

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

THE INTEGRATION GROUP OF AMERICAS,
Petitioner

v.

SITEPRO, INC.,
Patent Owner

Case No. IPR 2024-00724

U.S. Patent No. 8,649,909

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 8,649,909

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PETITIONER'S EXHIBIT LIST

<u>EXHIBIT</u>	<u>DESCRIPTION</u>
Ex. 1001	U.S. Patent No. 8,649,909
Ex. 1002	Declaration of Dr. Gary Wooley
Ex. 1003	Curriculum Vitae of Wooley
Ex. 1004	File Wrapper for U.S. Patent No. 8,649,909
Ex. 1005	U.S. Patent Application No. 2015/0308244 to Cardamone
Ex. 1006	U.S. Patent No. 8,667,091 to Almadi
Ex. 1007	U.S. Patent Application No. 2008/0316048 to Abdallah
Ex. 1008	Claim Construction Order (Dkt. 93)

I. INTRODUCTION

Petitioner requests *Inter Partes* Review (“IPR”) of claims 1-12, 14-17, and 19-21 (the “Challenged Claims”) of U.S. Patent No. 8,649,909 (the “’909 Patent”).

This petition (IPR 2024-00724) is part of a set of **seven** petitions, including IPR 2024-0073, IPR 2024-00739, IPR 2024-00741, IPR 2024-00737, IPR 2024-00742, and IPR 2024-00740, which challenge claims of U.S. Patent Nos. 9,342,00738 (the “’078 Patent”); 9,898,014 (the “’014 Patent”); 10,488,871 (the “’871 Patent”); 11,175,680 (the “’680 Patent”); 11,294,403 (the “’403 Patent”) and 11,726,504 (the “’504 Patent”) (collectively, with the ’909 Patent, the “Challenged Patents”) respectively. Petitioner requests that the PTO combine the schedule, discovery, and hearing of these seven IPRs.

II. MANDATORY NOTICES

A. Real Parties-in-Interest (37 C.F.R. § 42.8(b)(1))

The real party-in-interest is The Integration Group of Americas, Inc. (“Petitioner”).

B. Related Matters (37 C.F.R. § 42.8(b)(2))

The ‘909 Patent is related to a district court litigation pending in the United States District Court for the Western District of Texas. SitePro, Inc. (“Patent Owner”) asserted the ‘909 Patent, ‘504 Patent, ‘078 Patent, ‘014 Patent, ‘871 Patent, ‘680 Patent, and ‘403 Patent against Petitioner and the WaterBridge Entities in *SitePro*,

Inc. v. WaterBridge Resources, LLC, WaterBridge Operation, LLC, WaterBridge Holdings, LLC, WaterBridge Management, Inc., and The Integration Group of Americas, 6:23-cv-00115-ADA-DTG (W.D. Tex.).

C. Counsel (37 C.F.R. § 42.8(b)(3)) and Service Information (37 C.F.R. § 42.8(b)(3)-(4))

Petitioner designates Winston O. Huff (Reg. No. 51,825) as lead counsel for this matter and designates Jamil N. Alibhai (*pro hac vice* forthcoming) and Chad Ray (Reg. No. 68,170) as backup counsel for this matter.

Postal mailings and hand-deliveries for lead and backup counsel should be addressed to: Winston O. Huff, Munsch Hardt Kopf & Harr, 500 N. Akard, Suite 4000, Dallas, TX 75201 (Telephone: 214.855.7500; Fax: 214.855.7584).

Pursuant to 37 C.F.R. § 42.8(b)(4), Petitioner consents to e-mail service at: TIGA_IPRS@munsch.com. In compliance with 37 C.F.R. § 42.10(b), a Power of Attorney is filed concurrently herewith.

III. CERTIFICATION AND FEES

Petitioner certifies that the ‘909 Patent is available for IPR and that the Petitioner is not barred or estopped from requesting *inter partes* review of claims claim 1-12, 14-17, and 19-21 of the ‘909 Patent identified in this Petition. Any additional fees for this IPR may be charged to Deposit Account No. DA505990.

