon input from a single or multiple instruments." Paragraph 0037; paragraphs 0035, 0036, 0037, 0038, 0041, 0042, 0062, 0063, 0064, 0065, 0069, 0070; figures 1, 1b, 5, 6, 7)**

Regarding claim 14, Deans et al. describes the system of claim 1, comprising one of the following coupled to the fluid-handling device: an oil well, a salt water disposal well, a carbon-capture well, or a pump station. **(Deans et al.: "artificial lifting of hydrocarbons from the wellbore" paragraph 0040; "This invention relates to communications with a subsea well, and in particular, communications with sensors and/or control devices associated with the subsea well." Paragraph 0002; paragraphs 0002, 0007, 0040; figures 1, 1B, 5, 6, 7, 8, 9, 10)**

Regarding claim 17, Deans et al. describes the system of claim 1, comprising:

- a remote server coupled to the network interface via the Internet; **(Deans et al.: production management as illustrated in figure 6; "Production management refers to the management of the production of one or more subsea wells. For example, a**

well operator may decide to increase or decrease the amount of production from one or more wells." Paragraph 0069; "The data network 310 enables convenient communication between remote users (such as those associated with the data handling module 314 or production management module 312) and the topside communication hub 300 (and ultimately the subsea communication hub 28)." Paragraph 0070; paragraphs 0069, 0070; figures 6, 7)

- a plurality of oil-wells, petro water disposal or re-injection facilities, or petroleum pumping station, each oil well, petro water disposal or re-injection facility, or petroleum pumping station coupled to a corresponding one of a plurality of systems, each respective system being in communication with the remote server via the Internet and comprising: **(Deans et al.: see wells in figure 1B; "in an SMC system for multiple wells" paragraph 0046; "FIG. 1B illustrates another embodiment of the subsea monitoring and control system that has multiple subsea communication hubs 50, 52, and 54 that are coupled by a subsea network 56 to the surface facility 32. The subsea communication hubs 50, 52, and 54 each has a processor 56 as well as communication equipment 58. Each subsea communication hub can be attached to either local or network-enabled sensors and/or control devices. A local sensor and/or control device is capable of communication only with the respective subsea communication hub." Paragraph 0049; figure 1B)**
    - a respective input/output module operable to communicate with a respective fluid-handling device; **(Deans et al.: see figure 1B; "As shown in FIG. 5, a communication pod includes various components, including a device**

connector 200 that is connected to one or more communications lines to various subsea or downhole sensors and/or control devices." Paragraph 0062; "Examples of control devices 20 include a flow control device (e.g., a valve), a pump, and so forth." Paragraph 0019; paragraphs 0019, 0020, 0046, 0047, 0048, 0049, 0062; figures 1, 1B, 5, 6, 7, 8, 9, 10)

- a respective network interface; **(Deans et al.: see figure 1B; "The pod also has a network connector 202 for connection to the subsea network 34." Paragraph 0062; paragraphs 0019, 0020, 0046, 0047, 0048, 0049, 0062, 0063, 0064; figures 1, 1B, 5, 6, 7, 8, 9, 10)**
- a respective memory; and **(Deans et al.: see figure 1B; "The cards 204 are coupled to an electronics module 206. For example, the electronics module 206 can have slots to receive the multiple cards 204. The electronics module 206 includes a processor 208 and storage 210, such as random access memory (RAM), mass storage, and so forth. Also, the electronics module 206 may include software 214 that is executable on the processor 208. Alternatively, the tasks performed by the electronics module 206 can be implemented entirely in hardware without the use of software." Paragraph 0063; paragraphs 0046, 0047, 0048, 0049, 0062, 0063, 0064; figures 1, 5)**
- a respective set of one or more processors communicatively coupled to the respective input/output module, the respective network interface, and the respective memory, wherein the respective memory stores instructions that when executed by the respective processors cause the respective processors to effectuate

steps comprising: **(Deans et al.: see figure 1B; "The cards 204 are coupled to an electronics module 206. For example, the electronics module 206 can have slots to receive the multiple cards 204. The electronics module 206 includes a processor 208 and storage 210, such as random access memory (RAM), mass storage, and so forth. Also, the electronics module 206 may include software 214 that is executable on the processor 208. Alternatively, the tasks performed by the electronics module 206 can be implemented entirely in hardware without the use of software." Paragraph 0063; paragraphs 0046, 0047, 0048, 0049, 0062, 0063, 0064; figures 1, 5)**

- receiving, via the respective network interface, from the remote user device, a respective command to change a respective state of the respective fluid-handling device to a respective target state; **(Deans et al.: "Data and control information can also be communicated from the surface facility 32 for receipt by the pod." Paragraph 0065; "The interface 212 enables the pod to communicate according to packet-based communications (e.g., TCP/IP-based communications) over the subsea network 34." Paragraph 0064; "Production management refers to the management of the production of one or more subsea wells. For example, a well operator may decide to increase or decrease the amount of production from one or more wells." Paragraph 0069; "The data network 310 enables convenient communication between remote users (such as those associated with**

the data handling module 314 or production management module 312) and the topside communication hub 300 (and ultimately the subsea communication hub 28)." Paragraph 0070; paragraphs 0062, 0063, 0064, 0065, 0069, 0070; figures 5, 6, 7)

- translating the received respective command into a respective translated command operative to cause a respective local controller of the respective fluid-handling device to drive the respective fluid-handling equipment to the respective target state; and **(Deans et al.: "The triggers can include increased data sampling rates, and/or compilations of data sets to develop data products such as pressure build up curves as well as fault prediction and failure avoidance functionality. Also, the subsea communication hub 28 has the capability of accepting a software download from the surface facility 32 of autonomous processing and action criteria. Software downloads from the surface facility 32 to the subsea communication hub 28 can also be performed to revise instrumentation calibration factors." Paragraph 0038; "In the inbound direction (from surface facility to the pod), received IP packets are decapsulated by the interface 212 to extract the payload, which can contain control and/or data information to be communicated to subsea or downhole sensors and/or control devices." Paragraph 0067; paragraphs 0037, 0038, 0039, 0065, 0066, 0067; figures 1, 1b, 5)**

- sending the respective translated command to the respective local controller. **(Deans et al.: "For example, the subsea communication hub 28 can be configured to trigger on predefined subsea events, such as choke adjustments or valve closures." Paragraph 0038; "In the inbound direction (from surface facility to the pod), received IP packets are decapsulated by the interface 212 to extract the payload, which can contain control and/or data information to be communicated to subsea or downhole sensors and/or control devices." Paragraph 0067; paragraphs 0036, 0037, 0038, 0065, 0066, 0067; figures 1, 1b, 5)**

Regarding claim 19, Deans et al. describes a tangible, non-transitory machine-readable medium storing instructions that when executed by a data processing apparatus cause the data processing apparatus to perform operations comprising:

- receiving, via the network interface, from a remote user device, a command to change a state of the fluid-handling device to a target state; **(Deans et al.: "Data and control information can also be communicated from the surface facility 32 for receipt by the pod." Paragraph 0065; "The interface 212 enables the pod to communicate according to packet-based communications (e.g., TCP/IP-based communications) over the subsea network 34." Paragraph 0064; "Production management refers to the management of the production of one or more subsea wells. For example, a well operator may decide to increase or decrease the amount of production from one or**

more wells." Paragraph 0069; "The data network 310 enables convenient communication between remote users (such as those associated with the data handling module 314 or production management module 312) and the topside communication hub 300 (and ultimately the subsea communication hub 28)." Paragraph 0070; paragraphs 0062, 0063, 0064, 0065, 0069, 0070; figures 5, 6, 7)

- translating the received command into a translated command operative to cause a local controller of the fluid-handling device to drive the fluid-handling equipment to the target state, the local controller being responsive to the command and feedback from the fluid-handling device indicative of whether the fluid-handling device is in the target state; and **(Deans et al.: "The triggers can include increased data sampling rates, and/or compilations of data sets to develop data products such as pressure build up curves as well as fault prediction and failure avoidance functionality. Also, the subsea communication hub 28 has the capability of accepting a software download from the surface facility 32 of autonomous processing and action criteria. Software downloads from the surface facility 32 to the subsea communication hub 28 can also be performed to revise instrumentation calibration factors." Paragraph 0038; "In the inbound direction (from surface facility to the pod), received IP packets are decapsulated by the interface 212 to extract the payload, which can contain control and/or data information to be communicated to subsea or downhole sensors and/or control devices." Paragraph 0067; paragraphs 0037, 0038, 0039, 0065, 0066, 0067; figures 1, 1b, 5)**

- sending the translated command to the local controller. **(Deans et al.: "For example, the subsea communication hub 28 can be configured to trigger on predefined subsea events, such as choke adjustments or valve closures." Paragraph 0038; "In the inbound direction (from surface facility to the pod), received IP packets are decapsulated by the interface 212 to extract the payload, which can contain control and/or data information to be communicated to subsea or downhole sensors and/or control devices." Paragraph 0067; paragraphs 0036, 0037, 0038, 0065, 0066, 0067; figures 1, 1b, 5)**

Regarding claim 20, Deans et al. describes a method, comprising:

- receiving, via the network interface, from a remote user device, a command to change a state of the fluid-handling device to a target state; **(Deans et al.: "Data and control information can also be communicated from the surface facility 32 for receipt by the pod." Paragraph 0065; "The interface 212 enables the pod to communicate according to packet-based communications (e.g., TCP/IP-based communications) over the subsea network 34." Paragraph 0064; "Production management refers to the management of the production of one or more subsea wells. For example, a well operator may decide to increase or decrease the amount of production from one or more wells." Paragraph 0069; "The data network 310 enables convenient communication between remote users (such as those associated with the data handling module 314 or production management module 312) and the topside**

communication hub 300 (and ultimately the subsea communication hub 28)." Paragraph 0070; paragraphs 0062, 0063, 0064, 0065, 0069, 0070; figures 5, 6, 7)

- translating the received command into a translated command operative to cause a local controller of the fluid-handling device to drive the fluid-handling equipment to the target state, the local controller being responsive to the command and feedback from the fluid-handling device indicative of whether the fluid-handling device is in the target state; and **(Deans et al.: "The triggers can include increased data sampling rates, and/or compilations of data sets to develop data products such as pressure build up curves as well as fault prediction and failure avoidance functionality. Also, the subsea communication hub 28 has the capability of accepting a software download from the surface facility 32 of autonomous processing and action criteria. Software downloads from the surface facility 32 to the subsea communication hub 28 can also be performed to revise instrumentation calibration factors." Paragraph 0038; "In the inbound direction (from surface facility to the pod), received IP packets are decapsulated by the interface 212 to extract the payload, which can contain control and/or data information to be communicated to subsea or downhole sensors and/or control devices." Paragraph 0067; paragraphs 0037, 0038, 0039, 0065, 0066, 0067; figures 1, 1b, 5**)
- sending the translated command to the local controller. **(Deans et al.: "For example, the subsea communication hub 28 can be configured to trigger on predefined subsea events, such as choke adjustments or valve closures." Paragraph 0038; "In the inbound direction (from surface facility to the pod), received IP packets are**

decapsulated by the interface 212 to extract the payload, which can contain control and/or data information to be communicated to subsea or downhole sensors and/or control devices." Paragraph 0067; paragraphs 0036, 0037, 0038, 0065, 0066, 0067; figures 1, 1b, 5)

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

16. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Publication No. 2004/0262008 (Deans et al.) in view of U.S. Patent Publication No. 2004/0231851 (Silvers).

Claim 9:

Deans et al. does not explicitly describe a serial bus with a corresponding process as described below. However, Silvers teaches the serial bus with the corresponding process as described below.

Regarding claim 9, Silvers describes the system of claim 1, comprising a remote terminal unit through which the one or more processes communicate with the fluid-handling device, wherein translating the received command comprises: **(Silvers: see field station as illustrated in figure 1; "Well data and production control commands are transmitted from a remote**

central data store to wells at a remote location with a well hopping system and method, preferably through a radio frequency (RF) network. Request packets are sent through a field station to one or more well units until it reaches the destination well unit." Abstract; "The data processor is programmed to transmit data through the internet or other suitable communication media to a field station. The field station has an internet connection, such as a satellite dish or a broad band connection, to receive data from the central data store and a converter for converting the received data, for example, into serial RS 232 format, and a transmitter to transmit the converted data to a well hopping communication system formed of two or more well units." Paragraph 0010; abstract; paragraphs 0010, 0011, 0015, 0016, 0027, 0029, 0038, 0049; figures 1, 5)

- identifying an address on a serial bus corresponding to a component of the fluid-handling device responsive to the received command; **(Silvers: see field station and units 12 as illustrated in figure 1; "In the practice of the invention, each of the wells is assigned a unique address and at least one well hoping path between each well and the central data store zone. Typically, each well is assigned a preferred well hopping path and one or more alternative well hopping paths in the event that one of the transmitters in the main path is not functioning." Paragraph 0016; paragraphs 0010, 0011, 0015, 0016, 0027, 0028, 0038, 0049; figures 1, 5)**
- identifying a command code operative to cause the component to execute the received command; and **(Silvers: "In another of its aspects, the invention relates to a wireless radio frequency communication system for transferring commands and data between wellheads and a central data store." Paragraph 0002; "The invention**

further relates to a method for communicating between wells and a remote location comprising the steps of sending from a central data store to a field station via the Internet a request data packet intended for a destination well unit, transferring the request data packet from the field station to a first well unit via radio waves, determining if the first well unit is the destination well unit, if the first well unit is not the destination well unit, hopping the request data packet along a series of at least two well units, wherein the first well unit is part of the series, until the request data packet reaches the destination well unit." Paragraph 0018; paragraphs 0010, 0011, 0015, 0016, 0018, 0038, 0049; figures 1, 5)

- sending to the address on the serial bus the command code. **(Silvers: see sending of packet through radio frequency network as illustrated in figure 3A; see field station and units 12 as illustrated in figure 1; "transferring the request data packet from the field station to a first well unit via radio waves, determining if the first well unit is the destination well unit, if the first well unit is not the destination well unit, hopping the request data packet along a series of at least two well units, wherein the first well unit is part of the series, until the request data packet reaches the destination well unit." Paragraph 0018; paragraphs 0011, 0015, 0016, 0018, 0030, 0038, 0049; figures 1, 5)**

One of ordinary skill in the art would have recognized that applying the known technique of Deans et al., namely, communication and control of a subsea oil well from a surface facility, with the known techniques of Silvers, namely, well control and monitoring system, would have yielded predictable results and resulted in an improved system. Accordingly, applying the

teachings of Deans et al. to provide communication and control mechanisms for the automated control and maintenance of an underwater oil platform with the teachings of Silvers to automated control and monitoring of well units in an oil field with identical results would have been recognized by those of ordinary skill in the art as resulting in an improved subsea communication and control system (i.e., controlling fluid control devices using serial bus communication of Deans et al. based on the teachings of using serial communication in Silvers).

17. Claims 10 and 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Publication No. 2004/0262008 (Deans et al.) in view of WO 2008/124765 (Roberson et al.).

Claim 10:

Deans et al. does not explicitly describe a digital to analog converter and a valve connected to the digital to analog converter as described below. However, Roberson et al. teaches the digital to analog converter and a valve connected to the digital to analog converter as described below.

Regarding claim 10, Deans et al. and Roberson et al. describe the system of claim 1, comprising

- a digital-to-analog converter, **(Roberson et al.: "one or more digital-to-analog converters (DAC) 113 for generating analog output signals and a number of digital logic output gates 114" page 18, lines 8-9; page 18, lines 5-12; figures 5, 7)**

- wherein the fluid- handling device comprises a valve responsive to an output signal of the digital-to-analog converter, and **(Roberson et al.: "actuates or regulates a set of outputs for actuating hardware such as solenoids and variable speed motor drive circuitry." page 18, lines 6-7; page 18, lines 5-12; figures 5, 7; Deans et al.: "Examples of control devices 20 include a flow control device (e.g., a valve), a pump, and so forth." Paragraph 0019; "The subsea production control system 26 is responsible for providing control commands to the various subsea sensors and/or control devices or downhole sensors and/or control devices. The production control system 26 may also provide commands to wellhead components, such as xmas tree valves." Paragraph 0022; paragraphs 0019, 0020, 0022, 0041, 0062; figures 1, 1B, 5, 6, 7, 8, 9, 10)**
- wherein translating the received command comprises changing an output signal of the digital-to-analog converter responsive to the receive command. **(Roberson et al.: "providing a control signal to regulate the speed of variable speed motor 12" page 18, lines 11-12; page 18, lines 5-12; figures 5, 7; Deans et al.: "The triggers can include increased data sampling rates, and/or compilations of data sets to develop data products such as pressure build up curves as well as fault prediction and failure avoidance functionality. Also, the subsea communication hub 28 has the capability of accepting a software download from the surface facility 32 of autonomous processing and action criteria. Software downloads from the**

surface facility 32 to the subsea communication hub 28 can also be performed to revise instrumentation calibration factors." Paragraph 0038; "In the inbound direction (from surface facility to the pod), received IP packets are decapsulated by the interface 212 to extract the payload, which can contain control and/or data information to be communicated to subsea or downhole sensors and/or control devices." Paragraph 0067; paragraphs 0037, 0038, 0039, 0065, 0066, 0067; figures 1, 1b, 5)

One of ordinary skill in the art would have recognized that applying the known technique of Deans et al., namely, communication and control of a subsea oil well from a surface facility, with the known techniques of Roberson et al., namely, well control and monitoring system, would have yielded predictable results and resulted in an improved system. Accordingly, applying the teachings of Deans et al. to provide communication and control mechanisms for the automate control and maintenance of an underwater oil platform with the teachings of Roberson et al.to automated control and monitoring of pump controllers in an oil field with identical results would have been recognized by those of ordinary skill in the art as resulting in an improved subsea communication and control system (i.e., controlling fluid control devices using digital to analog converters of Deans et al. based on the teachings of using digital to analog converters in Roberson et al.).

Claim 18:

Deans et al. does not explicitly describe a user account data store as described below. However, Roberson et al. teaches the user account data store as described below.

Regarding claim 18, Roberson et al. describes the system of claim 17, wherein the remote server comprises a user account data store storing data associating each of the respective systems with a single user account distinct from a plurality of other user accounts in the data store. **(Roberson et al.: "Web server 230 provides initial login access to a remote client computer 91. Once the remote client 91 is authenticated, an initial or default HTML file 224 is transmitted by web server 230 to the remote client computer." Page 23, lines 6-9; page 23, lines 3-22; page 22, lines 14-22; page 24, lines 13-22; figures 5, 8, 9)**

Deans et al. and Roberson et al. are combinable for the same rationale as set forth above with respect to claim 10.

18. Claims 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Publication No. 2004/0262008 (Deans et al.) in view of U.S. Patent No. 5,149,443 (Varnam).

Claim 15:

Deans et al. does not explicitly describe an oil/water separation unit as described below. However, Varnam teaches the oil/water separation unit as described below.

Regarding claim 15, Varnam describes the system of claim 1, wherein the fluid-handling device comprises an oil/water separation unit, and wherein the command comprises a command operative to change a level of the oil/water separation unit at which oil meets water. **(Varnam: "The nozzle, which is powered by a turbine, effectively induces oil or an oil-water mixture**

into the nozzle and through a conduit that leads from the nozzle to a series of separation tanks that from a part of an oil-water separation sub-system that is indicated generally by the numeral 22." Col. 4, lines 43-48; "In effect, these sensors sense and measure the specific gravity of the liquid in the vicinity of each sensor. This specific gravity information is utilized by the computer logic control system 20 of the present invention to control valves 206 and 215. As particularly illustrated in FIG. 1, since the oil's specific gravity is less than water, oil will tend to settle about the top portions of the respective tanks 200. The object of the oil-water separation process is to expel oil of a threshold concentration through the oil outlet control valve 215 and to expel water or a high water-low oil mixture concentration through the bottom control valve 206 that joins water outlet line 208. The respective sensors 222 and 224 are effective to control the discharge of water from the respective tank. Thus, the sensors 222 and 224 are operative to effectuate the control of the oil outlet control valve 215 to assure that oil of a threshold concentration is discharged from the final tank." Col. 8, line 65 through col. 9, line 14; col. 4, lines 59-62; col. 12, lines 43-67; figures 7, 8, 10)

One of ordinary skill in the art would have recognized that applying the known technique of Deans et al., namely, communication and control of a subsea oil well from a surface facility, with the known techniques of Varnam, namely, an oil recovery system using an oil and water separation unit, would have yielded predictable results and resulted in an improved system. Accordingly, applying the teachings of Deans et al. to provide communication and control mechanisms for the automated control and maintenance of an underwater oil platform with the teachings of Varnam to separate water and oil using a pumping system with identical results

would have been recognized by those of ordinary skill in the art as resulting in an improved subsea communication and control system for oil well processing (i.e., controlling fluid control devices including an oil and water separation unit of Deans et al. based on the teachings of controlling an oil and water separation unit using a controller in Varnam).

Claim 16:

Deans et al. does not explicitly describe a pump and control of the pump as described below. However, Varnam teaches the pump and control of the pump as described below.