IV. BACKGROUND

The Challenged Patents relate to the remote monitoring and operation of fluid-handling devices. In the oil and gas industry, fluid handling systems measure and direct the flow of fluids. Ex. 1001, 1:11-22. Because of the potential hazards posed by the fluids they manage, where possible, industrial oil and gas producers manage operations remotely to keep personnel out of harm's way. To enhance operational performance and improve worker safety, the oil and gas industry long ago adopted technologies for remote monitoring and control of fluid handling systems. *See generally*, Ex. 1005, Ex. 1006, Ex. 1007.

The typical operation of industrial fluid handling systems places sensor and actuator functions on-site, supported by a remote controller that receives information from the sensors and transmits instructions to the actuators. *See generally*, Ex. 1005, Ex. 1006, Ex. 1007.

V. THE ALLEGED INVENTION OF THE '909 PATENT

The '909 Patent, entitled "Remote Control of Fluid-Handling Devices," describes a remote data collection and control system for fluid-handling devices found in oil wells, petro water disposal or re-injection facilities, or petroleum pumping stations, which the command center control systems manage as separate user accounts. Ex. 1001, Claim 1. The command center system sends commands to an on-site controller, configured to operate whether or not continuously connected

to the command center system, to specify the target state of a fluid-handling device.

Id. The on-site controller system translates the received command into an operative command for a fluid-handling device controller to drive the fluid-handling equipment to the target state and sends the translated command to the fluid-handling device controller. *Id.* The fluid-handling device controller in the claimed system both responds to the translated command and provides feedback to the on-site controller system indicating whether the connected fluid-handling device achieved the target state. *Id.*

A. Summary of Prosecution History (Ex. 1004)

The application issued as the ‘909 Patent (US13/708,557) was filed on December 7, 2012, and issued on February 11, 2014. In a March 7, 2013 office action, the examiner rejected several claims as being anticipated by or obvious in view of: (1) U.S. Patent Publication No. 2004/0262008 (Deans et al.) and (2) the combination of Deans et al. and U.S. Patent Publication No. 2004/0231851 (“Silvers”), WO 2008/124765 (“Roberson et al.”), and U.S. Patent No. 5,149,443 (“Varnam”). Ex. 1004, at 324-58.

In a second (Final) Office Action, the Examiner maintained its rejection of the pending claims view of Deans et al. and the combination of Deans et al. and U.S. Patent Publication No. 2002/0161685 (“Dwinnell”), Silvers, Roberson et al., U.S. Patent Publication No. 2001/0032518 (“Boger et al.”) and Varnam. Ex.

1004, at 104-49.

In response to the second office action, the Applicant argued, without amending claims, that the cited references taken alone or in hypothetical combination, fail to teach or suggest features of independent claims or their dependent claims. On October 3, 2013, the Applicant participated in an Examiner's interview to discuss the 35 U.S.C. § 103 rejections. Applicant's representative discussed how the prior art was directed to standardized communication to wells and the present invention is directed to *translating* and sending commands for control of devices at the wells. Ex. 1004, at 76, 81-96.

On October 10, 2013, the Applicant filed a Request for Continued Examination narrowing the pending claims to recite the translation elements in the later-allowed claims. Ex. 1004. In the Notice of Allowance, the Examiner noted that the prior art does not disclose the translation elements in the allowed claims. Ex. 1004, at 61-74.

VI. OVERVIEW OF THE PRIOR ART

The challenged claims are anticipated by or are obvious over the following prior art.

A. Cardamone (Ex. 1005)

U.S. Patent Application No. 2015/0308244 to Cardamone was filed on November 26, 2013, and claims the benefit of Provisional Patent Application No.

61/729,815 filed on November 26, 2012. Cardamone is prior art under pre-AIA § 102(e).

Cardamone teaches a deep-well pump system configured to provide drive commands to the pump motor, a surface control computer connected with the motor drive system, and a sensor system communicating with the control computer to detect various operating parameters. Ex. 1005.

B. Almadi (Ex. 1006)

U.S. Patent No. 8,667,091 to Almadi was filed on July 22, 2011, published on April 5, 2012, and claims priority to Provisional Patent Application No. 61/367,207 filed on July 25, 2010. Almadi issued March 4, 2014. Almadi is prior art under pre-AIA § 102(a).