Regarding claim 16, Deans et al. and Varnam describe the system of claim 15,

- wherein the oil/water separation unit comprises a pump having a variable-frequency drive, and **(Varnam: see water pump and/or oil pump as illustrated in figure 8; increase water pump speed and/or increase oil pump speed as illustrated in figure 10; col. 11, line 65 through col. 12, line 3; col. 12, lines 9-15; col. 12, lines 43-64; figures 1, 7, 8, 10)**
- wherein the local controller is operative to adjust a frequency of the variable frequency drive until the level of the oil/water separation unit reaches a target level corresponding to the target state. **(Varnam: see controller 156 as illustrated in figure 8; "Finally, the oil recovery system of the present invention includes a computer logic control system 20 that controls the nozzle sub-system 18 as well as the oil-water separation sub-system 22." Col. 4, lines 59-62; col. 4, lines 55-58; col. 11, line 65 through col. 12, line 3; col. 12, lines 9-15; col. 12, lines 43-64; figures 1, 7, 8, 10; Deans et al.: "As shown in FIG. 5, a communication pod**

includes various components, including a device connector 200 that is connected to one or more communications lines to various subsea or downhole sensors and/or control devices." Paragraph 0062; "Examples of control devices 20 include a flow control device (e.g., a valve), a pump, and so forth." Paragraph 0019; paragraphs 0019, 0020, 0062; figures 1, 1B, 5, 6, 7, 8, 9, 10)

Deans et al. and Varnam are combinable for the same rationale as set forth above with respect to claim 15.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher E. Everett whose telephone number is (571)272-2851. The examiner can normally be reached on Monday through Friday from 8:00 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kavita Padmanabhan can be reached on 571-272-8352. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

7/22/2014

/C. E. E./
Examiner, Art Unit 2121

/Kavita Padmanabhan/
Supervisory Patent Examiner, Art Unit 2121

Notice of References Cited	Application/Control No. 14/147,190	Applicant(s)/Patent Under Reexamination PHILLIPS, AARON	
	Examiner Christopher E. Everett	Art Unit 2121	Page 1 of 3

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*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-4,052,703 A	10-1977	Collins et al.	714/2
*	B	US-5,149,443 A	09-1992	Varnam, O'Neal	210/739
*	C	US-5,732,776 A	03-1998	Tubel et al.	166/250.15
*	D	US-6,061,603 A	05-2000	Papadopoulos et al.	700/83
*	E	US-6,192,980 B1	02-2001	Tubel et al.	166/65.1
*	F	US-2002/0112860 A1	08-2002	McDaniel, Jeffery Lee	166/381
*	G	US-6,801,135 B2	10-2004	Schultz et al.	340/853.1
*	H	US-2004/0262008 A1	12-2004	Deans et al.	166/339
*	I	US-2005/0096846 A1	05-2005	Koithan et al.	702/006
*	J	US-6,913,083 B2	07-2005	Smith, David Randolph	166/336
*	K	US-7,148,812 B2	12-2006	Baggs, Christopher David	340/853.7
*	L	US-7,289,994 B2	10-2007	Nixon et al.	1/1
*	M	US-2009/0149969 A1	06-2009	Slupphaug et al.	700/42

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*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N	WO 2008/124765 A1	10-2008	PCT	Roberson et al.	
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

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*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2010/0147510 A1	06-2010	Kwok et al.	166/250.01
*	B	US-7,845,404 B2	12-2010	McStay et al.	166/250.01
*	C	US-7,921,916 B2	04-2011	Lovell et al.	166/336
*	D	US-7,931,090 B2	04-2011	Smedstad et al.	166/366
*	E	US-7,958,938 B2	06-2011	Crossley et al.	166/366
*	F	US-7,967,066 B2	06-2011	McStay et al.	166/250.01
*	G	US-2011/0231024 A1	09-2011	Medizade, Masoud	700/282
*	H	US-8,131,510 B2	03-2012	Wingky et al.	702/188
*	I	US-8,179,279 B2	05-2012	Voss, Robert K.	340/854.6
*	J	US-8,290,737 B2	10-2012	Davis, Julian R.	702/119
*	K	US-8,312,320 B2	11-2012	Almadi et al.	714/15
*	L	US-8,373,418 B2	02-2013	Davey, Peter John	324/366
*	M	US-8,386,059 B2	02-2013	Boone, Scott G.	700/65

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*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
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U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2004/0231851	11-2004	Silvers, David	166/350
	B	US-			
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
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	I	US-			
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	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

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Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14147190	PHILLIPS, AARON
	Examiner	Art Unit
	CHRISTOPHER E EVERETT	2121

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
Search of EAST using classes, text, and inventor searches	7/22/2014	CEE
Search of sub-classes 340/853.3, 853.2, 856.3 (text search only - see search history printout)	7/22/2014	CEE
Search of sub-classes 166/336, 363, 250.1 (text search only - see search history printout)	7/22/2014	CEE
Search of PALM using inventor searches	7/22/2014	CEE
Search of sub-classes 700/1, 282, 275, 281, 42 (text search only - see search history printout)	7/22/2014	CEE
Search of sub-classes 702/6, 13, 183, 188 (text search only - see search history printout)	7/22/2014	CEE
Search of sub-class 709/224 (text search only - see search history printout)	7/22/2014	CEE
Search of CPC G05D7/0676;G05B9/02;E21B47/00;G05B2219/23472 using text	7/22/2014	CEE

INTERFERENCE SEARCH

/CHRISTOPHER E EVERETT/ Examiner.Art Unit 2121	

US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

/CHRISTOPHER E EVERETT/ Examiner.Art Unit 2121	

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	Examiner	Art Unit
	CHRISTOPHER E EVERETT	2121

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	07/22/2014								
	1	✓								
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	19	✓								
	20	✓								

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	4914	700/1,282,275,281,42.ccls.	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
L2	6494	702/6,13,183,188.ccls.	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
L3	22712	709/224.ccls.	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
L4	948	166/336,363,250.1.ccls.	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
L5	511	340/853.3,853.2,856.3.ccls.	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
L6	35297	L1 L2 L3 L4 L5	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
L7	188122	(oil hydrocarbon (hydro adj2 carbon) gas) near2 (well site disposal station)	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
L8	2416039	(controller control device) near2 (operate operat$4 adjust drive move close)	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
L9	38	((AARON) near2 (PHILLIPS)).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2014/07/22 16:19
L10	5	((AARON) near2 (PHILLIPS)).INV.	EPO; JPO; DERWENT	OR	ON	2014/07/22 16:19
L11	2	(AMPLISINE adj2 LABS).as.	EPO; JPO; DERWENT	OR	ON	2014/07/22 16:19
L12	5	real-time and onsite and internet and communication	EPO; JPO; DERWENT	OR	ON	2014/07/22 16:19
L13	20	(US-20040262008-$ or US-20120316658-$ or US-20080208475-$ or US-20060271299-$ or US-20060240818-$ or US-20050092523-$ or US-20040231851-$ or US-20040088115-$ or US-20030182463-$ or US-20020169645-$ or US-20020112860-$).did. or (US-7148812-$ or US-7958938-$ or US-7967066-$ or US-7845404-$ or US-6913083-$ or	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19

		US-5732776-$ or US-4052703-$ or US-8179279-$).did. or (WO-2008124765-$).did.				
L14	0	L13 and (oil near2 water near2 separation)	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
L15	7	L13 and (oil near2 water)	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
L16	5262	(oil near2 water near2 separation)	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
L17	2663	L16 and pump	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
L18	969	L17 and (oil near2 well)	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
L19	268	L18 and (oil near2 level)	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
L20	4	L19 and ("700"/$.ccls. "702"/$.ccls.)	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
L21	1686	L6 and L7	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
L22	2171012	(internet network (web adj2 server))	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
L23	18312	(local autonomous independent) near2 (controller control device) near2 (operate operat$4 adjust drive move close)	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
L24	776	L8 and L21	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
L25	390	L24 and L22	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
L26	383	L7 and L23	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
L27	8	L25 and L26	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
L28	12	L7 and L23 and L6	US-	OR	ON	2014/07/22

			PGPUB; USPAT; EPO			16:19
L29	605853	(remote internet network) near2 (control monitor control$4 monitor$4 command)	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
L30	10936	L29 and L7	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
L31	129	L30 and L23	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
L32	178	L9 L10 L11 L12 L14 L15 L20 L27 L28 L31	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
L33	178	L32	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
L34	178	L33	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:19
L35	2489	G05D7/0676;G05B9/02;E21B47/00;G05B2219/23472.cpc.	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:20
L36	645	35 and L7	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:28
L37	452	36 and (oil near2 well)	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:28
L39	15	37 and (oil near2 level)	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:28
L40	16	35 and 23 and 22	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:29
L41	204	39 40 34	US-PGPUB; USPAT; EPO	OR	ON	2014/07/22 16:29

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APPLICANTS
AmpliSine Labs, LLC, Lubbock, TX, Assignee (with 37 CFR 1.172 Interest);

INVENTORS
Aaron Phillips, Lubbock, TX;

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ADDRESS
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P.O. Box 61389
Houston, TX 77208-1389
UNITED STATES

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(71) Applicant *(for all designated States except US)*: **LUFKIN INDUSTRIES, INC.** [US/US]; 601 S. Raguet, Lufkin, TX 75902 (US).

(72) Inventors: **ROBERSON, Alan, L.**; 15618 Juniper Hollow Way, Cypress, TX 77429 (US). **DORADO, Doneil, M.**; 403 Jewel Landing, Missouri City, TX 77459 (US). **PINNELL, David, L.**; 2158 Little Cedar Drive, Kingwood, TX 77339 (US). **OESTREICH, Eric, S.**; 1442 Sand Lake Lane, Richmond, TX 77469 (US).

(74) Agents: **BUSH, Gary, L.** et al.; Andrews Kurth LLP, 600 Travis, Suite 4200, Houston, TX 77002 (US).

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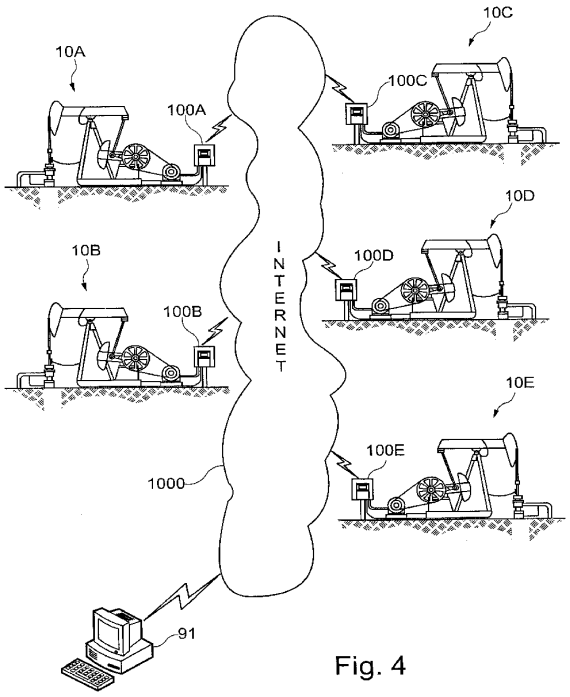


Fig. 4

(57) Abstract: An apparatus and method for well control and monitoring including an independent web server computer integrated with a pump controller located at each well in an oil field. The well controller locally controls the well pump, processes well and pump data, generates surface and downhole cards, and communicates production reports, recommendations for production improvements, and production statistics to remote sites via the internet. The controller can be queried remotely to provide production reports, etc. Furthermore, the controller can initiate alerts via email, text messaging, or internet messaging, for example, during fault conditions.

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REAL-TIME ONSITE INTERNET COMMUNICATION WITH WELL MANAGER FOR CONSTANT WELL OPTIMIZATION

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates generally to methods and apparatus for remotely monitoring, controlling, and automating the operation of pumps for the production of hydrocarbons and dewatering, for example, and more specifically to a controller for rod pumps, progressing cavity pumps, injection well control, variable speed drives, well gas measurement, et cetera, for continuous optimization thereof.

2. Description of the Prior Art

Hydrocarbons are often produced from well bores by sucker rod pumps, reciprocating pumps driven from the surface by pumping units that move a polished rod up and down through a packing gland at a wellhead. The units may be of the predominant beam type or any other type that reciprocates the polished rod.

Because the incremental cost of larger sucker rod pumps is usually less than the added value realized by producing oil from the wells at the highest possible rate, sucker rod pumping units are typically sized to pump faster than the wells can produce. Consequently, sucker rod pumps periodically run out of liquids to pump and draw gas into the cylinders through the standing valves. The term "pumped-off" is used to describe the condition where the fluid level in the well is not sufficient to completely fill the pump barrel on the upstroke. On the next down stroke the plunger will impact the fluid surface in the incompletely filled barrel and send shock waves through the rod string and other components of the pumping system. This "fluid pound"

lowers well production efficiency and over time can cause damage to the drive unit or downhole pump, such as broken rods.

To minimize running pumped-off, sucker rod pumps are generally operated with some type of controller. Early controllers consist of simple controllers, such as clock timers that start and stop the pumping unit in response to a user selectable program, allowing the well to fill during the times when the pump is switched off. However, simple clock timers are not responsive to actual well conditions and do not detect actual pump-off conditions.

Thus, in the early 1970s, a viable well control method evolved using more sophisticated controllers that stop the rod pump when a well actually pumps-off. This method is known as pump off control (POC). Over the years, POC has employed different algorithms to sense pump-off conditions. Some of these involve measurement of changes in surface load, motor current, or motor speed.

In addition to running a rod pump in a pumped-off state, other abnormal conditions of the pump operation reduce well production efficiency. Common abnormal conditions include tubing movement, gas interference, an inoperative pump, the pump hitting up or down, a bent barrel, a sticking pump, a worn plunger or traveling valve, a worn standing valve, a worn or split barrel, fluid friction, and drag friction. As many of these problems gradually appear and progressively worsen, early detection of these problems can often minimize the cost of maintenance, minimize the cost of inefficient operation, and prevent or minimize the loss of production.

Traditionally, troubleshooting and repair of pump problems requires lifting the entire down-hole unit to the surface. It is not unusual to have a mile or more of sucker rods or tubing that must be lifted and disassembled by a single or pair of twenty-five or thirty foot long sections

at a time. This method of pump diagnosis and troubleshooting is costly both in terms of labor costs and lost revenue from the well.

Fortunately, many pump health indications and abnormal operating conditions can be detected by accurate monitoring of the pump operation, reducing the need for physical inspection of the downhole pump components and lowering the cost of well troubleshooting. Thus, from its humble beginning of merely stopping the well to prevent the mechanical damage of fluid pound and the inefficiency associated with operating an incompletely filled pump, POC has evolved in the last quarter century into a diagnostic system with robust well management capabilities. Gradually the phrase "pump off control" has been replaced with terms like "well manager," "rod pump controller," et cetera. (Lufkin Automation uses the trademark SAM® Well manager to identify its rod pump control system.) These newer terms connote more than pump off control. The later systems generally include diagnostic capability and collection and analysis of performance data for operation of the well in an economic fashion.

Many of these intelligent well controllers monitor work performed, or something that relates to work performed, as a function of polished rod position. This information is used, for example, to determine if the well is in a pumped-off condition, if valves are leaking or stuck, or for troubleshooting a wide variety of other problems. This information is generally presented and analyzed in the form of a plot of polished rod load versus polished rod position as measured at the surface. For a normally operating pump, the shape of this plot, known as a "surface card" or "surface dynagraph," is generally an irregular elliptical shape. The area bounded by this curve, often referred to as the surface card area, is proportional to the work performed by the pump. Many pump-off controllers utilize a surface dynagraph plot to determine when the sucker rod pump is not filling to shutdown the pump for a time period. For example, U.S. Pat. No.

3,951,209, issued Apr. 20, 1976 to Gibbs, describes a controller that measures at the surface both the load on the rod string and the displacement of the rod string to determine a pump-off condition and is incorporated herein by reference.

However, because the surface card is not always an accurate representation of the load and displacement of the downhole rod string, particularly for deep wells, more accurate well control is achieved by using a "downhole card," i.e., a plot of load versus rod string displacement as measured at the downhole pump. The downhole card is immensely useful. Its shape reveals defective pumps, completely filled pumps, gassy or pounding wells, unanchored tubing, parted rods, etc. Furthermore, the downhole card can be used to sense tubing leaks. Quantitative computation of pump leakage from downhole cards is described in "Quantitative Determination of Rod-Pump Leakage with Dynamometer Techniques," Nolen, Gibbs, SPE Production Engineering, August 1990.

When first developed in 1936, the downhole pump card was directly measured by a dynamometer located at the subsurface pump. The measured data was retrieved by the costly process of pulling the rods and pump. Because even today these measurements are not easily directly obtained, requiring a costly telemetry system to relay the data to the surface, methods have been developed to calculate the downhole dynagraph from the more easily obtained surface card. One such method is described in U.S. patent 3,343,409 (Gibbs), which is incorporated herein by reference. Gibbs utilizes surface measurements of load and position of the rod string to construct a downhole pump card; to produce the downhole card, solutions to a wave equation to satisfy dynamometer time histories of surface rod load and position are calculated by the use of a computer.

In addition to identification of abnormal well conditions or pump malfunctions, the most advanced of today's well managers can also infer well production rates with considerable accuracy by using the subsurface pump as a flow meter and the downhole card to compute producing pressure, liquid and gas throughput, and oil shrinkage effects. In other words, production rates can be determined continuously without the use of traditional metering equipment or production tests. For example, a decline in production rate can corroborate a mechanical problem indicated by a downhole card; the downhole pump may be worn or a tubing leak may have developed. The decline may also be caused by a change in reservoir conditions in the drainage area of the well; the receptivity of an offset injection well may have diminished, which may have resulted in a producing pressure decline and a decrease in production rate. Conversely, an increase in productivity as calculated by a well manager may indicate that the well is responding to secondary recovery efforts; the well should be pumped more aggressively to obtain the increased production that is available. These sophisticated well managers are instrumental in many facets of oil production including economic operation of the oilfield as a business venture, compliance with governmental regulations, well troubleshooting, and estimation of reservoir reserves. A method of inferred production using a well manager is taught by Gibbs in co-pending U.S. Patent Application No. 10/940,273, which is incorporated herein by reference.

Of significant use is the ability of well managers to communicate with a central host computer for supervisory control and data acquisition (SCADA). For example, a well manager unit receives surface rod and load information (or equivalent measurements), measures a surface card, computes a downhole card, and locally displays a graphical representation of the surface card and/or the downhole card for the operators' ease and benefit. However, the benefit of the

well manager features is diminished when the operator must be present at the well site to see and analyze the well data. A well manager with SCADA capability, on the other hand, can automatically transfer well data to a distantly located control station. SCADA allows information about the subsurface pump, including well and pump performance data, inferred fluid production over time, and surface and downhole cards, to be both displayed locally for manual recording and automatically sent to a distant central location. Furthermore, the SCADA system may be configured to send alarms, allowing problems to be timely announced. Control signals may also be sent from the central control station to the well manager. SCADA capability reduces or eliminates the need for an individual to visit the well site to determine the status at the controller and results in several advantages, including reducing delays in notifying the operator of alert or alarm conditions, increasing the accuracy of the disseminated well manager data, lowering costs of managing oil fields, and minimizing the need for the operator to visit potentially hazardous well sites. Thus, most sophisticated well managers have a built-in SCADA capability to communicate data by radio, hardwire, or telephone. This telemetry capability makes it possible for one or more computers to retrieve data from a controller, obtain status of operations, issue control instructions, monitor for alarms, and develop reports.

Although current SCADA systems provide some remote connectivity between a remote site and a number of well managers in an oil field, they generally employ expensive proprietary hardware and short-range RF radios of low bandwidth. Typical SCADA systems are polling systems that can only interrogate each well a few times each day to retrieve dynamometer and other performance data. Therefore downhole pump cards can on average be reviewed at the central location via SCADA only a few times each day.

Therefore, it is desirable to provide higher data throughput and continuous connectivity to a well manager by exploiting current internet technology. Such technology integrated with today's sophisticated well controllers would allow more well data to be collected at a central location at a lower cost. Several patents address connecting an oilfield to the internet. For example, U.S. Patent No. 6,857,474 issued to Bramlett et al. on February 22, 2005 shows a rod pump well manager with the capability to display a graphical pump card at a remote output display via an internet link 131 and is incorporated herein by reference. However, Bramlett's teaching is limited to using the internet to remotely display graphical surface and downhole cards; Bramlett does not disclose sending well production reports, statistics, pump diagnostics, alarms, alerts or other data from the well manager to remote users via the internet or receiving control data at the well manager from remote users over the internet.

The method according to U.S. Patent No. 7,096,092 issued to Ramakrishnan et al. on August 22, 2006 is illustrated in Figure 1. Ramakrishnan shows a method of managing oil fields including installing oil field sensors (50) on oil wells (60, 61, 62) , connecting the sensors (50) to computer controllers (52) disposed at the wells (60, 61, 62) for data collection and data analysis, and connecting a number of local oil field controllers (52) to a central web server (54). Access to oil field data in real time is provided to a remote computer (56) via the internet (1000). Raw data, partially analyzed data, or fully analyzed data is available remotely. The local controllers (52) are programmed with parameters for analyzing the data and automatically determining the presence of anomalies. Upon detecting the occurrence of an anomaly, the local controllers (52) are programmed to notify, via the central web server (54), an operator by email, pager, telephone, et cetera. If no response to the notification is received within a programmed period of time, the local controllers (52) automatically take pre-programmed corrective action.

Ramakrishnan does not disclose that the controllers are adapted to control rod pumps or that the controllers calculate downhole and surface cards or infer production.

U.S. Patent No. 6,967,589 issued to Peters on November 22, 2005 and illustrated in Figure 2 shows a system for monitoring gas/oil wells with a local monitoring unit (58) located at each well (61, 62), a central field-located relay unit (64) in wireless short range RF communication with a number of monitoring units (58), and a host interface linked (66) with the relay unit (64) via the internet (1000). The monitoring units (58) collect data regarding the status of the gas/oil wells (61, 62) and wirelessly transmit that data to the relay unit (64). The relay unit (64), in turn, connects to a host interface (66) over the internet (1000) and transmits the data. That is, a central field-wide web-enabled relay unit (64) is used for numerous well monitoring units (58). Each monitoring unit (58) can transmit information on demand or after an alarm condition is sensed. The relay unit (64) can request information from a monitoring unit (58) or respond to a wake up transmission sent to it from either the host interface (66) or a monitoring unit (58). The host interface (66) receives data from the relay unit (58) for providing data to an operator. Peters does not disclose that the well monitors (58) are adapted to control rod pumps or that they calculate downhole and surface cards or infer production.

Also illustrated by Figure 2, U.S. Patent No. 6,898,149 issued to Hill et al. on May 24, 2005 shows a data communications system for use with an oil or gas well (60) including downhole well sensors (67) that communicate via a conventional wireless SCADA interface (68) to a local internet server (64) located in the oil field. In other words, a field-wide web server (64) is used for servicing numerous wells. The internet server (64) acts to transmit data logging at remote points for display. Hill does not disclose controllers adapted to control rod pumps or to calculate downhole and surface cards.

Referring to Figure 3, U.S. Patent No. 6,873,267 issued to Tubel et al. on March 29, 2005 shows a system for monitoring and controlling hydrocarbon production wells (63, 65) from a first remote location (70) including a surface control and data acquisition systems (72, 74) each with one or more sensors or downhole flow control devices (76, 78). The surface control and data acquisition systems (72, 74) are in satellite communication with a remote controller (80) disposed at a second remote location (82). The remote controller includes an internet web site server for providing access to end users at the first remote location (70) over the internet (1000). The internet server (80) is disposed at a remote location, not locally at each well (63, 65) or at the surface control and data acquisition systems (72, 74). Tubel does not disclose that the system is adapted to control rod pumps or to calculate downhole and surface cards.

Finally, U.S. Patent No. 6,498,988 issued to Robert et al. on December 24, 2002 shows a technique for centralized processing for design and analysis on a server computer of oilfield engineering data transmitted over the internet from client computers at distributed locations. The data is processed at the remote server computing device and the results are communicated over the internet to the client computing device. Although each remote client computer has internet connectivity, they do not function as internet servers, and the data is not processed locally.

3. **Identification of Features Provided by Some Embodiments of the Invention**

A primary object of the invention is to provide a well manager for controlling a rod pump with constant and direct internet connectivity and the capability to act as a web server so that the well manager can host a remote user directly via the internet at any time from anywhere in the world to provide the remote operator unlimited access to critical operating data.

Another object of the invention is to provide a well manager that processes well data at the well site and requires little or no post-processing of collected data.

Another object of the invention is to eliminate the need for specialized and proprietary SCADA protocols and hardware connection methods such as direct serial communication, or other polling-style communication methods to provide data to a distant central location.

Another object of the invention is to provide a well manager unit that requires only standard commercial off-the-shelf computer technology.

Another object of the invention is to provide a well manager having a computer with standard network, administration and security features that require no specialized knowledge or training beyond that generally possessed by corporate information technology (IT) personnel to allow the well manager to be easily integrated into existing corporate IT systems.

Another object of the invention is to provide a well manager that runs totally independently of all other managing systems.

Another object of the invention is to provide a well manager that locally generates on-the-fly data processing and reports and displays them on an output display at the well or remotely via the internet.

Another object of the invention is to provide a well manager that communicates with a remote user using standard email alerts, SMS text messages, or other common internet messaging vehicles to provide the remote user with real-time alerts and reports generated directly by the well manager unit, thus eliminating the need for constant well monitoring by personnel and expensive hardware systems.

Another object of the invention is to provide a well manager where all data and settings are accessible via a web interface to reduce support costs by eliminating the requirement for physical presence to troubleshoot or reconfigure the well manager.

Another object of the invention is to provide a well manager that retrieves, stores, organizes, and processes data onsite in real time, providing reports compatible with off-the-shelf software products such as Excel,® Word,® Access,® et cetera.

Another object of the invention is to provide a well manager that runs proprietary software, such as SROD and DIAG, on specific data to determine opportunities for operating improvements and increased efficiencies.

Another object of the invention is to provide a well manager with backwards-compatible SCADA interoperatively.

SUMMARY OF THE INVENTION

The objects identified above, as well as other features of the invention are incorporated in an apparatus and system for control of rod pumped wells including a well manager pump controller that has a computer system with data acquisition and control circuitry for collecting data from and controlling the rod pump. Preferably, the well manager calculates downhole or surface pump cards for pump off control. The computer system provides on-site well data processing and generates a full suite of well and reservoir operational management reports in user-friendly formats from the collected rod pump data to provide analysis, diagnostics and recommendations for optimizing well performance. The computer system also includes a high capacity web server for selectively and securely allowing a remote computer client to access the well manager over the internet to query well data, download processed reports, control the well, and configure the well manager. The well manager can also push reports, alerts, and alarms to a remote operator via email, text messaging or internet instant messaging, for example, during rod pump fault conditions.

In an oil field of multiple wells, each rod pump has an individual and dedicated well manager with an integral web server that is independent of all others. This system eliminates the need for traditional SCADA systems.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention is described in detail hereinafter on the basis of the embodiments represented in the accompanying figures, in which:

Figure 1 is a schematic diagram illustrating an arrangement of prior art wherein well sensors are coupled to circuitry disposed locally at the well, with well circuitry for a number of wells in an oil field coupled to a central internet server;

Figure 2 is a schematic diagram illustrating an arrangement of prior art wherein well sensors are coupled to circuitry locally disposed at the well which transfer data in via wireless RF or SCADA links to a central internet server that serves a multi-well oil field;

Figure 3 is a schematic diagram illustrating an arrangement of prior art wherein downhole well sensors communicate with surface control systems, which in turn transmit data via satellite to a remote internet server;

Figure 4 is a schematic diagram according to a preferred embodiment of the invention illustrating a plurality of rod pumps each with a well manager having an integral web server therein that communicates with a remote client via the internet;

Figure 5 is a schematic diagram according to a preferred embodiment of the invention illustrating a local well manager adapted for controlling a rod pump and disposed in the vicinity of the well, including an internet server incorporated therein;

Figure 6 is a perspective view of a well controller according to an embodiment of the invention showing a computer display screen and input keypad housed in a weathertight enclosure;

Figure 7 is a functional schematic diagram of the computer architecture of the well manager according to an embodiment of the invention;

Figure 8 is a functional schematic diagram of the software of the well manager according to an embodiment of the invention; and

Figure 9 is a flow chart diagram depicting typical communication between the well manager of Figures 5-8 and a remote client computer.

DESCRIPTION OF THE PREFERRED EMBODIMENT OF THE INVENTION

Figure 4 illustrates a number of rod pumps according to a preferred embodiment of the invention. Rod pumps 10A, 10B, 10C, 10D and 10E are each equipped with a well manager 100A, 100B, 100C, 100D, 100E, respectively. Each well manager 100A, 100B, 100C, 100D, 100E is independent of the others. Well managers 100A, 100B, 100C, 100D, 100E preferably provide pump off control and control the speed of operation of rod pumps 10A, 10B, 10C, 10D, 10E, respectively, to match production rate with well fill rate.

Unlike the prior art arrangements of Figures 1-3, each well manager 100A, 100B, 100C, 100D, 100E includes an integrated web server that intelligently handles request from a remote client for well data formatted in Hypertext markup language (HTML) or other user-friendly report formats.

Figures 5-7 illustrate a preferred embodiment of the invention. Figure 5 shows a typical rod pumping system, generally indicated by reference number 10, including a prime mover 12, typically an electric motor. The power output from the prime mover 12 is transmitted by a belt 14 to a gear box 16. The gear box 16 reduces the rotational speed generated by prime mover 12 and imparts a rotary motion to a pumping unit counterbalance, a counterweight 18 and a crank arm 20 that are journaled to a crank shaft end 22 of gear box 16. The rotary motion of crank arm

20 is converted to reciprocating motion by means of a walking beam 24. Crank arm 20 is connected to walking beam 24 by means of a Pitman 26. A walking horsehead 28 and a cable 30 hang a polished rod 32 which extends through a stuffing box 34.

A rod string 36 of sucker rods hangs from polished rod 32 within a tubing 38 located in a casing 40. Tubing 38 can be held stationary to casing 40 by anchor 37. The rod string 36 is connected to a plunger 42 of a subsurface pump 44. Pump 44 includes a traveling valve 46, a standing valve 48 and a pump barrel 50. In a reciprocation cycle of the structure, including the walking beam 24, polished rod 32, rod string 36 and pump plunger 42, fluids are lifted on the upstroke. When pump fillage occurs on the upstroke between the traveling valve 46 and the standing valve 48, the fluid is trapped above the standing valve 48. A portion of this fluid is displaced above the traveling valve 46 when the traveling valve moves down. Then, this fluid is lifted toward the surface on the upstroke.

The prime mover 12 of pumping system 10 is operatively controlled by a locally-disposed well manager 100. Well manager 100 may employ any of a number of pump control methodologies, including control of the prime mover 12 based on surface cards, downhole cards, or motor power. U.S. Patent No. 3,951,209 issued to Gibbs, which describes pump control by surface cards, and U.S. Patent No. 5,252,031 issued to Gibbs, which describes pump control by downhole cards, are incorporated herein by reference.

Well manager 100 includes a computer system 102 (Figure 7). Computer system 102 collects data from and sends control signals to rod pump 10. Computer system 102 also provides on-site well data processing, generating a full suite of well and reservoir operational management reports from the collected rod pump data. Furthermore, computer system 102 functions as a high-capacity web server that hosts a server software application for selectively and securely

allowing a remote client computer 91 access to the server over the internet 1000 for transfer of well data and reports. The computer system 102 preferably has the memory capacity and functional capabilities of at least a powerful desktop computer to support a large number of input and control channels, handle data-intensive mathematical computations, and maintain high-throughput internet communications.

Referring to Figure 6, well manager 100 is ideally equipped with a local display monitor 120 and input keyboard, keypad, and/or input pointing device 122 that are operatively coupled to the computer system 102 for interfacing with a local operator. Well manager 100 is typically incorporated into a single chassis of electronics housed in a weathertight enclosure 101. Well manager may also include a wireless local interface to improve the field operator's efficiency. For example, Bluetooth communication

Figure 7 is a block diagram that illustrates the architecture of a preferred embodiment of the computer system 102, although other architectures may be used as appropriate. Computer system 102 includes a central processing unit (CPU) 104 that is coupled to various buses by a northbridge 150 and a southbridge 152 chipset. CPU 104 is operatively coupled to volatile memory 106 by a high speed memory bus 107 and to a video display 120 by a graphics bus 121 such as an Accelerated Graphics Port (AGP) or a Peripheral Component Interconnect (PCI) Express bus. The memory bus 107 and the graphics bus 121 are directly coupled to the northbridge 150. In other words, they are located on the high-speed front side bus (FSB).

CPU 104 is operatively coupled to a number of other devices or buses on the slower back side bus (BSB), i.e., through the southbridge 152. For instance, keypad 122, non-volatile memory 108, and a network interface 105 are directly tied to southbridge 152. Network interface 105 is preferably an industry standard Transmission Control Protocol over Internet

Protocol (TCP/IP)-capable interface that is accessible by hardwire or wireless network communication methods. An optional Universal Serial Bus (USB) 154 connects USB ports 156 to southbridge 152, and an optional hard disk drive or compact disc (CD) 158 is tied to the BSB by an Integrated Drive Electronics (IDE) (also known as Advanced Technology Attachment (ATA)) bus 160. Input and output data acquisition and control circuits 110, 112 are preferably coupled to southbridge 152 by a PCI bus 162. Although not illustrated, computer system 102 includes a power supply with power conditioning circuitry that typically receives line power and supplies low voltage direct current power to the other components of computer system 102.

CPU 104 is preferably a microprocessor or microcontroller, although special-purpose electronic logic circuits may be used. As is well known in the computer field, processor 104 executes software code instructions retrieved from a memory device 106, 108, 158 to interact with a user, control the reception of input data, and access, manipulate, store, transfer and display data on output devices. CPU word size may range from 8 to 64 bits, but computer system 102 is preferably capable of processing words of sufficient size at a sufficient speed so as to accurately and concurrently control the rod pump 10 (Figure 5), process well data, and perform web server services all in real time.

Memory 106, 108, 158 is used for storing input data, processed data, and software in the form of instructions for the processor. Computer system 102 ideally includes both volatile memory 106 such as random access memory (RAM), which due to its high speed and ease of programming is primarily used to store input data and frequently changing digital control logic software, and non-volatile memory 108 such as battery-backed-up complimentary metal oxide semiconductor (CMOS) memory or electronically erasable programmable read-only memory (EEPROM), which retain memory without power from the computer power supply. CMOS

memory and EEPROMs are preferable to store data or software code that is expected to be infrequently changed. Computer system 102 may also include non-volatile read-only memory (ROM). ROM chips, which cannot be reprogrammed, are preferred to store low-level interface software programs, often referred to as firmware, that contain specific instructions to allow higher-level digital control logic software to access and control a specific piece of equipment. For example, a basic input/output system (BIOS) chip 115 used to provide low-level boot instructions to CPU 104 is occasionally provided on a ROM chip. Other memory devices, such as magnetic or optical mass storage devices 158 are optionally included in computer system 102 to store software code and data. Network memory devices, accessed via network interface 105, may also be used. Software code and data originating from non-volatile memory 108, hard disk drive or CD 158, or via network interface 105 are usually transferred to RAM 106 for faster operation of computer system 102. As computer systems are well known in the art, they are not discussed further herein.

During control of rod pump 10 by well manager 100 (Figure 5), CPU 104 continuously scans the status of all input devices connected to input data acquisition circuitry 110, correlates the received input with control logic in memory 106, and produces the appropriate output responses needed to control pump 10 via the output control circuitry 112. As shown in Figures 5 and 7, typical inputs include a load cell 93 on the polished rod 32 and an inclinometer 94 on the walking beam 24, although other inputs may be used. The input circuitry 110 preferably includes one or more analog-to-digital converters (ADC) 111 to provide capability for monitoring analog electronic signals and a number of digital logic input gates 109 for receiving digital signals, thus allowing input from almost any sensor, monitor, gauge, or transducer. Sensor input to well manager 100 may be in either discrete or continuous form, or a combination

of both. Discrete inputs may come from push buttons, micro switches, limit switches, photocells, proximity switches, shaft encoders, optional scales, or pressure switches, for instance. Continuous inputs may come from sources such as strain gauges, resolvers, thermocouples, transducers, resistance bridges, potentiometers, or voltmeters.

Well manager 100 examines the status of a set of inputs and, based on this status and instructions coded in digital control logic software 200, actuates or regulates a set of outputs for actuating hardware such as solenoids and variable speed motor drive circuitry. The output control circuitry 112 preferably includes one or more digital-to-analog converters (DAC) 113 for generating analog output signals and a number of digital logic output gates 114 for outputting digital signals so that well manager 100 can be connected to almost any analog or digital device in the field for control purposes. An output control line 92 for providing a control signal to regulate the speed of variable speed motor 12 is shown in Figures 5 and 7.

Well manager 100 may provide open-loop control, closed-loop control, or a combination of both. In open-loop control, well manager 100 issues commands to the rod pump components but has no means of assessing the results of these commands; no provision is made for feedback of information concerning movement of a controlled element, for example. In closed-loop control, also referred to as feedback control, well manager 100 outputs a command signal to a rod pump element and then compares the expected result of the command signal to the actual measured movement or location of the driven component. The difference constitutes an error signal, which is fed back to well manager 100 to adjust the command signal until no error exists. Closed loop control is generally required for use of a servomotor. The feedback devices normally used for measuring movement or location of the component are called resolvers, encoders, Inductosyn® transducers, or optical scales, and any of these, other suitable devices, or a

combination thereof are used with well manager 100 as appropriate. As control systems in general, and computer-aided data acquisition and control in particular, are well known in the art, specific details are not addressed herein.

Well manager 100 includes computer software 200 as an integral part of the system. Figure 5 illustrates the well manager 100. Figure 7 is a functional block diagram of a preferred embodiment of computer system 102, and Figure 8 is a functional block diagram of a preferred embodiment of software 200. Referring to Figures 5, 7 and 8 collectively, the software code 200 resides in RAM 106, non-volatile memory 108, hard disk drive, CD, or other mass storage medium 158. Additionally, the software 200 may be stored at a separate computer and accessed over the internet 1000 via network interface 105. Computer software 200 serves several purposes, including retrieving well data from the input circuitry, transforming and displaying data on computer monitors, generating reports, issuing control instructions for the rod pump, and transmitting data to a remote user over the internet. Computer software 200 includes an operating system (OS) 210, a well manager application 220, a web server application 230, an optional web browser application 240, and an optional network firewall application 250.

Operating system 210 controls computer resources, peripherals, and the execution of software applications for computer system 102. Operating system 210 is preferably an industry-standard OS such as a Linux,® Unix,® Windows,® or Macintosh® Operating System. As OS technology is commonplace and well understood in the art, operating system 210 is not discussed further herein.

Software 200 running on computer system 102 generates a local user interface 180, 180' that is displayed on monitor 120 (Figure 6) at the well site. In a preferred embodiment, local user interface 180 is a graphical user interface (GUI) constructed of standard windows-type

display and control mechanisms including windows, client windows, frames, icons, buttons, check boxes, radio buttons, scroll bars, drop-down menus, pull-down menus, folder tabs, bar graphs, panes, panels, forms, slide bars, selection boxes, dialog boxes, text boxes, list boxes, menu bars, bar graphs, wizards, et cetera. The graphical user interface is preferably constructed using an object-oriented programming language such as C++ for a Microsoft® Windows,® Linux® or Unix® OS. The graphical user interface 180 may be generated by a standard web browser application 240 such as Internet Explorer® or Netscape® running on computer system 102 that displays as a web page HyperText mark-up language (HTML) code generated concurrently by well manager application 220 and web server application 230, or alternatively, the graphical user interface 180' may be generated directly by well manager application 220 (using OS 210 resources as appropriate). In another embodiment (not illustrated), the local user interface may consist entirely of a legacy-style character and graphics display with keypad control rather than a windows-style interface. In this case, local user interface is without the use of browser application 240. As user interface and object-oriented programming are well known in the field, the details of constructing the user interfaces are not discussed further herein.

Well manager software application 220 is preferably a suite of custom software programs and files that control rod pump 10 (Figure 5), generate a local user display 180, 180', analyze well data, provide user reports over the internet to remote users, send alarms and alerts to remote users, and accept control commands over the internet from remote users for control of the rod pump. Well manager software application 220 preferably includes a well control module 221, a family of hyperlinked HTML form files 223 disposed in a web page directory accessed by web server application 230, and a series of Common Gateway Interface (CGI) shell scripts or compiled programs 227, disposed in a cgi-bin directory, that are selectively executed in order to

transform the otherwise static HTML form files 223 into a dynamic user interface when displayed in a web browser.

Well control module 221 is a custom software program that preferably provides pump-off control and production optimization capabilities such as lift optimization, automatic well testing, compressor monitoring-control, trend analysis, and pump system analysis. In rod-pumping applications, for example, proprietary optimization software, such as SROD and DIAG, is executed following each stroke of the pumping unit to determine optimum pumping speed, whether the unit should be turned off or remain running, the amount of production through the pump, the pump intake pressure, mechanical efficiencies, and opportunities for operating improvements and increased efficiencies. For example, a well manager application is described in U.S. Patent Application No. 10/940,273 filed on January 5, 2005 by Gibbs et al., entitled "Inferred Production Rates of a Rod Pumped Well from Surface and Pump Card Information," which is incorporated herein by reference.

Well manager 100 collects tremendous amounts of rod pump data at input circuitry 110 for analysis by well manager software application 220. Well manager application 220 retrieves, stores, organizes, and processes data onsite in real time, providing reports compatible with off-the-shelf software products such as Excel,® Word,® Access,® etc. Well manager application 220 generates and makes available locally a myriad of reports from the collected data, allowing a user to query and format well data and graphically display trends with tremendous flexibility. An optional relational database application 225, such as MySQL,® may be integrated with well manager application 220 in order to simplify the handling of the large amount of collected well data. As relational databases are well known in the art, database 225 is not discussed further herein.

Software 200 includes a web sever application 230 that enables users at remote computer 91 (Figure 5) to access well manager 100 to upload control instructions and download well data and reports. Apache is a popular open source HyperText transport protocol (HTTP) web server application that is used with Linux, Windows and other operating systems. Utilizing standard ethernet and TCP/IP networking protocols, well manager 100 is connected to the internet 1000 and assigned a static internet protocol (IP) address enabling direct inbound communication with the unit at the well site. This addressing schema eliminates the need for specialized and proprietary SCADA protocols and hardware connection methods such as direct serial communication, analog radio communication, or other polling-style communication methods. With communications managed by web server application 230, well manager 100 is accessible via the static IP address from anywhere in the world having internet access. As web server applications are commonplace and well known in the art, web server application 230 is not discussed further herein.

Well manager 100 may include a network firewall to protect it from unauthorized intrusion and computer hacking efforts. The firewall may be a firewall software application 250 executed by computer system 102, or it may be a discrete and independent hardware firewall 190 operatively coupled between network interface 105 of computer system 102 and the internet 1000. Regardless of the type of firewall installed, the firewall is preferably commercial off-the-shelf and provides controlled access to well manager 100 using multiple recognized network security methods such as user and password challenges, VPN access, filtered IP address access, et cetera. In other words, well manager 100 is secured to eliminate unauthorized access the same way that an ordinary computer is protected using existing or future common network security

products. As network firewalls are well known in the art, firewall 190, 250 is not discussed further herein.

Figure 9 is a flow chart diagram illustrating an example communication sequence between a remote user at computer 91 and well manager 100 according to one embodiment of the invention. Referring to Figures 8 and 9, web server application 230 and well manager application 220 cooperate to provide secure remote internet access to well manager 100. Web server 230 provides initial login access to a remote client computer 91. Once the remote client 91 is authenticated, an initial or default HTML file 224 is transmitted by web server 230 to the remote client computer. The initial HTML file 224 may include current well data and status provided by well manager application 220. In other words, the default HTML file 224 is not necessarily a static or unchanging file. The initial HTML file 224, displayed as a web page in a web browser application 241 running on remote client computer 91, forms a remote user interface 181. Web server 230 fields requests from remote users via one or more HTML web pages 223. Well manager 220 interprets each request using CGI scripts or programs 227 and selects, analyzes, sorts and codes well data in HTML format in response to the request. Web server 230 transmits the generated HTML code over the internet 1000 to remote computer 91 for display in a web browser application 241 running thereon. Thus, the remote user interface 181 display consists entirely of HTML code displayed in a browser software application running on the remote computer system 91. Additionally, due to the tremendous onboard processing power provided by computer 102, well manager 100 is capable of generating on-the-fly data processing and reports locally rather than relying on post processing of well data by a distant computer facility. These data reports, generated by well manager application in Word® or Excel® format for example, may be downloaded by remote computer 91 via web server 230 and internet 1000.

Remote computer 91 may be a personal computer, desktop computer, laptop computer, mini computer, or mainframe computer, for example, but remote computer 91 may also be a wireless personal digital assistant (PDA) such as a BlackBerry® or Palm® handheld device or cell phone that communicates with well manager 100 via a wireless internet or email connection.

Well manager 100 may additionally be programmed to "push" data to a remote user, rather than responding to a user request that "pulls" data. For instance, reports can automatically and routinely be generated and emailed to a remote user. Also, situations requiring critical decisions, alerts, and alarms may be immediately communicated in real-time to on-call operators via email, SMS text messaging, or any other standard type of internet messaging platform, eliminating the need for expensive hardware systems and constant monitoring by personnel at a SCADA control station. As internet application programming is well known in the art, details are not provided herein.

Management and access to well manager 100 for system administration is provided by the web interface built into well manager 100 and accessible via TCP/IP through a computer web browser. Well manager 100 is simply another computer node in a corporate network requiring few, if any, changes in security policies and protection methods. Administration of the network features and security of the well manager unit are thus easily managed by ordinary corporate information technology personnel as no additional protocol training or specialized knowledge is necessary to ensure successful network integration of well manager unit 100. All configuration, management and reports generated are ideally accessible directly from the web interface. Furthermore, well manager 100 is easily upgraded by uploading new software 200 or firmware 108 over the internet 1000.

As shown in Figure 4, well manager 100 runs totally independently of managing systems or other well controllers. With direct internet access available to well manager unit 100, the need for traditional management systems and specialized hardware or software systems is eliminated That is, SCADA systems using polling-style data collection are no longer necessary. However, well manager 100 is preferably backwards compatible to allow it to work with existing legacy SCADA devices until obsolete SCADA systems are completely phased out.