Almadi teaches an integrated node used to interface between a remote host server and a plurality of remote subsystems in a process automation environment to provide a single point of control for data collection and monitoring. Ex. 1006.

The claimed node integrates the functions of controller units, communications networking devices, and data storage servers, and also supports networking over multiple communication interfaces to transmit process data to a remote host server over TCP/IP (transmission control protocol and the internet protocol, also referred to as the internet protocol suite). Ex. 1006.

C. Abdallah (Ex. 1007)

U.S. Patent Application No. 2008/0316048 to Abdallah was filed on March 26, 2008, and claims the benefit under 35 U.S.C. § 120 and is a continuation-in-part of co-pending U.S. Patent Application No. 60/920,434 filed Mar. 28, 2007 and U.S. Patent Application No. 11/931,842 filed on Oct. 31, 2007. Abdallah was published on December 25, 2008, and is prior art under pre-AIA § 102(a).

Abdallah teaches a well-site data communication system and method including a central communication terminal that sends information to communication terminals located at well sites; including a processor configured as a protocol translator to translate information between communication protocols for the communication terminals. Ex. 1007.

VII. CLAIM CONSTRUCTION

In IPR proceedings, the Board construes claims terms “using the same claim construction standard that would be used to construe the claim in a civil action” 37 C.F.R. § 42.100(b). The Board only construes the claims when necessary to resolve the underlying controversy. *Toyota Motor Corp. v. Cellport Systems, Inc.*, IPR2015-00633, Paper 11 at 16 (PTAB Aug. 14, 2015); *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

Petitioner notes that the Federal District Court for the Western District of Texas has construed certain claim terms. *See* Ex. 1008. But Petitioners respectfully

submit that no terms need to be construed to resolve the issues raised in this Petition because the prior art discloses all limitations under the plain meaning as well as under any plausible construction.

VIII. GROUNDS FOR PETITION

A. **Ground 1: Cardamone Anticipates Claims 1-8, 12, 14, 16, 17, and 19-21.**

Independent Claims 1, 20, and 21 and dependent Claims 2, 4-8, 12, 14, 16, 17, and 19 are anticipated by U.S. Patent Application No. 2015/0308244 (“Cardamone”) under 35 U.S.C. § 102, or would be obvious to a POSITA in view of Cardamone under 35 U.S.C. § 103.

1. **Claim 1**

- a. **1[p] - A system for remotely controlling a fluid-handling device of an oil well, a petro water disposal or re-injection facility, or a petroleum pumping station, the system comprising**

To the extent that the Board finds that the preamble is limiting, Cardamone discloses a system for remotely controlling a fluid-handling device of an oil well, a petro water disposal or re-injection facility, or a petroleum pumping station. *See, e.g.*, Ex. 1005, ¶¶ 0001, 0022; *see also* Ex. 1005, ¶ 0005 (“downhole pump”).

A POSITA would recognize that a downhole pump is used at oil wells, water disposal sites, re-injection facilities, or petroleum pumping stations. Ex. 1002, ¶¶ 48-49. Therefore, Cardamone discloses a system for remotely controlling a fluid-handling device of an oil well, a petro water disposal or re-injection facility, or a

petroleum pumping station.

- b. 1[a] - a command-center server having a data store storing multiple user accounts, each user account corresponding to a set of one or more oil wells, petro water disposal or re-injection facilities, or petroleum pumping stations, or a combination thereof, each set being operated by a different entity corresponding to the respective user account; and**

Cardamone discloses data server 134, a server computer remote from the oil well. Ex. 1005, ¶ 0021. Data server 134 links to control and communication computer 126 through standard wired and wireless communication links. Ex. 1005, ¶ 0024. Data server 134 receives sensory data logs from control and communication computer 126 and contains a web server/web application 136 for providing a client interface for viewing the sensory data logs on remote management computer 138. Ex. 1005, ¶ 0027. Data server 134 acts as a data storage for sensory data. Ex. 1005, ¶ 0027.