Although the invention is described herein with reference to control of rod pumps, the invention is not limited as such. Rather, the invention includes an entire spectrum of artificial lift controllers having integral internet web servers such as for controlling rod pumps, progressing cavity pumps, injection wells, ESP, variable speed drives, et cetera. Nor is the invention limited to the production of hydrocarbons; the invention includes controllers with integral internet web servers for producing water, for dewatering, for gas measurement, et cetera. Finally, the invention is not limited to a stand alone controller, but includes portable diagnostic equipment with integral internet web servers and controllers with integral internet web servers that are also combined with other systems, for example.

Although the embodiments of well manager 100 described herein employ HTML and TCP/IP formats, the invention is not limited to using these formats. New communication formats and protocols may be developed over time which may replace existing formats, and well manager 100 preferably employs technologies consistent with the internet standards in use at any given time.

In summary, by providing well manager 100 with real-time, constant onsite internet communication, remote operators have access to operating data at all times. All of the well data reporting functionality of well manager 100 that is available locally is exportable over the

internet to remote users. For example, reservoir engineers can monitor flood response on a minute-to-minute basis, lease operators can have periodic custom reports of the status of each well produced automatically, and technicians can determine the discharge pressure of a compressor station in a small remote field. Support costs and requirements are reduced, because no physical presence at the well is required for troubleshooting or reconfiguration of the well manager units by the operator; remote troubleshooting of the well, the pump 10, or the well manager 100 is possible over the internet 1000. The need for corrective actions can be identified sooner to minimize expensive repairs, losses in production, or pollution to the environment.

The Abstract of the disclosure is written solely for providing the United States Patent and Trademark Office and the public at large with a way by which to determine quickly from a cursory reading the nature and gist of the technical disclosure, and it represents solely a preferred embodiment and is not indicative of the nature of the invention as a whole.

While some embodiments of the invention have been illustrated in detail, the invention is not limited to the embodiments shown; modifications and adaptations of the above embodiment may occur to those skilled in the art. Such modifications and adaptations are in the spirit and scope of the invention as set forth herein:

WHAT IS CLAIMED IS:

1. An apparatus for controlling a rod pump (10), said rod pump characterized by having a rod (32) that is reciprocated by a prime mover (12), the apparatus comprising:

a pump controller (100) coupled to and disposed near said rod pump, said controller arranged and designed to control the speed of said prime mover, to receive and record measurements of a plurality of parameters of said rod pump, and to generate an operational report therefrom; and

a web server (102, 210, 230) integrated with said well controller and operatively connected to an internet (1000), said web server arranged and designed to handle a request from and transmit said operational report to a remote client computer (91) via said internet.

2. The apparatus of claim 1 wherein said controller comprises:

a computer system (102);

data acquisition input circuitry (110) operatively coupled said computer system and a sensor (93, 94) and arranged to measure a parameter of said rod pump;

a well manager software application (220) structured for execution by and residing on said computer system and designed and arranged to calculate a desired speed of said prime mover as a function of a measurement of said parameter; and

control output circuitry (112) operatively coupled between said computer system and said prime mover and arranged and designed to cause said prime mover to move at said desired speed.

3. The apparatus of claim 2 wherein said controller further comprises:

first and second sensors (93, 94) and arranged to measure a stroke position of said rod (32) and a load acting on said rod pump (10), respectively;

said well manager software application (220) arranged to generate a downhole pump card from measurements of said first and second sensors (93, 94) and to calculate a desired speed of said prime mover (12) as a function of said downhole pump card.

4. The apparatus of claim 2 wherein said web server comprises:

a web server software application (230) structured for execution by and residing on said computer system (102).

5. In a well produced by a pump (10) having a pump controller (100) operatively coupled to said pump for controlling the speed of said pump, the improvement comprising:

a web server (102, 210, 230) integrated with said pump controller (100), said web server coupled to an internet (1000) and arranged and designed to allow communications between said pump controller and a remote client computer (91) via said internet.

6. A method for controlling a pump (10)having a prime mover (12), the method comprising the steps of:

integrating a web server (102, 210, 230) with a controller (100) that is arranged and designed to control the speed of said prime mover;

disposing said controller (100) and said web server integrated therewith near said pump (10);

operatively coupling said web server to an internet (1000);

measuring a parameter of said pump by said controller;

calculating by said controller (100) a desired speed of said prime mover (12) as a function of a measurement of said parameter;

storing in said controller said measurement as data;

controlling the speed of said prime mover at said desired speed by said controller;

receiving a request for a report from a remote client (91) via said internet (1000) by said controller (100); and

transmitting said report by said controller to said remote client via said internet.

7. The method of claim 6 further comprising the step of:

generating said report by said controller from said data.

8. The method of claim 7 further comprising the steps of:

formatting said report by said controller in a hypertext markup language; and

displaying said report by said remote client as a web page (181).

9. The method of claim 6 further comprising the step of:

authenticating said remote client (91) by said controller (100).

10. The method of claim 6 wherein said pump (10) is a rod pump characterized by having a rod (32) that is reciprocated by said prime mover (12), the method further comprising the steps of:

measuring a load of said rod pump (10) and a position of said rod (32) by said controller (100);

generating a downhole pump card from load and position measurements by said controller;

storing in said controller said load and position measurements as said data; and

controlling the speed of said rod pump by said controller as a function of said downhole pump card.

11. The method of claim 6 further comprising the step of:

pushing a notification of a condition of said pump to a remote user (91) over said internet (1000) by said controller (100).

12. The method of claim 6 further comprising the step of:

configuring said controller (100) by a remote user (91) over said internet (1000).

13. A method for managing production of an oil reservoir produced by first and second wells having first and second pumps (10A, 10B), respectively, the method comprising the steps of:

disposing first and second pump controllers (100A, 100B) at said first and second pumps, respectively, said first controller operatively coupled to said first pump so as to control the speed thereof, and said second controller operatively coupled to said second pump so as to control the speed thereof;

integrating a first web server with said first controller (100A), said first web server arranged and designed for receiving a first request from a remote client (91) and transmitting a first response to said remote client via an internet (1000);

coupling said first web server to said internet;

integrating a second web server with said second controller (100B), said second web server arranged and designed for receiving a second request from said remote client (91) and transmitting a second response to said remote client via said internet (1000), said second controller independent of said first controller; and

coupling said second web server to said internet.

14. The method of claim 13 further comprising the steps of:

generating said first response by said first controller (100A) from data of said first pump (10A); and

generating said second response by said second controller (100B) from data of said second pump (10B).

15. The method of claim 14 further comprising the steps of:

formatting said first response by said first controller (100A) in a hypertext markup language;

displaying said first response by said remote client (91) as a first web page (181);

formatting said second response by said second controller (100B) in a hypertext markup language; and

displaying said second response by said remote client (91) as a second web page.

16. The method of claim 13 further comprising the steps of:

authenticating said remote client (91) by said first controller (100A); and

authenticating said remote client (91) by said second controller (100B).

17. The method of claim 14 wherein said first and second pumps (10A, 10B) are first and second rod pumps, respectively, the method further comprising the steps of:

measuring a first load of said first rod pump (10A) and a first position of a rod of said first rod pump by said first controller;

generating a first downhole pump card from first load and position measurements by said first controller (100A);

storing in said first controller said first load and position measurements as said first data;

controlling the speed of said first rod pump (10A) by said first controller (100A) as a function of said first downhole pump card;

measuring a second load of said second rod pump (10B) and a second position of a rod of said second rod pump by said second controller;

generating a second downhole pump card from second load and position measurements by said second controller (100B);

storing in said second controller said second load and position measurements as said second data; and

controlling the speed of said second rod pump (10B) by said second controller (100B) as a function of said second downhole pump card.

18. The method of claim 13 further comprising the steps of:

pushing a first notification of a first condition of said first pump (10A) to a remote user (91) over said internet (1000) by said first controller (100A); and

pushing a second notification of a second condition of said second pump (10B) to said remote user (91) over said internet (1000) by said second controller (100B).

19. The method of claim 13 further comprising the steps of:

configuring said first controller (100A) by a remote user (91) over said internet (1000); and

configuring said second controller (100B) by said remote user (91) over said internet (1000).

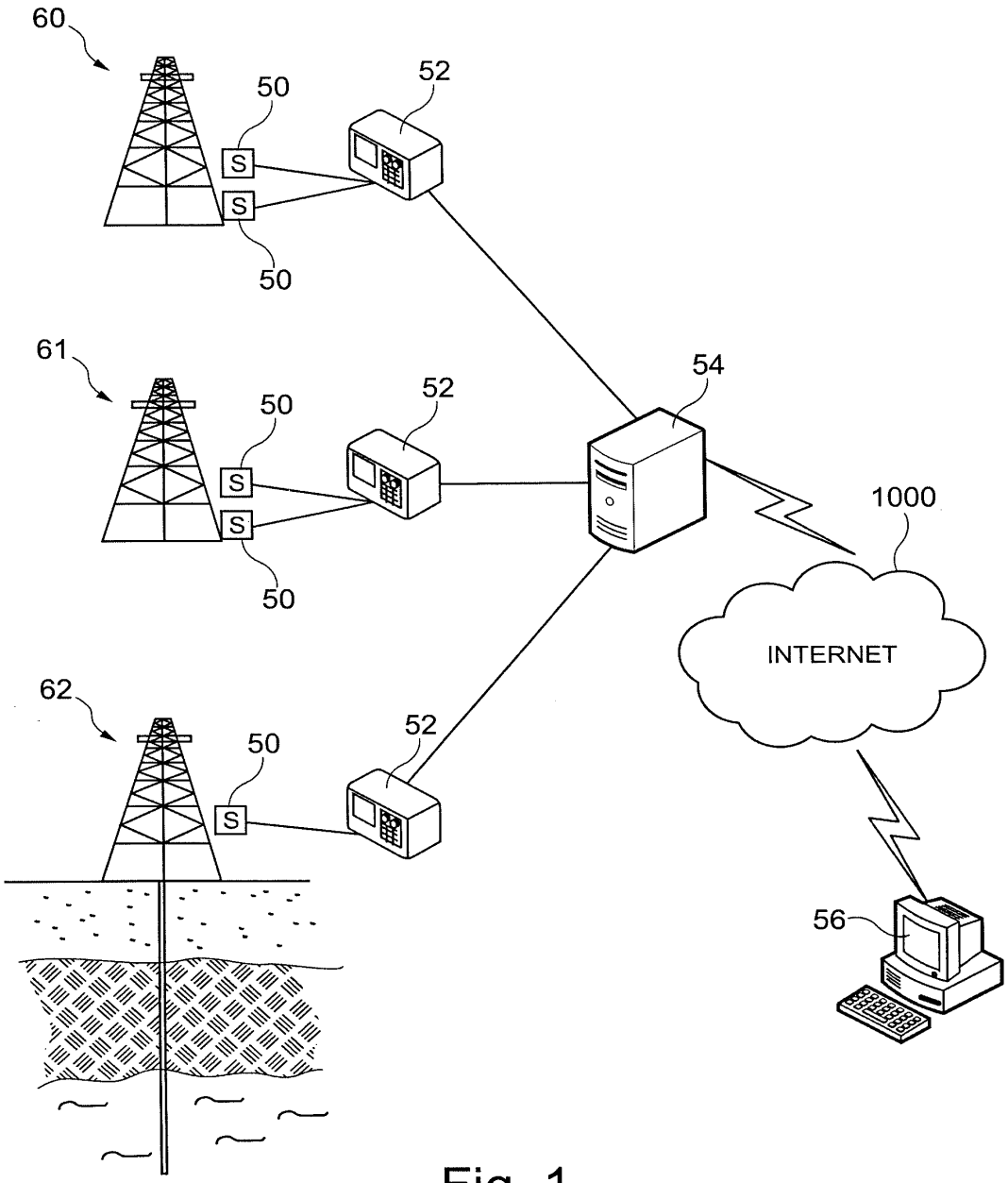


Fig. 1
(PRIOR ART)

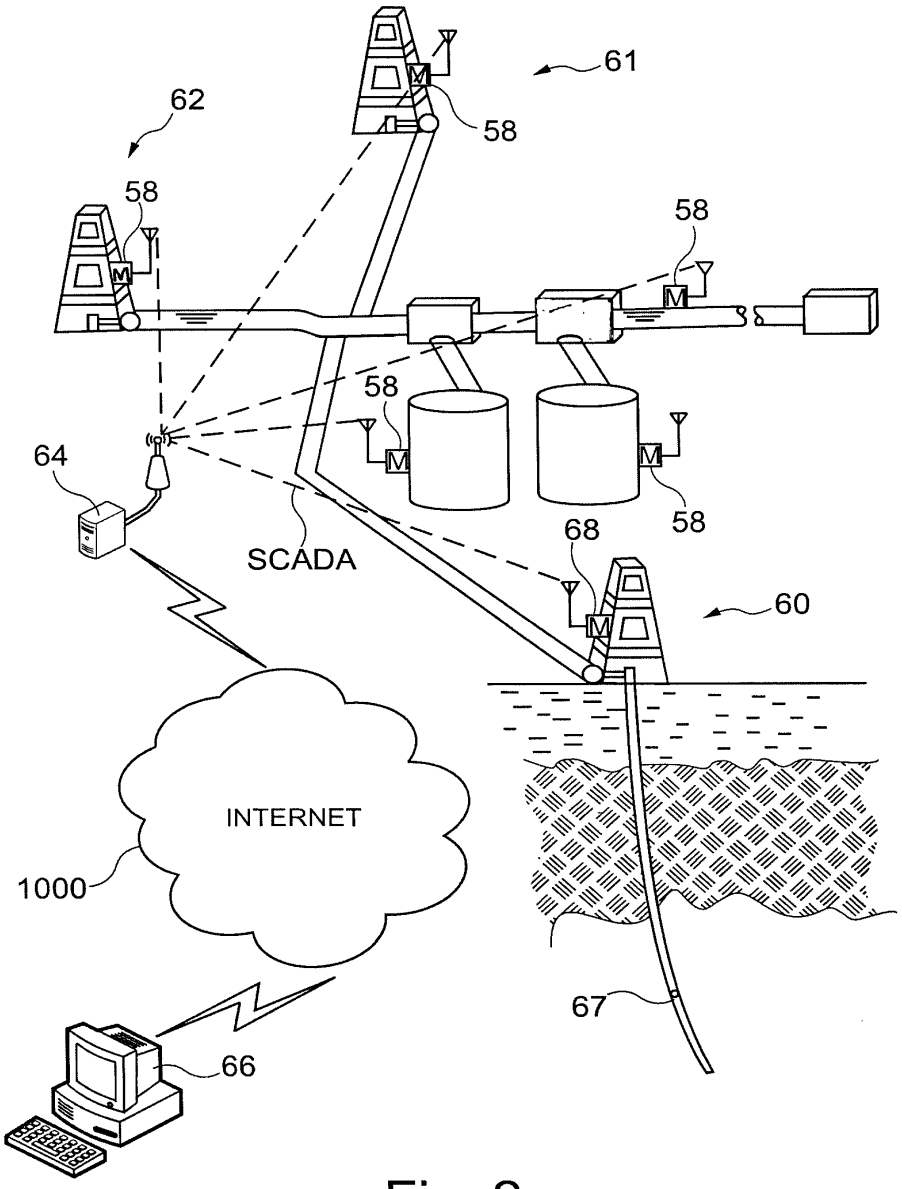


Fig. 2
(PRIOR ART)

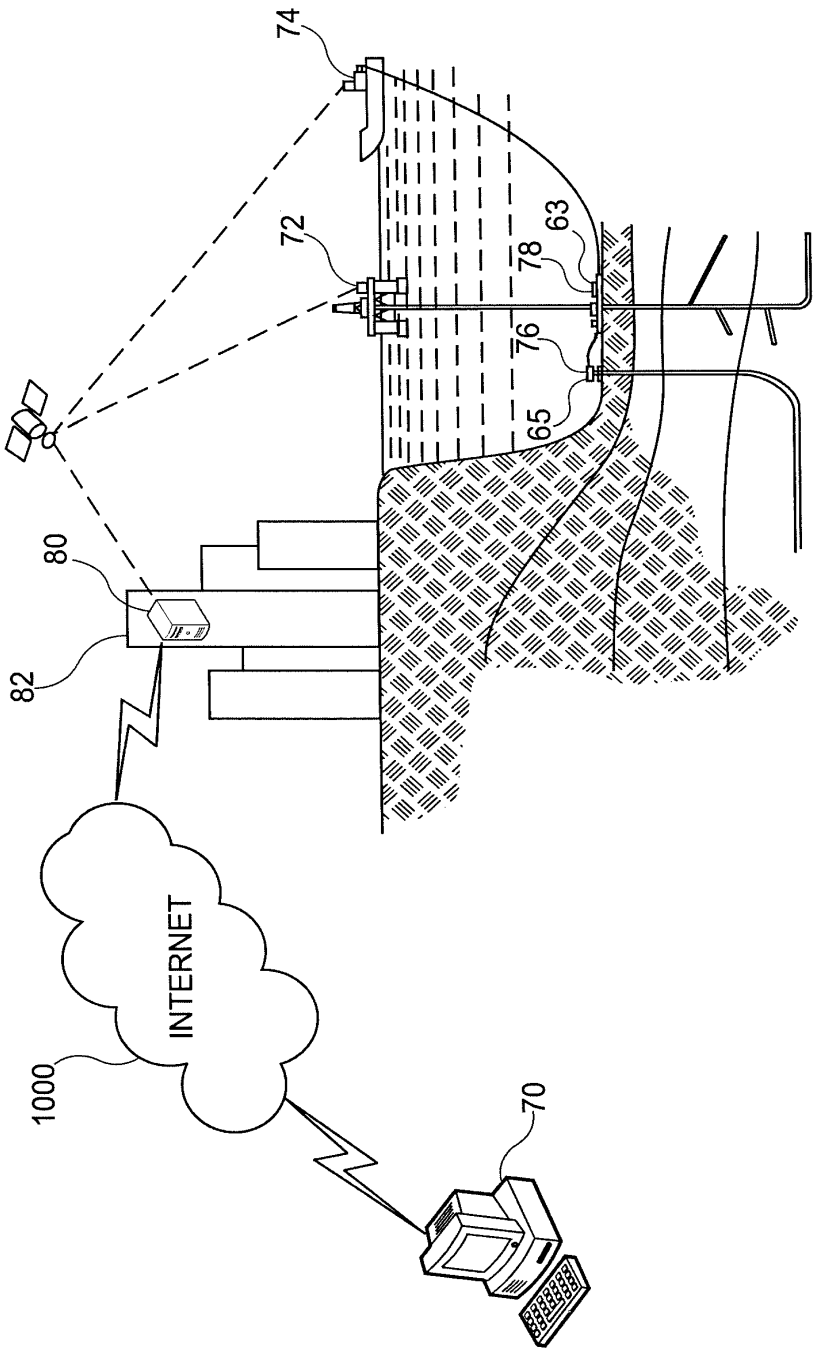


Fig. 3
(PRIOR ART)

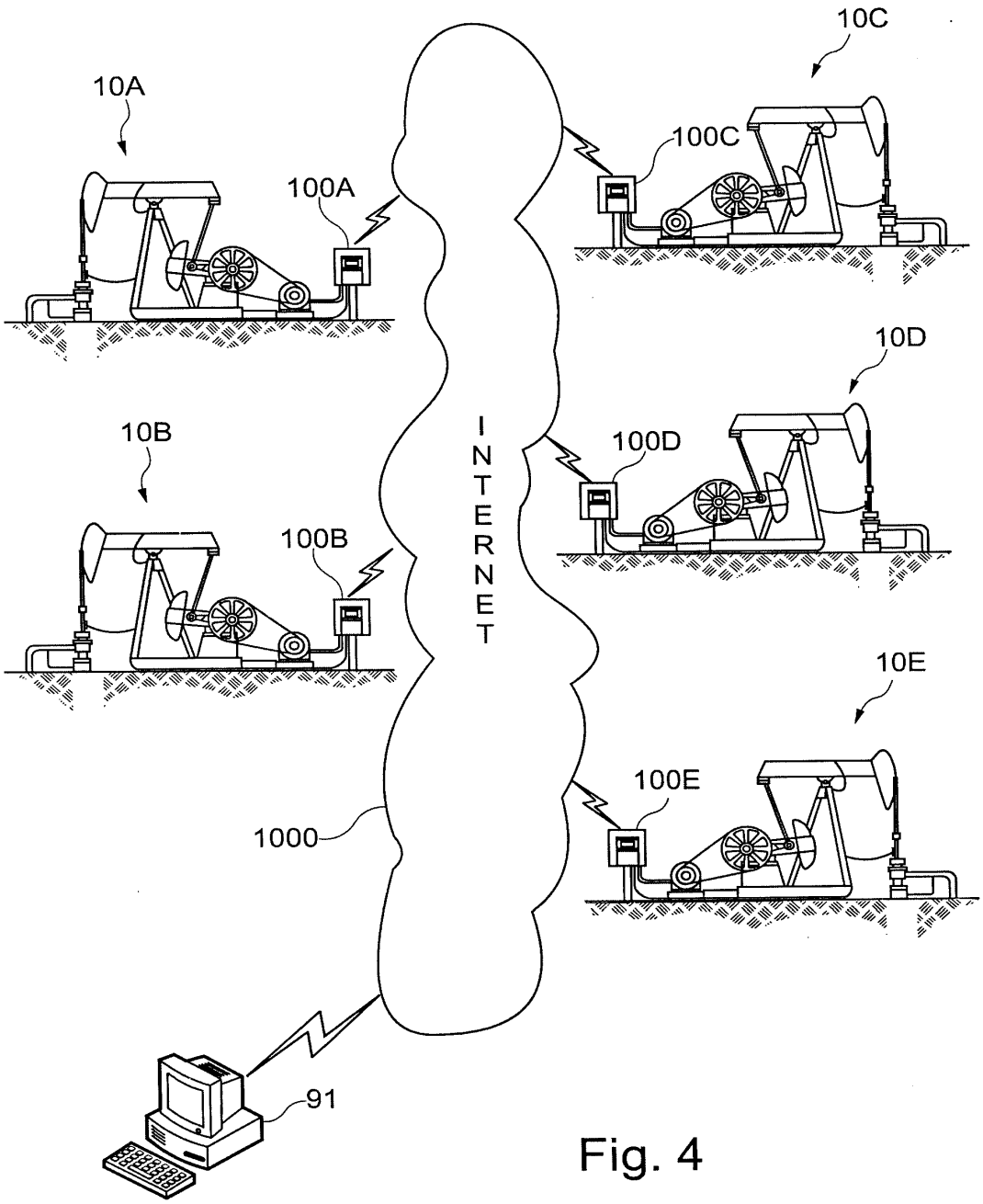


Fig. 4

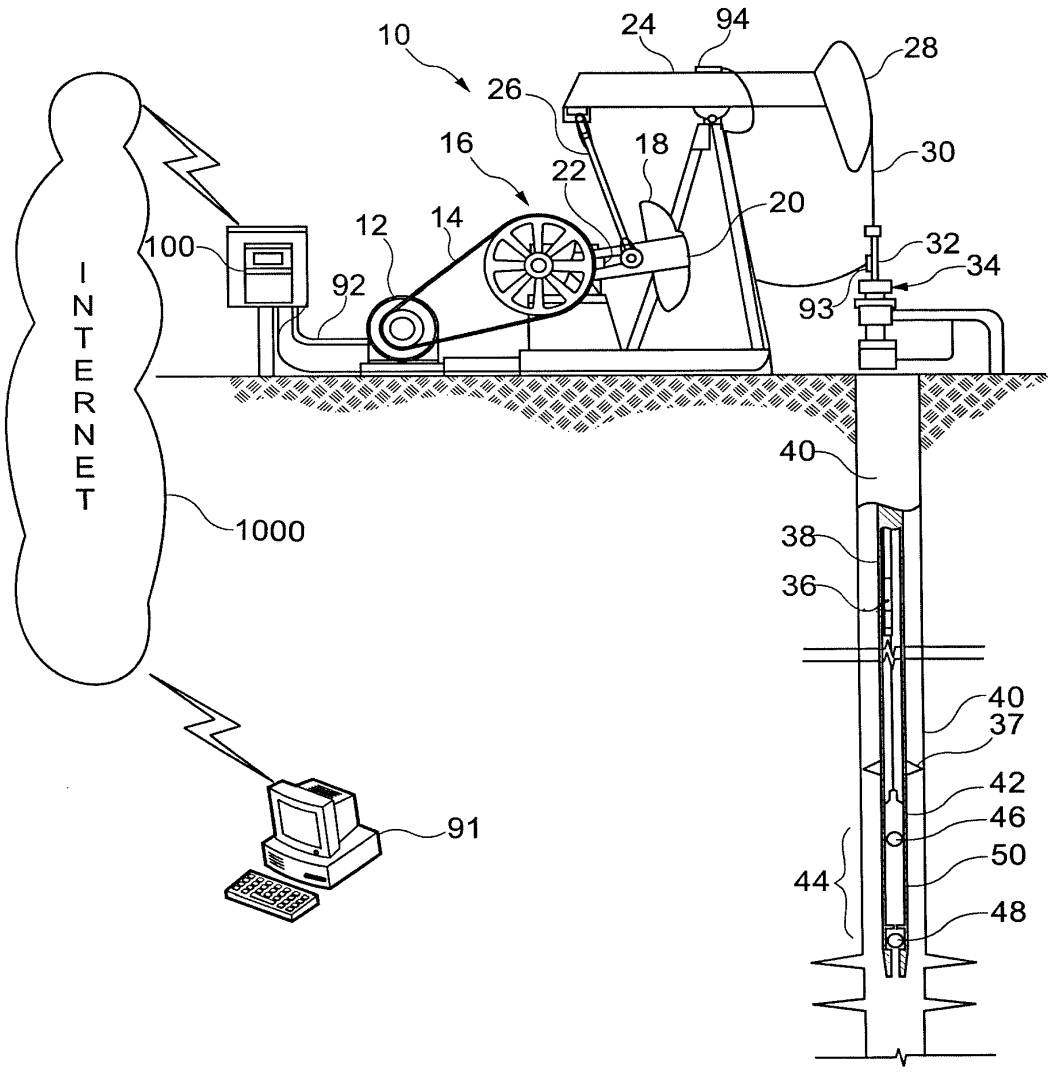

10
24
94
28
26
16
18
30
22
20
12
14
32
34
100
92
93
INTERNET
40
1000
38
36
40
37
42
46
50
91
44
48

Fig. 5

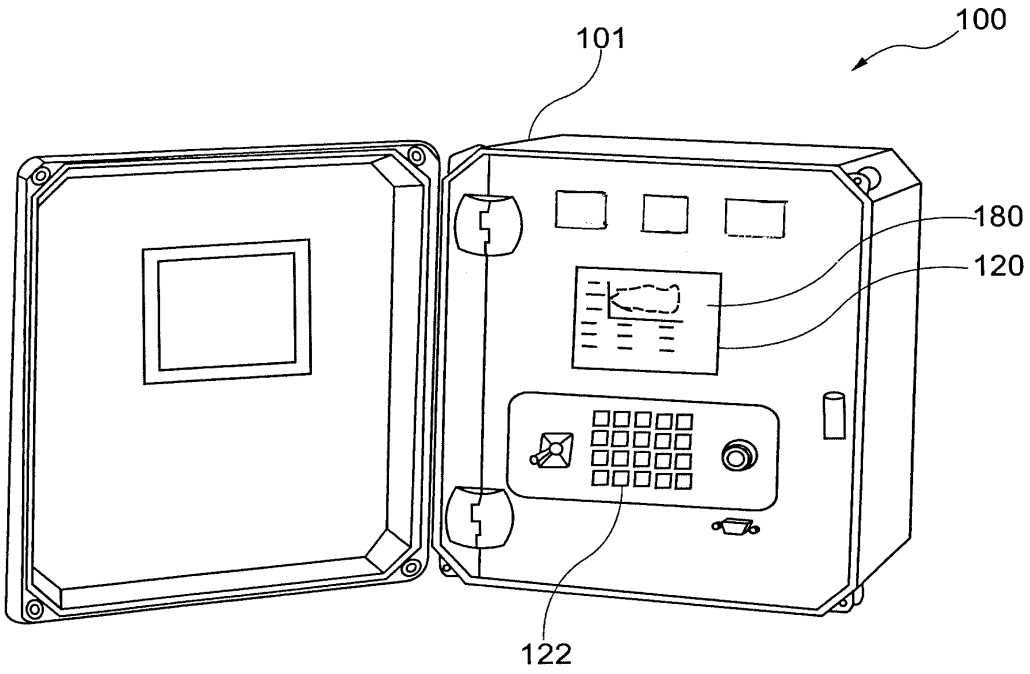


Fig. 6

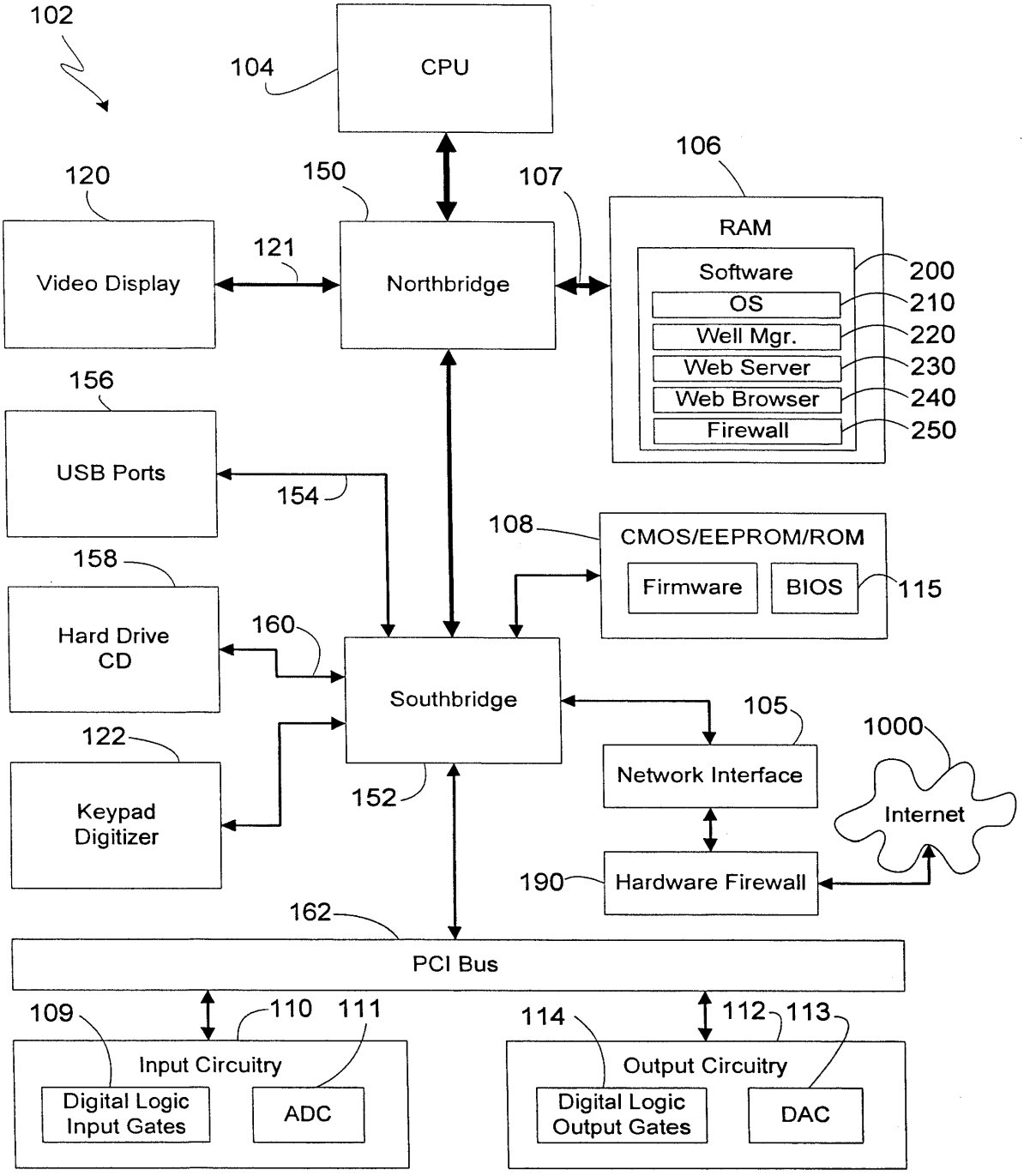

102
104
CPU
106
120
150
107
RAM
121
Video Display
Northbridge
Software
200
OS
210
Well Mgr.
220
Web Server
230
Web Browser
240
Firewall
250
156
USB Ports
154
108
CMOS/EEPROM/ROM
158
Firmware
BIOS
115
Hard Drive
CD
160
Southbridge
105
1000
122
Network Interface
Internet
Keypad
Digitizer
152
190
Hardware Firewall
162
PCI Bus
109
110
111
114
112
113
Input Circuitry
Output Circuitry
Digital Logic
Input Gates
ADC
Digital Logic
Output Gates
DAC

Fig. 7

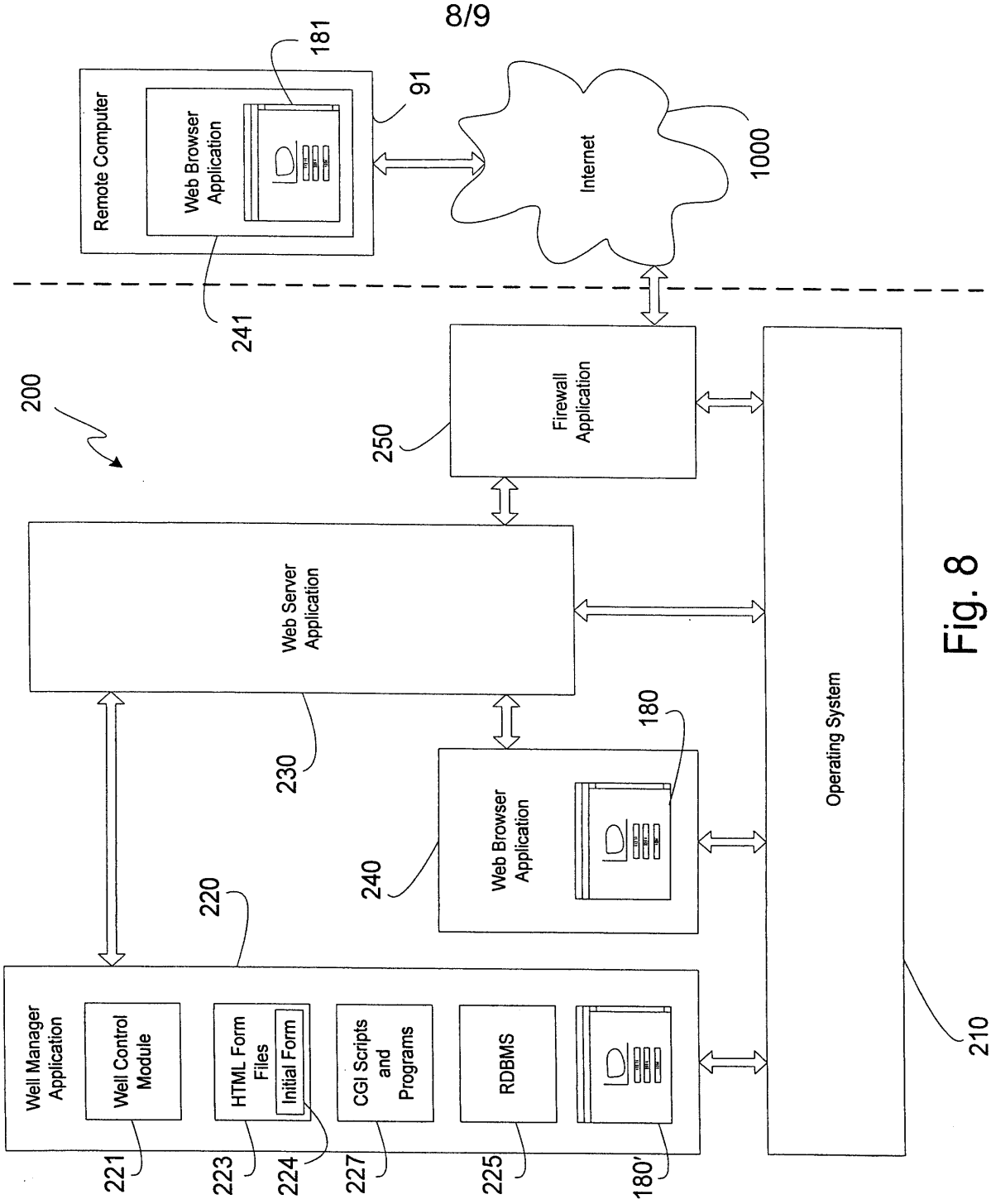

Remote Computer
Web Browser Application
181
91
Internet
1000
241
200
250
Firewall Application
Web Server Application
230
180
Web Browser Application
240
220
Operating System
210
Well Manager Application
Well Control Module
HTML Form Files
Initial Form
CGI Scripts and Programs
RDBMS
221
223
224
227
225
180'

Fig. 8

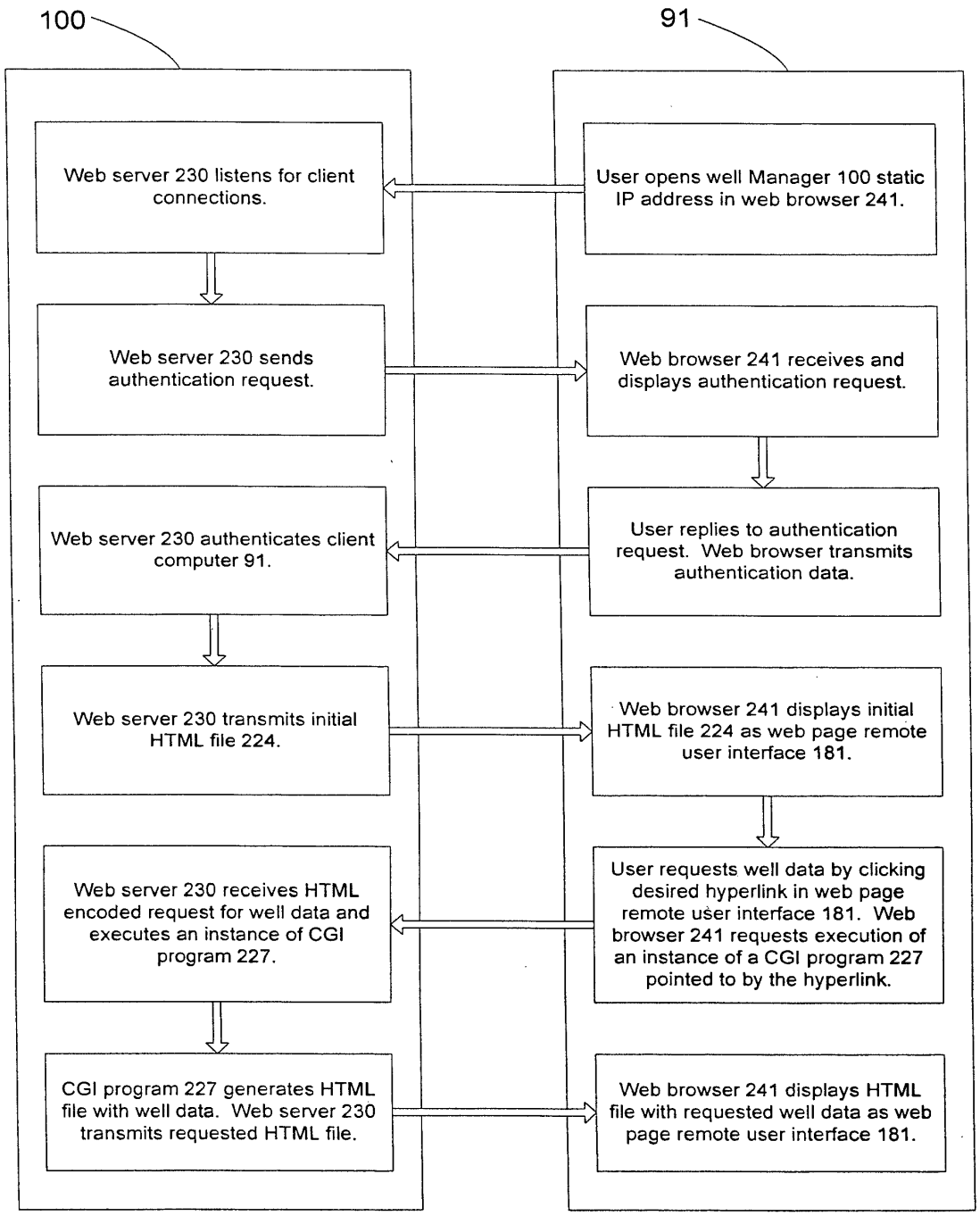

100
91
Web server 230 listens for client connections.
User opens well Manager 100 static IP address in web browser 241.
Web server 230 sends authentication request.
Web browser 241 receives and displays authentication request.
Web server 230 authenticates client computer 91.
User replies to authentication request. Web browser transmits authentication data.
Web server 230 transmits initial HTML file 224.
Web browser 241 displays initial HTML file 224 as web page remote user interface 181.
Web server 230 receives HTML encoded request for well data and executes an instance of CGI program 227.
User requests well data by clicking desired hyperlink in web page remote user interface 181. Web browser 241 requests execution of an instance of a CGI program 227 pointed to by the hyperlink.
CGI program 227 generates HTML file with well data. Web server 230 transmits requested HTML file.
Web browser 241 displays HTML file with requested well data as web page remote user interface 181.

Fig. 9

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 08/59749

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - G06F 11/00 (2008.04)
USPC - 702/188
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)
USPC: 702/188

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC: 702/6, 702/127, 702/188; search terms below

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Delphion [German (Applications - Full text), German (Granted - Full text), European (Applications - Full text), European (Granted - Full text), INPADOC, Abstracts of Japan, US (Granted - Full text), WIPO PCT Publications (Full text), US (Applications - Full text)]; Google Scholar; pump control, hydrocarbon, gas, oil, downhole

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2006/0149476 A1 (GIBBS et al.) 06 July 2006 (06.07.2006), abstract, para [0001], [0021], [0032], [0041], [0073].	1-19
Y	US 2006/0271299 A1 (WARD et al.) 30 November 2006 (30.11.2006), abstract, fig 7, para [0018], [0028]-[0029], [0050], [0052], [0084].	1-19
A	US 2003/0065447 A1 (BRAMLETT et al.) 03 April 2003 (03.04.2003), abstract, fig 1-6.	1-19
A	US 4,594,665 A (CHANDRA et al.) 10 June 1986 (10.06.1986), abstract, fig 1A-23.	1-19

☐ Further documents are listed in the continuation of Box C. ☐

* 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 another 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
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
07 August 2008 (07.08.2008)	15 AUG 2008
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (April 2007)

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/147,190	01/03/2014	Aaron Phillips	000314.000003

CONFIRMATION NO. 7979

35979
Bracewell & Giuliani LLP
P.O. Box 61389
Houston, TX 77208-1389

PUBLICATION NOTICE



Title:REMOTE CONTROL OF FLUID-HANDLING DEVICES

Publication No.US-2014-0163749-A1
Publication Date:06/12/2014

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently http://pair.uspto.gov/. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Managment, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 14/147,190

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	70		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	300		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	360		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	20 minus 20 =	*	x 40 =	0.00	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	*	x 210 =	0.00			
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	730		TOTAL	

APPLICATION AS AMENDED - PART II

AMENDMENT A

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
Application Size Fee (37 CFR 1.16(s))									
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

AMENDMENT B

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)		RATE($)	ADDITIONAL FEE($)
Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
Application Size Fee (37 CFR 1.16(s))									
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
14/147,190	01/03/2014	3753	800	000314.000003	20	3

CONFIRMATION NO. 7979

35979
Bracewell & Giuliani LLP
P.O. Box 61389
Houston, TX 77208-1389

UPDATED FILING RECEIPT

OC000000066421720

Date Mailed: 02/11/2014

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)
Aaron Phillips, Lubbock, TX;

Applicant(s)
AmpliSine Labs, LLC, Lubbock, TX

Assignment For Published Patent Application
AmpliSine Labs, LLC, Lubbock, TX

Power of Attorney: None

Domestic Priority data as claimed by applicant
This application is a CON of 13/708,557 12/07/2012 PAT 8649909

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

If Required, Foreign Filing License Granted: 01/16/2014

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 14/147,190**

Projected Publication Date: 06/12/2014

Non-Publication Request: No

Early Publication Request: No
**** SMALL ENTITY ****

Title

REMOTE CONTROL OF FLUID-HANDLING DEVICES

Preliminary Class

137

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

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Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/147,190	01/03/2014	Aaron Phillips	000314.000003

CONFIRMATION NO. 7979

35979
Bracewell & Giuliani LLP
P.O. Box 61389
Houston, TX 77208-1389

FORMALITIES LETTER

OC000000066164553

Date Mailed: 01/21/2014

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

Items Required To Avoid Abandonment:

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing.

Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- A surcharge as set forth in 37 CFR 1.16(f) was not received.
  The surcharge is due for any one of:
  - late submission of the basic filing fee, search fee, or examination fee,
  - late submission of inventor's oath or declaration,
  - filing an application that does not contain at least one claim on filing, or
  - submission of an application filed by reference to a previously filed application.