GUI Computer 130 includes software application 131 to provide an interface for connecting to control and communication computer 126 which presents “a graphical geographical view of known pumps,” and provides “basic operation statuses for each of the known pumps,” thereby disclosing “multiple user accounts” according to the Claim. Ex. 1005, ¶ 0041. Data server 134 provides the functionality of GUI Computer 130, acts as a data storage and backup facility, as well as a mechanism to provide periodic data to control and communications computer 126.

Ex. 1005, ¶ 0046.

A POSITA would recognize that Cardamone discloses the command center server with its disclosure of data server 134. Ex. 1002, ¶¶ 51-52. Therefore, Cardamone discloses a command-center server having a data store.

- c. 1[b]- a plurality of geographically distributed site master controllers, each site master controller corresponding to a respective one of the oil wells, petro water disposal or re-injection facilities, or petroleum pumping stations, each site master controller comprising:**

Cardamone discloses control and communication computer 126 arranged at the surface of the deep oil well. Ex. 1005, ¶ 0024. Control and communication computer 126 includes data sampling and storage mechanisms for receiving and storing sensory data from both pump system 122 and motor driver 124. *Id.* GUI Computer 130 includes software application 131 to provide an interface for connecting to control and communication computer 126 which presents “a graphical geographical view of known pumps,” and provides “basic operation statuses for each of the known pumps,” thereby disclosing a plurality of geographically distributed site master controllers according to the Claim. Ex. 1005, ¶ 0041.

A POSITA would understand that Cardamone discloses the site master controller of the ‘909 Patent through its disclosure of control and communication computer 126. Ex. 1002, ¶¶ 56-58. Thus, Cardamone discloses a plurality of geographically distributed site master controllers.

d. 1[c] - a communication module operable to communicate with a plurality of fluid-handling devices;

Cardamone discloses that the control and communication computer system may include “a wifi access port (141), *a satcom modem or port* (143), . . . an Ethernet (423) . . . or *an RS-485 transducer interface* (435) for communication.” Ex. 1005, ¶¶ 0008, 0033-34 (emphasis added). A POSITA would understand that the Wi-Fi access port, satcom modem, ethernet, and RS-485 transducer interface are communication modules. Ex. 1002, ¶ 59. Thus, Cardamone discloses a communication module.

e. 1[d] - a network interface;

Cardamone discloses that the control and communication computer system 126 may include a router (419), a switch (421), *a Wi-Fi access port* (141), GSM modem (145), a satcom modem or port (143), and a single-board computer (410). The control computer may include *an Ethernet* (423) for linking each of its components. Ex. 1005, ¶¶ 0008, 0033-34 (emphasis added). Cardamone also discloses that data server 134 is connected to network 132 which is linked to control and communication computer 126 through a variety of network communication types, including hardwire connection, or internet connection via wire, Wi-Fi, satellite modem, and/or cellular data connections. Ex. 1005, ¶ 0027.

A POSITA would understand that the Wi-Fi access port and Ethernet are network interfaces. Ex. 1002, ¶ 61. Thus, Cardamone discloses a network interface.

f. 1[e] - memory; and

Cardamone discloses that the control and communication computer 126 includes “a memory (431)” and that it “*stores* and relays sensory data . . . to data server 134 and/or GUI computer 130.” Ex. 1005, ¶¶ 0008, 0021. Cardamone further discloses that the control and communication computer 126 includes *data storage* for storing operational parameters as well as sensory data logs.” Ex. 1005, ¶¶ 0021, 0024.

A POSITA would understand that Cardamone discloses the memory of the ‘909 Patent. Ex. 1002, ¶ 62. Thus, Cardamone discloses a memory.

g. 1[f] - one or more processors communicatively coupled to the communication 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:

Cardamone discloses that the control and communication computer 126 contains a real-time controller/CPU. Ex. 1005, ¶¶ 0024 (“a CPU (429)”), 0033-35. Cardamone further discloses that control and communication computer 126 includes communications transceivers including Wi-Fi modems, satellite modems, or cellular data modems. Ex. 1005, ¶¶ 0008, 0033-34. Cardamone discloses that the control and communication computer 126 includes “a memory (431)” and that it “*stores* and relays sensory data” and “includes *data storage* for storing operational parameters as well as sensory data logs.” Ex. 1005, ¶¶ 0008, 0021, 0024.