SUMMARY OF FEES DUE:

The fee(s) required for a small entity within **TWO MONTHS** from the date of this Notice to avoid abandonment is/are:

- $ **70** surcharge.
- $(**.00**) Previous Payment Amount.
- $ **70** TOTAL FEE BALANCE DUE.

Items Required To Avoid Processing Delays:

Applicant is notified that the above-identified application contains the deficiencies noted below. No period for reply is set forth in this notice for correction of these deficiencies. However, if a deficiency relates to the inventor's oath or declaration, the applicant must file an oath or declaration in compliance with 37 CFR 1.63, or a substitute statement in compliance with 37 CFR 1.64, executed by or with respect to each actual inventor no later than the expiration of the time period set in the "Notice of Allowability" to avoid abandonment. See 37 CFR 1.53(f).

- A properly executed inventor's oath or declaration has not been received for the following inventor(s):
  Aaron Phillips

Replies must be received in the USPTO within the set time period or must include a proper Certificate of Mailing or Transmission under 37 CFR 1.8 with a mailing or transmission date within the set time period. For more information and a suggested format, see Form PTO/SB/92 and MPEP 512.

Replies should be mailed to:

Mail Stop Missing Parts
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P.O. Box 1450
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web, including a copy of this Notice and selecting the document description "Applicant response to Pre-Exam Formalities Notice". https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html

For more information about EFS-Web please call the USPTO Electronic Business Center at **1-866-217-9197** or visit our website at http://www.uspto.gov/ebc.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

/tnguyen/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

Electronic Acknowledgement Receipt	
EFS ID:	18063361
Application Number:	14147190
International Application Number:	
Confirmation Number:	7979
Title of Invention:	REMOTE CONTROL OF FLUID-HANDLING DEVICES
First Named Inventor/Applicant Name:	Aaron Phillips
Customer Number:	35979
Filer:	Joshua L. Tucker
Filer Authorized By:	
Attorney Docket Number:	000314.000003
Receipt Date:	29-JAN-2014
Filing Date:	03-JAN-2014
Time Stamp:	18:38:43
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Oath or Declaration filed	signed_Phillips_aia0001.pdf	1040544 c321ecce16187cb2c12856e9ead183137f2fd6d3	no	2
Warnings:					
Information:					

2	Applicant Response to Pre-Exam Formalities Notice	Notice_to_File_Missing_Parts_01-21-14.PDF	109271 afa559ae99d1e700c7ac5bbef01aa2fd36929bc9	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	1149815	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/AIA/01 (06-12)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	REMOTE CONTROL OF FLUID-HANDLING DEVICES

As the below named inventor, I hereby declare that:

This declaration is directed to:

- ☐ The attached application, or
- ☒ United States application or PCT international application number 14147190 filed on 03-JAN-2014.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTOR

Inventor: Aaron Phillips Date (Optional) :

Signature:

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal	
Application Number:	14147190
Filing Date:	03-Jan-2014
Title of Invention:	REMOTE CONTROL OF FLUID-HANDLING DEVICES
First Named Inventor/Applicant Name:	Aaron Phillips
Filer:	Joshua L. Tucker
Attorney Docket Number:	000314.000003
Filed as Small Entity	

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Late Filing Fee for Oath or Declaration	2051	1	70	70
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
		Total in USD ($)		**70**

Electronic Acknowledgement Receipt	
EFS ID:	18048654
Application Number:	14147190
International Application Number:	
Confirmation Number:	7979
Title of Invention:	REMOTE CONTROL OF FLUID-HANDLING DEVICES
First Named Inventor/Applicant Name:	Aaron Phillips
Customer Number:	35979
Filer:	Joshua L. Tucker
Filer Authorized By:	
Attorney Docket Number:	000314.000003
Receipt Date:	28-JAN-2014
Filing Date:	03-JAN-2014
Time Stamp:	16:08:05
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$70
RAM confirmation Number	2577
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Fee Worksheet (SB06)	fee-info.pdf	30034 8ab15ef518d009189b887a4b3cf08930666d44b7	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	30034	

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New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
14/147,190	01/03/2014	3753	730	000314.000003	20	3

CONFIRMATION NO. 7979

35979
Bracewell & Giuliani LLP
P.O. Box 61389
Houston, TX 77208-1389

FILING RECEIPT



Date Mailed: 01/21/2014

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)
Aaron Phillips, Lubbock, TX;

Applicant(s)
AmpliSine Labs, LLC, Lubbock, TX

Assignment For Published Patent Application
AmpliSine Labs, LLC, Lubbock, TX

Power of Attorney: None

Domestic Priority data as claimed by applicant
This application is a CON of 13/708,557 12/07/2012

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

If Required, Foreign Filing License Granted: 01/16/2014

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 14/147,190**

Projected Publication Date: 06/12/2014

Non-Publication Request: No

Early Publication Request: No
**** SMALL ENTITY ****

Title

REMOTE CONTROL OF FLUID-HANDLING DEVICES

Preliminary Class

137

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 14/147,190

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	70		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	300		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	360		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	20 minus 20 =	*	x 40 =	0.00	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	*	x 210 =	0.00			
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	730		TOTAL	

APPLICATION AS AMENDED - PART II

AMENDMENT A

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
Application Size Fee (37 CFR 1.16(s))									
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

AMENDMENT B

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
Application Size Fee (37 CFR 1.16(s))									
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/147,190	01/03/2014	Aaron Phillips	000314.000003

CONFIRMATION NO. 7979

35979
Bracewell & Giuliani LLP
P.O. Box 61389
Houston, TX 77208-1389

FORMALITIES LETTER

OC000000066164553

Date Mailed: 01/21/2014

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

Items Required To Avoid Abandonment:

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing.

Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- A surcharge as set forth in 37 CFR 1.16(f) was not received.
  The surcharge is due for any one of:
  - late submission of the basic filing fee, search fee, or examination fee,
  - late submission of inventor's oath or declaration,
  - filing an application that does not contain at least one claim on filing, or
  - submission of an application filed by reference to a previously filed application.

SUMMARY OF FEES DUE:

The fee(s) required for a small entity within **TWO MONTHS** from the date of this Notice to avoid abandonment is/are:

- $ **70** surcharge.
- $(**.00**) Previous Payment Amount.
- $ **70** TOTAL FEE BALANCE DUE.

Items Required To Avoid Processing Delays:

Applicant is notified that the above-identified application contains the deficiencies noted below. No period for reply is set forth in this notice for correction of these deficiencies. However, if a deficiency relates to the inventor's oath or declaration, the applicant must file an oath or declaration in compliance with 37 CFR 1.63, or a substitute statement in compliance with 37 CFR 1.64, executed by or with respect to each actual inventor no later than the expiration of the time period set in the "Notice of Allowability" to avoid abandonment. See 37 CFR 1.53(f).

- A properly executed inventor's oath or declaration has not been received for the following inventor(s):
  Aaron Phillips

Replies must be received in the USPTO within the set time period or must include a proper Certificate of Mailing or Transmission under 37 CFR 1.8 with a mailing or transmission date within the set time period. For more information and a suggested format, see Form PTO/SB/92 and MPEP 512.

Replies should be mailed to:

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Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web, including a copy of this Notice and selecting the document description "Applicant response to Pre-Exam Formalities Notice". https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html

For more information about EFS-Web please call the USPTO Electronic Business Center at **1-866-217-9197** or visit our website at http://www.uspto.gov/ebc.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

/tnguyen/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

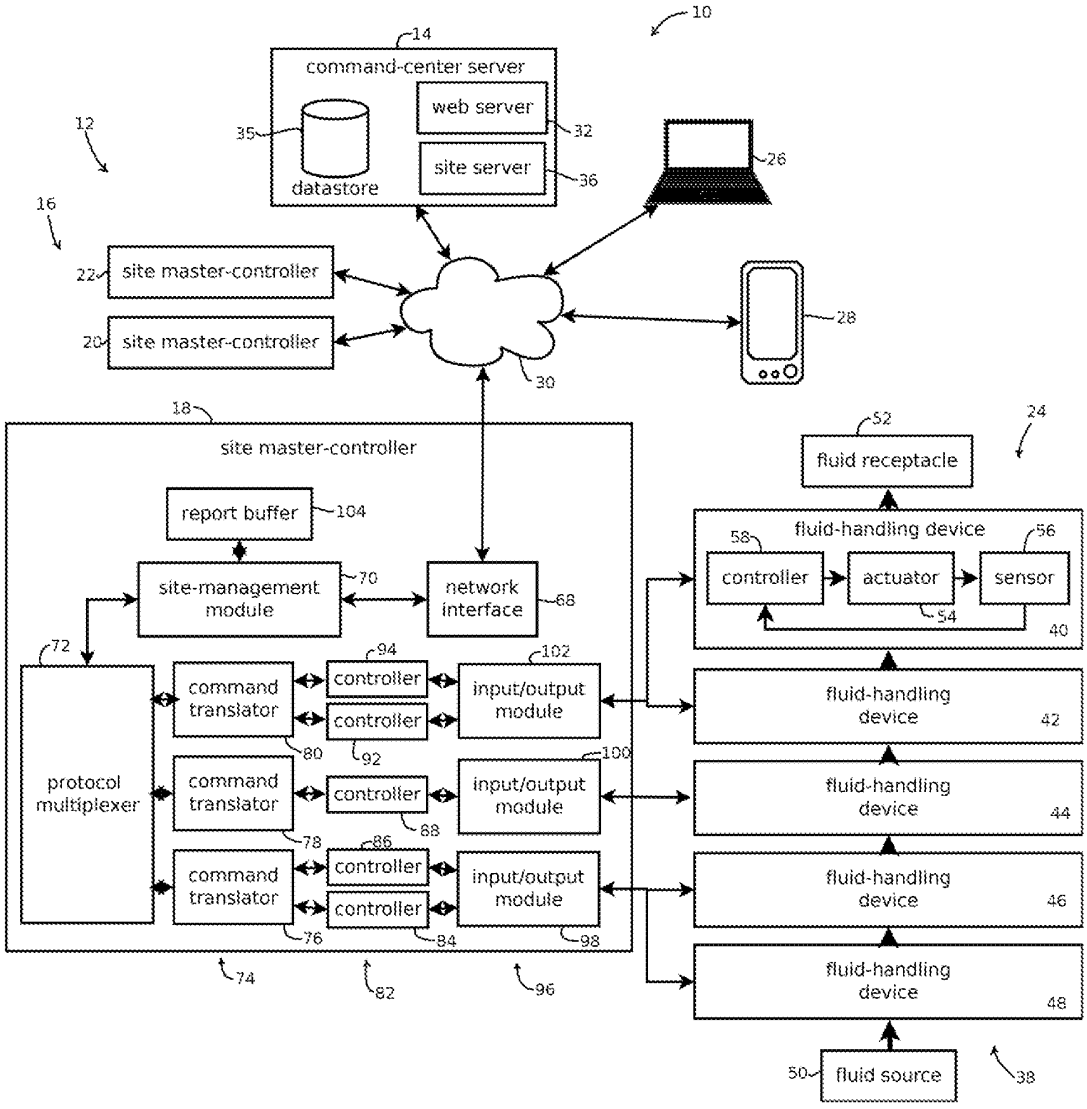

10
14
command-center server
web server
32
35
datastore
site server
36
12
26
16
22
site master-controller
20
site master-controller
28
30
18
site master-controller
report buffer
104
site-management module
70
network interface
68
72
protocol multiplexer
command translator
80
controller
94
controller
92
input/output module
102
command translator
78
controller
88
input/output module
100
command translator
76
controller
86
controller
84
input/output module
98
74
82
96
24
52
fluid receptacle
fluid-handling device
58
controller
actuator
54
sensor
56
40
fluid-handling device
42
fluid-handling device
44
fluid-handling device
46
fluid-handling device
48
50
fluid source
38

FIG. 1

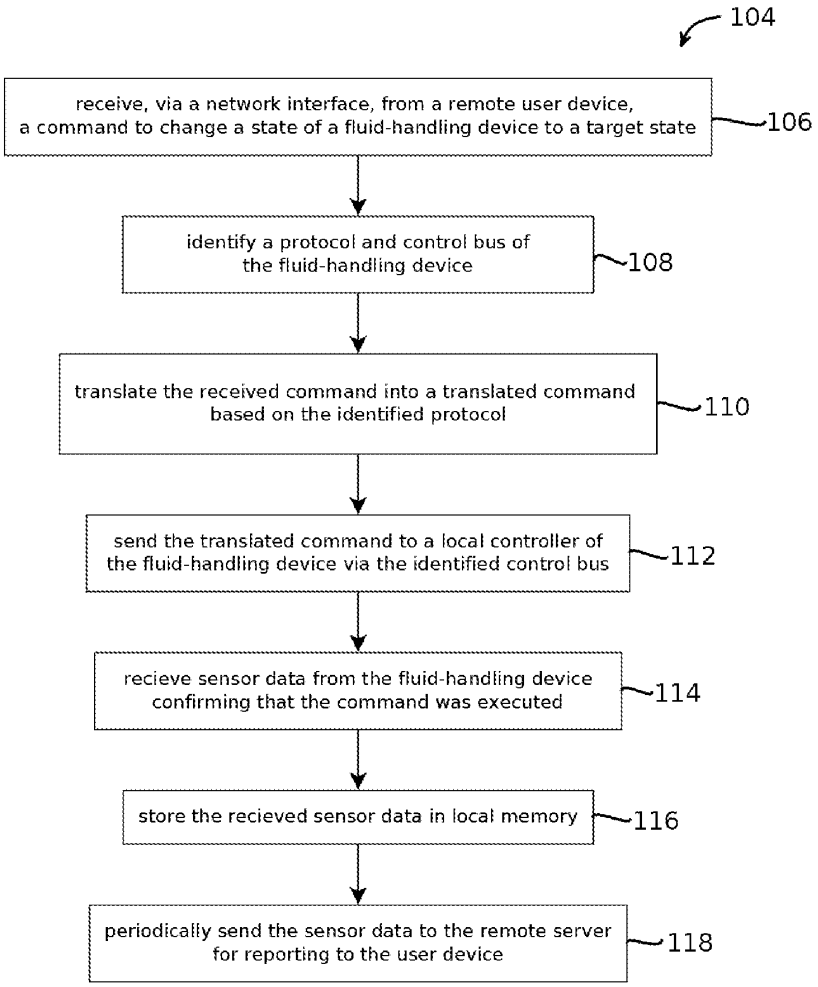

104
receive, via a network interface, from a remote user device, a command to change a state of a fluid-handling device to a target state
106
identify a protocol and control bus of the fluid-handling device
108
translate the received command into a translated command based on the identified protocol
110
send the translated command to a local controller of the fluid-handling device via the identified control bus
112
recieve sensor data from the fluid-handling device confirming that the command was executed
114
store the recieved sensor data in local memory
116
periodically send the sensor data to the remote server for reporting to the user device
118

FIG. 2

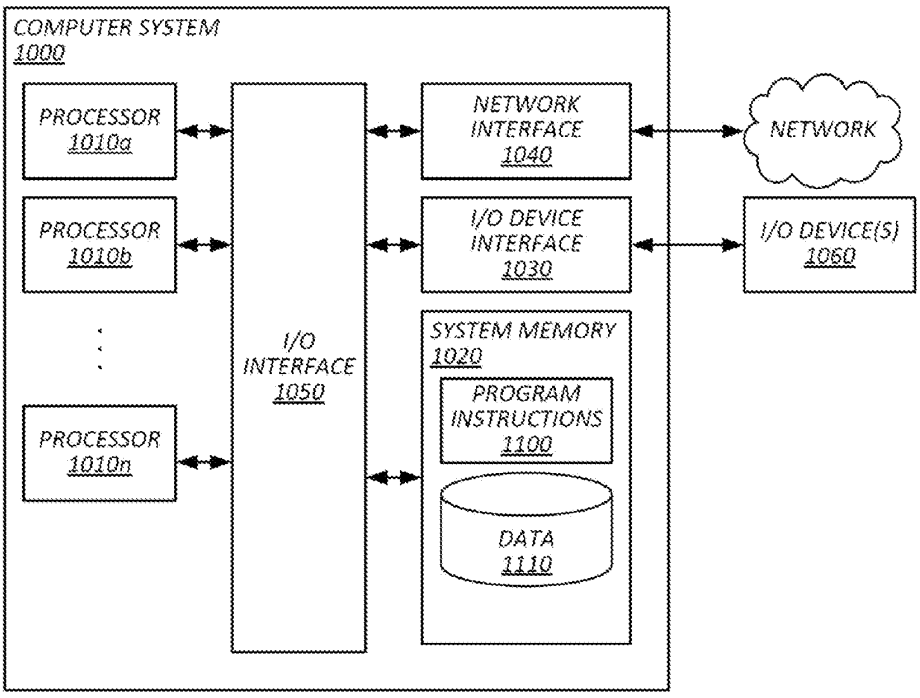

COMPUTER SYSTEM
1000
PROCESSOR
1010a
PROCESSOR
1010b
PROCESSOR
1010n
I/O
INTERFACE
1050
NETWORK
INTERFACE
1040
I/O DEVICE
INTERFACE
1030
SYSTEM MEMORY
1020
PROGRAM
INSTRUCTIONS
1100
DATA
1110
NETWORK
I/O DEVICE(S)
1060

FIG. 3

PATENT APPLICATION

REMOTE CONTROL OF FLUID-HANDLING DEVICES

CROSS-REFERENCE TO RELATED APPLICATIONS

[001] The present application is a continuation of U.S. Patent Application 13/708,557, filed 07 December 2012, and titled REMOTE CONTROL OF FLUID-HANDLING DEVICES, the entire contents of which are hereby incorporated by reference for all purposes.

BACKGROUND OF THE INVENTION

1. Field of the Invention

[002] The present invention relates generally to fluid-handling devices and, more specifically, to remote control of fluid-handling devices.

2. Description of the Related Art

[003] Fluid-handling devices, such as valves, pumps, and various other forms of process equipment, in many use cases, are widely geographically distributed. For example, when such devices are used to extract petroleum products from an oil well, the associated fluid source or receptacle may be in a relatively remote location, as oil wells are generally distributed relative to one another and located remote from metropolitan areas. Similar issues arise in relation to petro-water disposal facilities, re-injection facilities, and petroleum pumping stations, all of which tend to be geographically distributed and include fluid-handling equipment.

[004] When monitoring or controlling such sites, it can be time-consuming and expensive for a technician to manually adjust or otherwise control fluid-handling devices, as the technician will incur costs and delays by traveling to the device to make adjustments or gather data in person. And these adjustments and inspections often occur relatively frequently, as process conditions and market demand fluctuate, thereby further increasing costs.

[005] Some systems exist for exercising remote monitoring of fluid-handling devices, such as various supervisory control and data acquisition (SCADA) systems, but many of these systems fail when a network connection is lost. Remote logic controlling such systems generally ceases to exercise control when the remote logic is disconnected in the event of a network failure. Further, some SCADA systems require the installation of special-purpose software on a computing device in order to exercise control remotely, which tends to deter users from exercising remote control of fluid-handling devices due to the burden of configuring each computer from which remote control is exercised.

SUMMARY OF THE INVENTION

[006] The following is a non-exhaustive listing of some aspects of the present techniques. These and other aspects are described in the following disclosure.

[007] In some aspects, the present techniques include a system for remotely controlling fluid-handling device of an oil well, a petro water disposal or re-injection facility, or a petroleum pumping station, the system including: an input/output module operable to communicate with a fluid-handling device; a network interface; memory; and one or more processors communicatively coupled to the input/output module, the network interface, and the memory, wherein the memory stores instructions that when executed by the processors cause the processors to effectuate steps including: receiving, via the network interface, from a remote user device, a command to change a state of the fluid-handling device to a target state; translating the received command into a translated command operative to cause a local controller of the fluid-handling device to drive the fluid-handling equipment to the target state, the local controller being responsive to the command and feedback from the fluid-handling device indicative of whether the fluid-handling device is in the target state; and sending the translated command to the local controller..

[008] Some aspects include a tangible, non-transitory machine-readable medium storing instructions that when executed by a data processing apparatus cause the data processing apparatus to perform operations including: receiving, via the network interface, from a remote user device, a command to change a state of the fluid-handling device to a target state; translating the received command into a translated command operative to cause a local controller

of the fluid-handling device to drive the fluid-handling equipment to the target state, the local controller being responsive to the command and feedback from the fluid-handling device indicative of whether the fluid-handling device is in the target state; and sending the translated command to the local controller.

[009] Some aspects include a process, including: receiving, via the network interface, from a remote user device, a command to change a state of the fluid-handling device to a target state; translating the received command into a translated command operative to cause a local controller of the fluid-handling device to drive the fluid-handling equipment to the target state, the local controller being responsive to the command and feedback from the fluid-handling device indicative of whether the fluid-handling device is in the target state; and sending the translated command to the local controller.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] The above-mentioned aspects and other aspects of the present techniques will be better understood when the present application is read in view of the following figures in which like numbers indicate similar or identical elements:

[0011] Figure 1 illustrates an example of a command-center server and site master-controller in accordance with some embodiments;

[0012] Figure 2 illustrates an example of a process by which remote control of fluid-handling devices is exercised in accordance with some embodiments; and

[0013] Figure 3 illustrates an example of a computing device by which the hardware and processes of Figures 1 and 2 may be implemented.

[0014] While the invention is susceptible to various modifications and alternative forms, specific embodiments thereof are shown by way of example in the drawings and will herein be described in detail. The drawings may not be to scale. It should be understood, however, that the drawings and detailed description thereto are not intended to limit the invention to the particular form disclosed, but to the contrary, the intention is to cover all modifications, equivalents, and

alternatives falling within the spirit and scope of the present invention as defined by the appended claims.

DETAILED DESCRIPTION OF CERTAIN EMBODIMENTS

[0015] Figure 1 illustrates a computing environment 10 having a control system 12 that, in some implementations, addresses some or all of the above-mentioned deficiencies in certain SCADA systems for exercising remote control of fluid-handling devices. As explained in greater detail below, the control system 12 of this embodiment includes a command-center server 14 and site master-controllers 16 (specifically, in this example, three such site master-controllers 18, 20, and 22) that cooperate to facilitate remote control at a fluid-handling site 24 from user devices 26 or 28 via the Internet 30. Each site master-controller 16 may be co-located with a corresponding fluid-handling site 24 and, in some embodiments, may include logic that implements remotely issued commands, such that once a command is issued from user devices 26 or 28 and received at a site master-controller 16, the site master-controller 16, in some embodiments, executes the command to completion, even if Internet access is lost before the command is fully executed. Further, the site master-controller 16 of some embodiments may be operative to translate commands into various device-specific protocols, such that a single implementation of the site master-controller 16 is relatively versatile regardless of the type of fluid-handling device being controlled. And in some implementations, the command-center server 14 may be operative to present a command interface and receive commands via a web interface in a web browser on user devices 26 and 28, such that fluid-handling devices can be controlled remotely without the need to install special-purpose software on the computing device through which remote control is exercised. It should be noted, however, that not all embodiments provide all of these benefits, as various engineering and cost trade-offs are envisioned, and some embodiments may provide other or none of these benefits.

[0016] In some embodiments, the command-center server 14 includes a web server 32, a data store 34, and a site server 36. The command-center server 14 may act as a central node through which any of a plurality of user devices, such as user devices 26 and 28 (e.g., laptops, tablets, desktop computers, smartphones, and the like), issue commands to any of a plurality site master-controller 16, provided that such access is authorized. Only two user devices and three site

master-controllers are shown for simplicity of explanation, but implementations including substantially more of each are envisioned, such as more than several hundred or several thousand user devices and more than several hundred or several thousand site master-controllers, for example. That said, embodiments are also consistent with a single user device and a single site master-controller.

[0017] The illustrated web server 32 may be operative to send instructions to present a control interface on the user devices 26 and 28, for example in a web browser on an operating system executed by processors and stored by memory of the user devices 26 or 28. The web server 32 may be operative to receive a request for such an interface from one of the user devices 26 or 28, send instructions (for example HTML JavaScript, and cascading stylesheets) to the user devices 26 that when rendered in a browser of the user devices 26 or 28, presents the control interface. The control interface may include buttons, text-input fields, and the like, that when interacted with by a user (e.g., touching, clicking, keying in text, and the like) generated events handled by the control interface and which cause corresponding commands to be sent from the user devices 26 or 28 to the command-center server 14. Other embodiments may have a special-purpose application executing on the user devices 26 and 28 for presenting the control interface and sending commands to the command-center server 14, e.g., a smartphone app that communicates via a web-based application program interface. The command-center server may interact with the user devices 26 and 28 via an Internet Protocol (IP) address of the command-center server and a port, such as port 80, which may be different from a port by which the command-center server 14 communicates with the various site master-controller 16, as described below, to keep traffic from the different components separate.

[0018] The web server 32 may also be operative to send instructions to present reports, and interfaces by which such reports are selected, to the user devices 26 or 28 responsive to user requests for such information or interfaces. As explained in greater detail below, the site master-controller 16 may report various process data, and the web server 32 may present this process data to users upon request. This process data may be stored in the data store 34.

[0019] In the data store 34 of some embodiments, the site master-controllers 16 may be organized according to user accounts, with each site master-controller 16 corresponding to at

least one user account and some user accounts corresponding to multiple site master-controllers 16, as some users may have, for example, a plurality of oil wells or other facilities which the user wishes to control or monitor. In some embodiments, the data store 34 includes a plurality of account records, each account record having one or more user names, one or more user passwords, billing information (e.g., billing address, subscription price, and invoicing data), and identifiers of one or more site master-controllers (e.g. an IP address of each site master-controller) with which users under the corresponding account are authorized to interact (e.g., issue commands or view reports of data from the site master-controller). The data store 34 may encode such arrangements of data in a variety of formats, including a relational database, program state, hierarchical key-value pairs, a flat file, or other information encoded in a tangible, non-transitory, machine-readable medium, such as a hard drive or random access memory.

[0020] The illustrated site server 36 may be operative to interface between the command-center server 14 and the site master-controllers 16 by directing commands received via the web server 32 to the site master-controller 16 to which the command is addressed and receiving process data from the respective site master-controllers to be stored in the data store 34 or presented to the users via the web server 32. In some embodiments, the site server 36 is operative to receive a command via the web server 32, identify an IP address of the site master-controller 16 to which the command is addressed, and send the command to the respective site master-controller 16, for example via an IP address of the command set center server (which may be the same as that of the web server 32 or different) and via a port of the command-center server 14 (which may be different from a port used for the web server 32, or some embodiments may use the same port).

[0021] The data store 34, web server 32, and site server 36 may be co-located, for example in a single computing device, or these components 32 and 34 may be distributed across a number of computing devices, either co-located or physically distributed. The web server 32 and site server 36 may be operative to issue queries to the data store 34 to implement requests from the user devices 26 or 28, and the web server 32 may communicate with the site server 36 to effectuate commands.

[0022] In some embodiments, each site master-controller 16 controls a respective fluid-handling site 24 (only one of which is shown for site master-controller 18, though each of the other site

master-controllers 20 and 22 may be associated with their own, differently located fluid-handling site, or some sites may have multiple site master controllers). The site master-controller 16 may receive commands from the command-center server 14 and implement those commands to completion, for example without further feedback to, and control signals from, the command-center server 14, such that the command can be executed even if a network connection to the command-center server 14 is temporarily lost. Further, the site master-controller 16 may be operative to report process data to the command-center server 14 for storage in the data store 34 and presentation via the web server 32 on user devices 26 and 28.

[0023] In some embodiments, the site master-controllers 16 are physically located at an associated fluid-handling site 24. For example, the site master-controller 18 may be connected to the fluid-handling site via a private network through which communications are sent without passing through the public Internet, and in some cases, the site master-controller 18 may be within a mile of the fluid-handling site 24, to give one example of co-location. The site master-controllers 16 may be geographically remote from one another, the command-center server 14, and the user devices 26 and 28 (each of which may also be remote from one another). For example, each of these components may be more than 1 mile from one another or not connected to one another via a private network. In some cases, though, some sites may have multiple site master-controllers co-located at a single site or some user devices may be co-located.

[0024] To execute commands at the fluid-handling site 24, the site master-controller 18 translates the received commands into a protocol appropriate for a corresponding fluid-handling device 38 (identified individually by reference numbers 40, 42, 44, 46, and 48). Accordingly, the features of the fluid-handling site 24 are described before addressing internal components of the exemplary site master-controller 18 to explain the environment in which the site master-controller 18 operates.

[0025] In this embodiment, the fluid-handling site 24 includes a plurality of fluid-handling devices 38 that are fluidly coupled to a fluid source 50 or a fluid receptacle 52, such that fluids (e.g., liquids or gases) can flow to, from, or through the respective fluid-handling device 38. The illustrated embodiment includes five fluid-handling devices, but other embodiments may include different numbers of such devices coupled to the various site master-controllers 16.

[0026] The fluid-handling devices may be any of a variety of different types of devices that handle fluids. For example, the fluid-handling devices may be a valve, a pump, a process chamber (for instance a oil/water separation tank), or a process filter, or level switch. In some cases, the fluid-handling device may include an actuator, for instance an electric motor or a hydraulic drive, by which fluid flow or other parameters are manipulated, a sensor 56 by which process parameters are measured, or a local controller 58 by which power to the actuator 54 is modulated. Fluid-handling devices 38 may include a variety of types of sensors, for instance, a temperature, viscosity, flowrate, fluid level, pressure, conductivity, or other parameter sensor.

[0027] The illustrated fluid-handling device 40 is shown with feedback control of the actuator 54 by the local controller 58 based on measurements from the sensor 56, but other embodiments may include an actuator with feed-forward control, including actuators controlled by an on-off switch without sensor feedback. The local controller 58 may be operative to receive a command to drive the actuator 54 from a current setpoint to a target setpoint and control the flow of power (e.g. hydraulic or electric power) to the actuator 54 to implement the requested change of state. For instance, the controller 58 may receive a command to change a speed, pressure, or flowrate of a pump and may respond by increasing or decreasing a flow of electric or hydraulic power to an electrical or hydraulic motor driving such a pump. Or the controller 58 may receive a command to open or close a valve and, in response, may increase or decrease a flow of electric or hydraulic power to a corresponding actuator that opens or closes the valve.

[0028] In some cases, the local controllers 58 may have relatively limited processing power, such that more complicated changes in state are executed responsive to multiple commands to the respective fluid-handling device 38. For example, a fluid-handling device 38 with feed-forward control may receive a command to adjust to a target setpoint, return sensor data to the site master-controller 18, and received a subsequent command to adjust further based on a determination made by the site master-controller 18 based on the sensor data. In another example, a stuck-valve may be loosened by a series of commands issued from the site master-controller 18 causing a local controller 58 to oscillate between states, working the stuck-valve loose. Similarly, shocks to up-stream or down-stream fluid-handling devices may be mitigated by a series of commands gradually changing the state of a given fluid-handling device, for instance gradually ramping up or down the speed of a pump or gradually opening or closing a

valve. In some embodiments, an action that affects the system, yet originates from outside the system, may use logic from a controller in the local system, such as a relatively drastic or rapid reduction in a specific tank level, which may indicate that a leak in a tank may exists, and the outside logic may provide which tank is experiencing the leak.

[0029] The site master-controller 18, in some embodiments, communicates with the fluid-handling devices 38 via a plurality of control buses 60 (individually labeled as 62, 64, and 66). Each control bus 60 may be operative to convey commands to one or more of the fluid-handling devices 38 using a different protocol. In this example, control bus 66 communicates with fluid-handling devices 42 and 40, control bus 64 communicates with fluid-handling device 44, and control bus 62 communicates with fluid-handling devices 46 and 48, but this arrangement is merely exemplary, and other embodiments may include more or fewer control buses, more or fewer fluid-handling devices per control bus, and more or fewer control buses per fluid-handling device. The control buses 60 may be serial or parallel control buses conveying digital or analog signals.

[0030] In one particular implementation, intended to serve merely as an example, the control bus 66 conveys commands and data using a serial communication protocol, such as the Modbus remote terminal unit (RTU) protocol, in which commands and other data are encoded in binary signals packaged in frames having redundant bits for detecting errors. The fluid-handling devices 40 and 42 on the bus 66, in this example, each have a unique address on the bus 66 by which commands from the site master-controller 68 are addressed to specific fluid-handling devices 40 or 42, and these addresses may be stored in memory of the site master-controller 18 as described in greater detail below. In some examples, site master-controller 18 acts as a master device on the bus 66, controlling which devices are permitted to transmit signals on the bus 66 at a given point in time. In this example, the fluid-handling devices 42 and 40 may include a bus interface that detects when a command is addressed to the respective fluid-handling device and stores the command for further processing, for example by a local controller 58 that implements the command. For example, fluid-handling device 40 may be a pump, and the bus 66 may convey commands to the local controller 58 to increase the speed of the actuator 54, for example an electric motor speed, to increase a pumping flowrate or pressure. In another example, the site

master-controller 18 may issue a command on bus 66 to fluid-handling device 40 to return a value sensed by sensor 56, for example a measured pump speed, pressure, or flowrate.

[0031] In another aspect of this particular exemplary implementation, the bus 64 conveys a single value, for example a binary on/off value encoded in a voltage or current, or an analog control signal, encoded in a current or voltage, to one fluid-handling device 44 via a single wire (or pair of wires, if a reference different from ground is used). In some cases, the value may be a voltage ranging from 0 to 5 V, or some other range, in which a relatively low voltage, below a threshold, corresponds to an off signal, and a relatively high voltage, above a threshold, corresponds to an on signal. In some cases, the same command may be conveyed to multiple fluid-handling devices connected in series or parallel, or multiple commands may be conveyed by multiple wires in parallel to a single fluid-handling device or multiple fluid-handling devices, for instance one on-off signal per fluid-handling device. As explained in greater detail below, one or more instances the bus 64 may connect to a data acquisition board of the site master-controller 18 for manipulating voltage or current to encode commands. In one example, the bus 64 conveys a binary value to a local controller for a valve actuator as a voltage-high or voltage-low signal, commanding the valve to open or close, respectively. In some cases, instances of the bus 64 may also return data to the site master-controller 18, for example as an analog signal indicating the state of a sensor. In some embodiments, instances of the bus 64 may connect to sensors on fluid-handling devices that are also connected to the bus 66 or the bus 62, e.g., returning sensor values, while the other buses convey commands.

[0032] In another aspect of this particular exemplary implementation, the bus 62 is an Ethernet bus, forming a private local area network by which the site master-controller 18 communicates with fluid-handling devices 46 and 48 via the Ethernet protocol. Examples of various forms of constraints and set point targeting that might be implemented with such communication are described below with reference to local controllers. In this example, data is conveyed in frames of binary data, and each of the site master-controller 18 and the fluid-handling devices 46 and 48 are associated with a respective network address that, when included in such a frame, indicates that the frame is addressed to the associated device. Frames may include redundancy to detect corrupted frames, and access to the bus 62 may be controlled in a distributed fashion, by each device sensing whether a transmission by the device caused a collision on the bus 62, e.g., using

carrier-sense multiple-access techniques with collision detection. In this example, fluid-handling devices 46 and 48 may include network interfaces, such as network interface cards or integrated devices that detect frames addressed to the corresponding fluid-handling device 46 or 48, capture the frames, and store commands encoded in the frames (e.g., in a buffer) for subsequent processing by a local controller. Similarly, the fluid-handling devices 46 and 48 may return data to the site master-controller 18, for example data from sensors of the fluid-handling devices, using the Ethernet protocol.

[0033] As noted above, the site master-controller 18, in this embodiment, like the other site master-controller 20 and 22, is operative to receive commands from the command-center server 14 and translate those commands in accordance with both protocols of the respective buses 62, 64, or 66 and command formats supported by the fluid-handling devices 38 (e.g., command codes, on-off signals, application-program interfaces, and the like, depending on the device). To this end, in this embodiment, the site master-controller 18 includes a network interface 68, a site management module 70, a protocol multiplexer 72, command translators 74 (individually labeled as 76, 78, 80), controllers 82 (individually labeled as 84, 86, 88, 90, 92, and 94), and input/output modules 96 (individually labeled as 98, 100, and 102). The site master-controller 18 may also include a report buffer 104 that stores data to be reported back to the command-center server 14.

[0034] The illustrated network interface 68 is operative to communicate with the command-center server 14 via the Internet 30 (e.g., via the Internet and other networks, such as a local area network, a cellular network, or the like). In some embodiments, the site management module 70 communicates with the network interface 68 via application program interfaces of an operating system in which the site master-controller 18 is executed.

[0035] The illustrated site-management module 70 is operative to coordinate the operation of the other components of the site master-controller 18. In some cases, the site management module 70 monitors a network socket defined by an Internet protocol address and port of the site master-controller 18 and handles events, e.g., incoming commands, from the network socket. In some embodiments, the site-management module 70 is implemented with multiple threads, in a system in which one thread sends and receives data request; one thread controls and monitors the current state of the system, causing other threads to be synced with current information; one thread

writes to writeable devices (e.g., devices having memory) to set the target state of each device; one thread that handles server interaction for updating and receiving; one thread that handles user interaction (e.g., presenting interfaces on an local display, receiving user input, and handling events from such input); and one thread that eliminates threads that become problematic.

[0036] The site manager module 70 may also be operative to transmit data with the network socket, using the network interface 68, to the command-center server 14. For example, the site manager module 70 may periodically retrieve data from the report buffer 104, such as alarms, measurements from sensors, and other data associated with the fluid-handling site 24, and push this data to the command-center server 14. Or the site management module 70 may be operative to receive requests for such data being pulled from the command-center server 14, and retrieve the corresponding data from the report buffer 104 for transmission back to the command-center server 14. Further, the site manager module 70 may be operative to request measurements, alarms, and other data from the fluid-handling devices via the components 72, 74, 82, and 96, and store this data in the report buffer 104 for transmission to the command-center server 14.

[0037] In this embodiment, when the site management module 70 receives a command via the network interface 68, or issues its own command (e.g., to poll sensors or alarm logs), the command is conveyed to a protocol multiplexer 72, which may be operative to determine which control bus 60 and fluid-handling device 38 will receive a corresponding translated command. For example, the protocol multiplexer 72 may store in memory records for communicating with the fluid-handling devices 38. Each record may correspond to a individual fluid-handling device 38 or an individual actuator or sensor of a fluid-handling device, and each record may include a unique identifier of the corresponding device, actuator, or sensor; a control bus address of the device, actuator, or sensor (for those components on a control bus that is addressable); an identifier of the control bus 62, 64, or 66 through which the site master-controller 18 communicates with the device, actuator, or sensor; and an identifier of the protocol through which such communication occurs.

[0038] When a command is received at the protocol multiplexer 72, in some embodiments, the command includes the identifier of the device, actuator, or sensor to which the command is directed, and using this identifier, the protocol multiplexer 72 retrieves the corresponding record

from memory to identify the appropriate protocol. In this example, based on the protocol in the record, the protocol multiplexer 72 selects among the command translators 74, each of which corresponds to a different protocol. For example, the command translator 80 may correspond to a protocol of control bus 66, such as the modbus RTU protocol; the command translator 78 may corresponds to a protocol of the control bus 64, such as a binary or analog voltage or current signal conveyed via a data acquisition board; and the command translator 76 may corresponds to a protocol of the control bus 62, such as the Ethernet protocol.

[0039] The command translators 74 may be operative to translate a received command from an input format to a format configured to effectuate changes in the fluid-handling devices 38. For instance, a generic command to open a valve may be sent from the control-center server 14, and that command may be translated to differently depending on the specific protocol used to communicate with the corresponding valve at a given site, with different sites potentially employing different protocols for the task. Translating commands may abstract the details of the site-specific implementations away from those implementing the command-center server 14, facilitating relatively rapid deployment of new features or sites.

[0040] In one example of translation, the command translator 80 may receive a command to increase a pump speed, and the command translator may determine a corresponding command via calculation or look-up table, such as a modbus function code and associated data, that when conveyed via the control bus 66 causes a corresponding fluid-handling device 40 or 42 to change state. In some embodiments, prior to execution, the command is checked for validity, to ensure the current conditions of the system warrant that the commanded action occur to preventing harm to the fluid-handling devices.

[0041] For example, some embodiments may store in memory accessible to the command translator 80 system constraints describing acceptable patterns of input and output parameters. The system constraints may be selected to prevent damage to the system, e.g., a maximum speed for a pump, a maximum or minimum liquid height for a tank, a maximum or minimum fluid pressure, a maximum or minimum flow rate, an impermissible pattern of open valves that would leak oil outside of the system, etc. A command may be compared against these constraints to determine whether the command would cause the system to violate one of the constraints. In

response to determining that the command would violate a constraint, the command may be rejected, an override confirmation may be requested from the operator, or the command may be executed to the extent permitted by the constraints, for instance.

[0042] Some embodiments may execute the translated commands in different modes. For instance, in an automatic mode, the command translator 80 may select set points to keep the system within the above-described constraints, execute a process recipe in which a collection of set points are targeted, or to target other output set points given the above described constraints. In another example, the system may operate in a mixed automatic mode in which the user selects which devices are manually controlled while other devices are automatically controlled. In a third example, a manual mode, each of the devices may be controlled manually.

[0043] In another example, the command translator 78 may be operative to determine whether a command corresponds to a particular voltage or current on an individual instance of the control bus 64. For example, a command to dislodge a stuck valve may be translated by the command translator 78 into a sequence of on and off signals conveyed via a high and low voltage on an individual wire corresponding to bus 64.

[0044] In another example, the command translator 76 may be operative to translate commands into a format configured to change the state of fluid-handling devices 46 or 48. Or in some embodiments, command translator 76 is operative to pass through and un-translated command if appropriately formatted as received from the command-center server 14.

[0045] Some embodiments may include controllers 82 operative to execute control routines implicated by the translated commands on an individual device 38, actuator 54, or sensor 56. To this end, the commands translator 74, in addition to transmitting commands, may also route the translated command to a controller 82 corresponding to the specific device, actuator, or sensor to which the command is directed. The controllers 82 may determine set points corresponding to (or conveyed in) the command, send control signals configured to drive the fluid-handling device to the set points, and receive feedback from the fluid-handling device 38 indicative of whether the fluid-handling device 38 has achieved the target set point. In some embodiments, the controllers 82 include proportional-integral-derivative controllers for exercising feedback control, or the controllers 82 may include feed forward control algorithms (e.g., look-up tables or

formulas for calculating commands based on set points). Further, in some embodiments, the controllers 82 may change the set point over time in accordance with the received command, for example a command to gradually ramp up a motor speed, a command to gradually open a valve, or a command to oscillate the position of a valve to dislodge a stuck valve. Algorithms for changing the set point may be stored in memory accessible to the controllers 82 responsive to a translated command implicating the specific algorithm.

[0046] The illustrated input/output modules 26 include, in some embodiments, link-layer devices that accommodate the particular features of the physical medium with which control buses 62, 64, and 66 are implemented. In some cases, the input/output modules 96 also perform encoding and decoding at the network and transport layer, for example packaging data in appropriately structured frames for the respective control bus 60. In one example, the input/output module 102 includes a modbus modem, the input/output module 100 includes a data acquisition board (for example a printed circuit board having one or more digital-to-analog converters or analog-to-digital converters), and the input/output module 98 includes an Ethernet network interface card.

[0047] The site master-controller 18, thus, may be operative to receive commands from the site server 36 of the command-center server 14, translate those commands, identify the appropriate control bus 60 and, if needed, address on the control bus, and implement the command once received, even if network access is lost after the command is issued from the command-center server 14. Further, the site master-controller 18, in some embodiments, is operative to retrieve sensor data, alarms, and other site data, and buffer such data in the report buffer 104, before the data is periodically returned to the command-center server 14, such that buffered data is not lost if network access ceases intermittently. Accordingly, some embodiments provide control and monitoring of remote fluid handling sites 24 that is relatively robust to interruptions in network service, and some embodiments facilitate such monitoring and control via a web browser on user devices 26 and 28, such that the addition of new devices or users is relatively simple compared to systems that require special purpose applications. Again though, not all embodiments provide these benefits, and some embodiments may provide other benefits.

[0048] The components of the site master-controller 18 and command-center server 14 are described above with reference to discrete functional blocks and as discrete unitary components,

but it should be understood that software or hardware by which these functional blocks or components are implemented may be distributed across multiple computing systems or multiple processes within a computing system, and code, stored in a tangible, non-transitory, machine-readable medium, for providing this functionality or the functionality described below may be intermingled, conjoined, divided, or otherwise differently organized than the manner in which the functional blocks are illustrated.

[0049] Figure 2 illustrates an embodiment of a process 104 for exercising remote control of a fluid-handling site. The process 104 may be performed by the above-described site master-controllers 16, though embodiments are not limited to the implementations described above. Further, embodiments may include additional steps, fewer steps, and steps in a different order from the manner in which the process 104 is illustrated, which is not to suggest that any other feature described herein is required in all embodiments or cannot be modified.

[0050] In some embodiments, the process 104 includes receiving, via a network interface, from a remote user device, (e.g., via a command-center server) a command to change a state of a fluid-handling device to a target state, as illustrated by block 106. The command may be received from, for example, the above-describes site server 36, which may have received the command from a remote user device via a web browser of the user device. Further, the command to change the fluid-handling device to a target state may include a command that changes the fluid-handling device to a plurality of different states over time, such as a command to ramp up or down a motor speed or oscillate some parameter.