A POSITA would understand that the CPUs are communicatively coupled to the communication module, network interface, and memory and such a configuration has been known in the industry for decades. Ex. 1002, ¶ 63. Thus, Cardamone discloses the recited processor, communication module, network interface, and memory-storing instructions.

- h. 1[g] - receiving, via the network interface, from the command-center server, a plurality of commands encoded in a first protocol to control the fluid-handling devices from a user corresponding to one of the user accounts, different commands among the plurality of commands being directed to different fluid handling devices among the plurality of fluid-handling devices;**

Cardamone discloses that data server 134 provides the functionality of GUI Computer 130. Ex. 1005, ¶ 0046. Cardamone discloses that users connect to GUI computer 130 to interface with control and communication computer 126, through application 131. Ex. 1005, ¶ 0042, *see also id.* ¶¶ 0011, 0021, 0026, 0041. Application 131 provides access to control and communication computer 126 to request data, including the current sensory data of pump control system 110. *Id.* Application 131 also allows the user to adjust the operating parameters with control and communication computer 126 through “a command interface.” Ex. 1005, ¶¶ 0044-45. Cardamone also discloses that data server 134 is connected to network 132 which is linked to control and communication computer 126 through a variety of network communication types. Ex. 1005, ¶ 0027.

A POSITA would understand that the site master controller, control and communication computer 126, receives from the command center server, data server 134, a plurality of commands, including the retrieval of various data or various control adjustments, encoded in a first protocol (an internet, network, or cellular protocol) from a user of GUI computer 130. Ex. 1002, ¶ 66. Thus, Cardamone discloses receiving, via the network interface from the command-center server, a plurality of commands encoded in a first protocol to control the fluid-handling devices.

- i. **1[h] - for at least some of the plurality of commands, determining a plurality of different target states of a given one of the fluid-handling devices over time, wherein the respective site-master controller is operative to maintain control of the fluid handling devices in the absence of a network connection to the command-center server;**

Cardamone discloses the determining a plurality of different target states of a given one of the fluid-handling devices over time. Ex. 1005, ¶¶ 0009, 0021, 0022, 0025, 0026, 0029, 0036.

Cardamone discloses that the “control algorithm may control the motor drive system and/or pump as a function of sensory data.” Ex. 1005, ¶ 0009. Cardamone further discloses application 131 also allows the user to adjust the operating parameters of control and communication computer 126 through “a command interface” to specify the “movement profile” for the pump system, including through

a distance versus time curve, or a force versus time curve for an operation cycle of the pump. Ex. 1005, ¶ 0044. Application 131 allows the user to program the operating function to control and communication computer 126 based on sensory data. Ex. 1005, ¶ 0045. For example, user 101 may program control and communication computer 126 to set the pump frequency to be equal to the inlet pressure times a constant or more complex functions based on a whole range of sensory input conditions. *Id.*

A POSITA would understand establishing a movement profile, or adjusting operating function based upon the receipt of sensory data described above, determines a plurality of different target states of a given one of the fluid-handling devices over time. Ex. 1002, ¶ 67. A POSITA would further understand establishing—on control and communication computer 126—the movement profile or operating function based upon certain data causes control and communication computer 126 to maintain control of the fluid handling devices in the absence of a network connection to the command-center server, because the operating parameters have already been locally established. *Id.* Thus, Cardamone discloses this element of the '909 Patent.

- j. **1[i] - translating the plurality of commands into translated commands encoded in a plurality of 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; and**

Cardamone discloses data server 134 connected to network 132 linked to control and communication computer 126 through one of a variety of communication link types, including hardwire connection, or internet connection via wire, Wi-Fi, satellite modem, or cellular data connections. Ex. 1005, ¶¶ 0024, 0027. Whereas, the pump drive unit 318 interfaces with control and communication computer 126 over digital interface bus 326. Ex. 1005, ¶ 0031; *see also id.* ¶¶ 0029-31 (describing Pump System 122). Bus 326 has multiple protocols implemented including DeviceNet, RS485, F-NET, Modbus, FireWire, CANopen, Ethernet IP, ProfiNet, and SERCOS. Ex. 1005, ¶ 0031. These protocols, which include but are not limited to internet or computer networking protocols, drive the fluid-handling device. Ex. 1005, ¶ 0007. And other similar protocols may also be used as alternatives, through either analog or digital signal transfer. Ex. 1005, ¶ 0030-31.