[0051] In some embodiments, the process 104 includes identifying a protocol and control bus of the fluid-handling device, as illustrated by block 108. Identifying a protocol and control bus may include parsing an identifier of a device, actuator, or sensor from the received command and retrieving a corresponding record based on the identifier, the record including an identifier of the protocol and control bus. In some embodiments, the retrieved record may also include an identifier of a control bus address of the corresponding device, actuator, or sensor.

[0052] In some embodiments, the process 104 includes translating the received command into a translated command based on the identified protocol, as illustrated by block 110. Examples of such translation are described above with reference to the command translators 74.

[0053] The process 104 may also include sending the translated command to a local controller of the fluid-handling device via the identified control bus, as illustrated by block 112. Sending the translated command may include exercising feedback control of the fluid-handling device based on sensor data received from the fluid-handling device by adjusting a set point sent to the local controller. Or in some use cases, sending the translated command may include sending a sequence of set points that change over time.

[0054] In some embodiments, the process 104 includes receiving sensor data from the fluid-handling device confirming that the command was executed, as illustrated by block 114. As with the other features described herein, not all embodiments include this step. Using this data, some embodiments may exercise feedback control or may retrieve sensor measurements following the execution of a command for reporting to the user device. In some cases, the sensor data is retrieved regardless of whether a command was issued, for example periodically to monitor the state of the fluid-handling device. In one example, the fluid-handling device is an oil/water separation tank, and a set point of a pump is adjusted to change a fluid level in the tank, e.g., a level at which oil meets water or a level of the oil.

[0055] In some embodiments, the received sensor data is stored in local memory, as illustrated by block 116. For example, the received sensor data may be stored in the above-described report buffer 104.

[0056] In some embodiments, the process 104 further includes periodically sending the sensor data to the remote server for reporting to the user device, as illustrated by block 118. Periodically, data from the report buffer may be transmitted to the above-described command-center server 14 for compilation of reports requested by user devices 26 to 28. Similarly, alarms or other log data issued by fluid-handling devices may also be retrieved, stored, and transmitted to the command-center server 14 for reporting.

[0057] Thus, systems implementing the process 104, in some embodiments, offer relatively robust control and monitoring of fluid-handling devices that are geographically distributed. This is expected to lower the costs associated with operating such fluid-handling devices and facilitate the extraction of petroleum products and other processing of fluids.

[0058] Figure 3 is a diagram that illustrates an exemplary computing system 1000 in accordance with embodiments of the present technique. Various portions of systems and methods described herein, may include or be executed on one or more computer systems similar to computing system 1000. Further, processes and modules described herein may be executed by one or more processing systems similar to that of computing system 1000.

[0059] Computing system 1000 may include one or more processors (e.g., processors 1010a-1010n) coupled to system memory 1020, an input/output I/O device interface 1030 and a network interface 1040 via an input/output (I/O) interface 1050. A processor may include a single processor or a plurality of processors (e.g., distributed processors). A processor may be any suitable processor capable of executing or otherwise performing instructions. A processor may include a central processing unit (CPU) that carries out program instructions to perform the arithmetical, logical, and input/output operations of computing system 1000. A processor may execute code (e.g., processor firmware, a protocol stack, a database management system, an operating system, or a combination thereof) that creates an execution environment for program instructions. A processor may include a programmable processor. A processor may include general or special purpose microprocessors. A processor may receive instructions and data from a memory (e.g., system memory 1020). Computing system 1000 may be a uni-processor system including one processor (e.g., processor 1010a), or a multi-processor system including any number of suitable processors (e.g., 1010a-1010n). Multiple processors may be employed to provide for parallel or sequential execution of one or more portions of the techniques described herein. Processes, such as logic flows, described herein may be performed by one or more programmable processors executing one or more computer programs to perform functions by operating on input data and generating corresponding output. Processes described herein may be performed by, and apparatus can also be implemented as, special purpose logic circuitry, e.g., an FPGA (field programmable gate array) or an ASIC (application specific integrated circuit). Computing system 1000 may include a plurality of computing devices (e.g., distributed computer systems) to implement various processing functions.

[0060] I/O device interface 1030 may provide an interface for connection of one or more I/O devices 1060 to computer system 1000. I/O devices may include devices that receive input (e.g., from a user) or output information (e.g., to a user). I/O devices 1060 may include, for example,

graphical user interface presented on displays (e.g., a cathode ray tube (CRT) or liquid crystal display (LCD) monitor), pointing devices (e.g., a computer mouse or trackball), keyboards, keypads, touchpads, scanning devices, voice recognition devices, gesture recognition devices, printers, audio speakers, microphones, cameras, or the like. I/O devices 1060 may be connected to computer system 1000 through a wired or wireless connection. I/O devices 1060 may be connected to computer system 1000 from a remote location. I/O devices 1060 located on remote computer system, for example, may be connected to computer system 1000 via a network and network interface 1040.

[0061] Network interface 1040 may include a network adapter that provides for connection of computer system 1000 to a network. Network interface may 1040 may facilitate data exchange between computer system 1000 and other devices connected to the network. Network interface 1040 may support wired or wireless communication. The network may include an electronic communication network, such as the Internet, a local area network (LAN), a wide area (WAN), a cellular communications network or the like.

[0062] System memory 1020 may be configured to store program instructions 1100 or data 1110. Program instructions 1100 may be executable by a processor (e.g., one or more of processors 1010a-1010n) to implement one or more embodiments of the present techniques. Instructions 1100 may include modules of computer program instructions for implementing one or more techniques described herein with regard to various processing modules. Program instructions may include a computer program (which in certain forms is known as a program, software, software application, script, or code). A computer program may be written in a programming language, including compiled or interpreted languages, or declarative or procedural languages. A computer program may include a unit suitable for use in a computing environment, including as a stand-alone program, a module, a component, a subroutine. A computer program may or may not correspond to a file in a file system. A program may be stored in a portion of a file that holds other programs or data (e.g., one or more scripts stored in a markup language document), in a single file dedicated to the program in question, or in multiple coordinated files (e.g., files that store one or more modules, sub programs, or portions of code). A computer program may be deployed to be executed on one or more computer processors

located locally at one site or distributed across multiple remote sites and interconnected by a communication network.

[0063] System memory 1020 may include a tangible program carrier having program instructions stored thereon. A tangible program carrier may include a non-transitory computer readable storage medium. A non-transitory computer readable storage medium may include a machine readable storage device, a machine readable storage substrate, a memory device, or any combination thereof. Non-transitory computer readable storage medium may include, non-volatile memory (e.g., flash memory, ROM, PROM, EPROM, EEPROM memory), volatile memory (e.g., random access memory (RAM), static random access memory (SRAM), synchronous dynamic RAM (SDRAM)), bulk storage memory (e.g., CD-ROM and/or DVD-ROM, hard-drives), or the like. System memory 1020 may include a non-transitory computer readable storage medium may have program instructions stored thereon that are executable by a computer processor (e.g., one or more of processors 1010a-1010n) to cause the subject matter and the functional operations described herein. A memory (e.g., system memory 1020) may include a single memory device and/or a plurality of memory devices (e.g., distributed memory devices). In some embodiments, the program may be conveyed by a propagated signal, such as a carrier wave or digital signal conveying a stream of packets.

[0064] I/O interface 1050 may be configured to coordinate I/O traffic between processors 1010a-1010n, system memory 1020, network interface 1040, I/O devices 1060 and/or other peripheral devices. I/O interface 1050 may perform protocol, timing or other data transformations to convert data signals from one component (e.g., system memory 1020) into a format suitable for use by another component (e.g., processors 1010a-1010n). I/O interface 1050 may include support for devices attached through various types of peripheral buses, such as a variant of the Peripheral Component Interconnect (PCI) bus standard or the Universal Serial Bus (USB) standard.

[0065] Embodiments of the techniques described herein may be implemented using a single instance of computer system 1000, or multiple computer systems 1000 configured to host different portions or instances of embodiments. Multiple computer systems 1000 may provide

for parallel or sequential processing/execution of one or more portions of the techniques described herein.

[0066] Those skilled in the art will appreciate that computer system 1000 is merely illustrative and is not intended to limit the scope of the techniques described herein. Computer system 1000 may include any combination of devices or software that may perform or otherwise provide for the performance of the techniques described herein. For example, computer system 1000 may include or be a combination of a cloud-computing system, a data center, a server rack, a server, a virtual server, a desktop computer, a laptop computer, a tablet computer, a server device, a client device, a mobile telephone, a personal digital assistant (PDA), a mobile audio or video player, a game console, a vehicle-mounted computer, or a Global Positioning System (GPS), or the like. Computer system 1000 may also be connected to other devices that are not illustrated, or may operate as a stand-alone system. In addition, the functionality provided by the illustrated components may in some embodiments be combined in fewer components or distributed in additional components. Similarly, in some embodiments, the functionality of some of the illustrated components may not be provided or other additional functionality may be available.

[0067] Those skilled in the art will also appreciate that, while various items are illustrated as being stored in memory or on storage while being used, these items or portions of them may be transferred between memory and other storage devices for purposes of memory management and data integrity. Alternatively, in other embodiments some or all of the software components may execute in memory on another device and communicate with the illustrated computer system via inter-computer communication. Some or all of the system components or data structures may also be stored (e.g., as instructions or structured data) on a computer-accessible medium or a portable article to be read by an appropriate drive, various examples of which are described above. In some embodiments, instructions stored on a computer-accessible medium separate from computer system 1000 may be transmitted to computer system 1000 via transmission media or signals such as electrical, electromagnetic, or digital signals, conveyed via a communication medium such as a network or a wireless link. Various embodiments may further include receiving, sending or storing instructions or data implemented in accordance with the foregoing description upon a computer-accessible medium. Accordingly, the present invention may be practiced with other computer system configurations.

[0068] It should be understood that the description and the drawings are not intended to limit the invention to the particular form disclosed, but to the contrary, the intention is to cover all modifications, equivalents, and alternatives falling within the spirit and scope of the present invention as defined by the appended claims. Further modifications and alternative embodiments of various aspects of the invention will be apparent to those skilled in the art in view of this description. Accordingly, this description and the drawings are to be construed as illustrative only and are for the purpose of teaching those skilled in the art the general manner of carrying out the invention. It is to be understood that the forms of the invention shown and described herein are to be taken as examples of embodiments. Elements and materials may be substituted for those illustrated and described herein, parts and processes may be reversed or omitted, and certain features of the invention may be utilized independently, all as would be apparent to one skilled in the art after having the benefit of this description of the invention. Changes may be made in the elements described herein without departing from the spirit and scope of the invention as described in the following claims. Headings used herein are for organizational purposes only and are not meant to be used to limit the scope of the description.

[0069] As used throughout this application, the word “may” is used in a permissive sense (i.e., meaning having the potential to), rather than the mandatory sense (i.e., meaning must). The words “include”, “including”, and “includes” and the like mean including, but not limited to. As used throughout this application, the singular forms “a”, “an” and “the” include plural referents unless the content explicitly indicates otherwise. Thus, for example, reference to “an element” or "a element" includes a combination of two or more elements, notwithstanding use of other terms and phrases for one or more elements, such as “one or more.” The term "or" is, unless indicated otherwise, non-exclusive, i.e., encompassing both "and" and "or." Terms describing conditional relationships, e.g., "in response to X, Y," "upon X, Y,", “if X, Y,” "when X, Y," and the like, encompass causal relationships in which the antecedent is a necessary causal condition, the antecedent is a sufficient causal condition, or the antecedent is a contributory causal condition of the consequent, e.g., "state X occurs upon condition Y obtaining" is generic to "X occurs solely upon Y" and "X occurs upon Y and Z." Such conditional relationships are not limited to consequences that instantly follow the antecedent obtaining, as some consequences may be delayed, and in conditional statements, antecedents are connected to their consequents, e.g., the antecedent is relevant to the likelihood of the consequent occurring. Further, unless otherwise

indicated, statements that one value or action is "based on" another condition or value encompass both instances in which the condition or value is the sole factor and instances in which the condition or value is one factor among a plurality of factors. Unless specifically stated otherwise, as apparent from the discussion, it is appreciated that throughout this specification discussions utilizing terms such as "processing", "computing", "calculating", "determining" or the like refer to actions or processes of a specific apparatus, such as a special purpose computer or a similar special purpose electronic processing/computing device. In the context of this specification, a special purpose computer or a similar special purpose electronic processing or computing device is capable of manipulating or transforming signals, for instance signals represented as physical electronic, optical, or magnetic quantities within memories, registers, or other information storage devices, transmission devices, or display devices of the special purpose computer or similar special purpose processing or computing device.

CLAIMS

What is claimed is:

1. A system for remotely controlling fluid-handling device of an oil well, a petro water disposal or re-injection facility, or a petroleum pumping station, the system comprising:

an input/output module operable to communicate with a fluid-handling device;

a network interface;

memory; and

one or more processors communicatively coupled to the input/output module, the network interface, and the memory, wherein the memory stores instructions that when executed by the processors cause the processors to effectuate steps comprising:

receiving, via the network interface, from a remote user device, a command to change a state of the fluid-handling device to a target state;

translating the received command into a translated command operative to cause a local controller of the fluid-handling device to drive the fluid-handling equipment to the target state, the local controller being responsive to the command and feedback from the fluid-handling device indicative of whether the fluid-handling device is in the target state; and

sending the translated command to the local controller.

2. The system of claim 1, wherein the memory also stores instructions that when executed by the processors cause the processors to effectuate steps comprising:

receiving, from the fluid-handling device, sensor data indicative of the operation of the fluid-handling equipment obtained by sensors of the fluid-handling device; and

sending, to a remote data store, the received sensor data.

3. The system of claim 2, comprising the remote data store and a web-server, wherein the web-server is operative to perform steps comprising:

receiving, from a user device, a request for a data indicative of the operation of an oil well, a petro water disposal or re-injection facility, or a petroleum pumping station coupled to the fluid-handling device;

retrieving, from the data store, data responsive to the request from the user device; and

sending, to the user device, the retrieved data for presentation to the user.

4. The system of claim 3, wherein the request is a request for data indicative of an amount of oil or other type of fluid extracted from, or injected into, an oil well, a petro water disposal or re-injection facility, or a petroleum pumping station to which the fluid-handling device is coupled, and wherein the retrieved data comprises data indicative of the amount of oil, produced fluid, or flowback fluid.

5. The system of claim 3, wherein the request is a request to view alarms issued by the fluid-handling device, and wherein the retrieved data comprises data indicative of the alarms.

6. The system of claim 3, wherein the retrieved data comprises messages provided to the web-server regarding attempts to address the alarms.

7. The system of claim 2, comprising the remote data store and a web-server, wherein the web-server is operative to perform steps comprising:

receiving, from a user device, the command to change the state of the fluid-handling device; and

determining a network address of the network interface; and

sending the command to the network interface.

8. The system of claim 1, wherein fluid-handling device comprises a pump, and wherein the command comprises a command to change a speed of the pump.

9. The system of claim 1, comprising a remote terminal unit through which the one or more processes communicate with the fluid-handling device, wherein translating the received command comprises:

identifying an address on a serial bus corresponding to a component of the fluid-handling device responsive to the received command;

identifying a command code operative to cause the component to execute the received command; and

sending to the address on the serial bus the command code.

10. The system of claim 1, comprising a digital-to-analog converter, wherein the fluid-handling device comprises a valve responsive to an output signal of the digital-to-analog converter, and wherein translating the received command comprises changing an output signal of the digital-to-analog converter responsive to the receive command.

11. The system of claim 1, wherein receiving the command comprises receiving the command via a first network socket, and wherein sending the translated command comprises sending the translated command via a second network socket.

12. The system of claim 1, wherein translating the command comprises selecting among an Internet Protocol, a modbus protocol, and an analog output to convey the translated command.

13. The system of claim 1, wherein the local controller comprises a processor operative to execute the translated command after losing a network connection to the network interface and before the fluid-handling device is in the target state.

14. The system of claim 1, comprising one of the following coupled to the fluid-handling device: an oil well, a salt water disposal well, a carbon-capture well, or a pump station.

15. The system of claim 1, wherein the fluid-handling device comprises an oil/water separation unit, and wherein the command comprises a command operative to change a level of the oil/water separation unit at which oil meets water.

16. The system of claim 15, wherein the oil/water separation unit comprises a pump having a variable-frequency drive, and wherein the local controller is operative to adjust a frequency of

the variable frequency drive until the level of the oil/water separation unit reaches a target level corresponding to the target state.

17. The system of claim 1, comprising:

a remote server coupled to the network interface via the Internet;

a plurality of oil-wells, petro water disposal or re-injection facilities, or petroleum pumping station, each oil well, petro water disposal or re-injection facility, or petroleum pumping station coupled to a corresponding one of a plurality of systems, each respective system being in communication with the remote server via the Internet and comprising:

a respective input/output module operable to communicate with a respective fluid-handling device;

a respective network interface;

a respective memory; and

a respective set of one or more processors communicatively coupled to the respective input/output module, the respective network interface, and the respective memory, wherein the respective memory stores instructions that when executed by the respective processors cause the respective processors to effectuate steps comprising:

receiving, via the respective network interface, from the remote user device, a respective command to change a respective state of the respective fluid-handling device to a respective target state;

translating the received respective command into a respective translated command operative to cause a respective local controller of the respective fluid-handling device to drive the respective fluid-handling equipment to the respective target state; and

sending the respective translated command to the respective local controller.

18. The system of claim 17, wherein the remote server comprises a user account data store storing data associating each of the respective systems with a single user account distinct from a plurality of other user accounts in the data store.

19. A tangible, non-transitory machine-readable medium storing instructions that when executed by a data processing apparatus cause the data processing apparatus to perform operations comprising:

receiving, via the network interface, from a remote user device, a command to change a state of the fluid-handling device to a target state;

translating the received command into a translated command operative to cause a local controller of the fluid-handling device to drive the fluid-handling equipment to the target state, the local controller being responsive to the command and feedback from the fluid-handling device indicative of whether the fluid-handling device is in the target state; and

sending the translated command to the local controller.

20. A method, comprising:

receiving, via the network interface, from a remote user device, a command to change a state of the fluid-handling device to a target state;

translating the received command into a translated command operative to cause a local controller of the fluid-handling device to drive the fluid-handling equipment to the target state, the local controller being responsive to the command and feedback from the fluid-handling device indicative of whether the fluid-handling device is in the target state; and

sending the translated command to the local controller.

ABSTRACT

[0070] Provided is a process, including: receiving, via the network interface, from a remote user device, a command to change a state of the fluid-handling device to a target state; translating the received command into a translated command operative to cause a local controller of the fluid-handling device to drive the fluid-handling equipment to the target state, the local controller being responsive to the command and feedback from the fluid-handling device indicative of whether the fluid-handling device is in the target state; and sending the translated command to the local controller

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	000314.000003
	Application Number	
Title of Invention	REMOTE CONTROL OF FLUID-HANDLING DEVICES	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Aaron		Phillips	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	Lubbock	State/Province	TX	Country of Residence i	US

Mailing Address of Inventor:

Address 1	2806 87th St.		
Address 2			
City	Lubbock	State/Province	TX
Postal Code	79423	Country i	US

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

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Customer Number	35979		
Email Address	docketing@bgllp.com	Add Email	Remove Email

Application Information:

Title of the Invention	REMOTE CONTROL OF FLUID-HANDLING DEVICES		
Attorney Docket Number	000314.000003	Small Entity Status Claimed	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)		Suggested Figure for Publication (if any)	

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Only compete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
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This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the application number blank.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	Continuation of	13708557	2012-12-07

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	000314.000003
	Application Number	
Title of Invention	REMOTE CONTROL OF FLUID-HANDLING DEVICES	

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55(d). When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX) [i] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(h)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

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Application Number	Country [i]	Filing Date (YYYY-MM-DD)	Access Code [i] (if applicable)

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Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Authorization to Permit Access:

☐ Authorization to Permit Access to the Instant Application by the Participating Offices

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In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the instant patent application with respect to: 1) the instant patent application-as-filed; 2) any foreign application to which the instant patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the instant patent application; and 3) any U.S. application-as-filed from which benefit is sought in the instant patent application.

In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date of filing this Authorization.

Applicant Information:

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Applicant 1 Remove

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

(•) Assignee	( ) Legal Representative under 35 U.S.C. 117	( ) Joint Inventor
( ) Person to whom the inventor is obligated to assign.	( ) Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor :

If the Applicant is an Organization check here. [X]

Organization Name	AmpliSine Labs, LLC.		
Mailing Address Information:			
Address 1	9502 HWY 87		
Address 2			
City	Lubbock	**State/Province**	TX
Country [i]	US	Postal Code	79423
Phone Number		Fax Number	

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Signature	/Joshua Tucker/			Date (YYYY-MM-DD)	2014-01-03
First Name	Joshua	Last Name	Tucker	Registration Number	63809

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	000314.000003
		Application Number	
Title of Invention	REMOTE CONTROL OF FLUID-HANDLING DEVICES		

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5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

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Electronic Patent Application Fee Transmittal	
Application Number:	
Filing Date:	
Title of Invention:	REMOTE CONTROL OF FLUID-HANDLING DEVICES
First Named Inventor/Applicant Name:	Aaron Phillips
Filer:	Joshua L. Tucker
Attorney Docket Number:	000314.000003
Filed as Small Entity	

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Utility filing Fee (Electronic filing)	4011	1	70	70
Utility Search Fee	2111	1	300	300
Utility Examination Fee	2311	1	360	360
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**730**

Electronic Acknowledgement Receipt	
EFS ID:	17816026
Application Number:	14147190
International Application Number:	
Confirmation Number:	7979
Title of Invention:	REMOTE CONTROL OF FLUID-HANDLING DEVICES
First Named Inventor/Applicant Name:	Aaron Phillips
Customer Number:	35979
Filer:	Joshua L. Tucker
Filer Authorized By:	
Attorney Docket Number:	000314.000003
Receipt Date:	03-JAN-2014
Filing Date:	
Time Stamp:	16:37:10
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$730
RAM confirmation Number	2849
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Drawings-only black and white line drawings	well_control_figs.pdf	460108 6694d4e3fac1f811f55ca6a9fe7f447992e5debe	no	3
Warnings:					
Information:					
2		well_control_patent_app_con.pdf	306219 18ff6743098f636cc94edea7bba1e4710735b09d	yes	29
	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Specification		1	23	
	Claims		24	28	
	Abstract		29	29	
Warnings:					
Information:					
3	Application Data Sheet	aia0014.pdf	1560996 669cb7d0245964efdf3b85306d2739278aa8784e	no	7
Warnings:					
Information:					
4	Fee Worksheet (SB06)	fee-info.pdf	32848 cb078b832a7480f5437614039e5f57efd8320c2c	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	2360171		

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New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.