A POSITA would understand the claimed translation of protocols is required to permit the data interface and bus to operate and communicate with various types of devices using multiple different types of protocols. Ex. 1002, ¶¶ 70-71. Thus, Cardamone discloses translating the plurality of commands into translated commands encoded in a plurality of protocols different from the first protocol.

k. 1[j] - sending the translated commands to respective local controllers of the respective fluid-handling devices to which the respective commands are directed.

Cardamone discloses control and communication computer 126 providing motor driver 124 with command signals to properly drive pump system 122. Ex. 1005, ¶ 0021. Pump drive unit 318 receives commands from control and communication computer 126 over digital interface bus 326. Ex. 1005, ¶ 0031; *see also* ¶¶ 0029-31 (describing Pump System 122).

A POSITA would understand that sending translated commands, i.e., commands in the computing language of the respective fluid handling device is required to program control and communication computer 126 to drive the pump according to the user-provided specifications. Ex. 1002, ¶ 72. Thus, Cardamone discloses sending the translated commands to respective local controllers of the respective fluid-handling devices.

Cardamone, therefore, anticipates Claim 1 or would be obvious to a POSITA in view of Cardamone.

2. Claim 2

Claim 2 depends from independent Claim 1. Cardamone discloses Claim 1 for the reasons discussed above and incorporated herein.

Claim 2 recites 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 device obtained by sensors of the fluid-handling device; and sending, to a remote data store, the received sensor data.

Cardamone discloses control and communication computer 126 includes “a memory (431)” and that it “*stores* and relays sensory data from pump system 122 and driver 124 to data server 134 and/or GUI computer 130.” Ex. 1005, ¶¶ 0008, 0021 (emphasis added).

A POSITA would understand that the control and communication computer 126 stores and relays sensor data indicative of the operation of a fluid-handling device. Ex. 1002, ¶ 75. A POSITA would further understand that the control and communication computer 126 sends the respective fluid handling device data to data server 134, a remote data store. *Id.*

Therefore, a POSITA would understand Cardamone discloses the element recited in Claim 2. *Id.* As such, Claim 2 is anticipated by Cardamone or would be obvious to a POSITA in view of Cardamone.

3. Claim 3

Claim 3 depends from independent Claim 1 and dependent Claim 2. Cardamone discloses Claim 1 and Claim 2 for the reasons discussed above and incorporated herein.

Claim 3 recites 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 password corresponding to a selected one of the user accounts; receiving, from the 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 of the selected one of the user accounts; 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.

Cardamone discloses that after user 101 connects GUI computer 130 to control and communication computer 126's LAN, user 101 then starts application 131. Ex. 1005, ¶ 0042. Application 131 queries user 101 for a username and password, which are then provided to control and communication computer 126 for authentication. *Id.* Cardamone thus discloses the web server (GUI computer 130) receives a username and password for at least one user account. *Id.*

After authentication, application 131 provides user 101 several options. *Id.* User 101 may select an option to view the current sensory data of pump control system 110 from a data stream from control and communication computer 126. *Id.*

Therefore, a POSITA would understand that Cardamone discloses the element recited in Claim 3. Ex. 1002, ¶ 78. As such, Claim 3 is anticipated by Cardamone or would be obvious to a POSITA in view of Cardamone.

4. Claim 4

Claim 4 depends from independent Claim 1 and dependent Claims 2 and 3. Cardamone discloses Claims 1-3 for the reasons discussed above and incorporated herein.

Claim 4 recites the system of Claim 3, wherein the request is a request for data indicative of an amount of oil or other types 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.

Cardamone discloses GUI Computer 130 includes software application 131 to provide an interface for connecting to control and communication computer 126 for viewing live and stored sensor data. Ex. 1005, ¶ 0041. The available data includes inlet pressure, which can be used to determine the depth of fluids remaining in the

well, and monitoring pump frequency to monitor the volume of fluids extracted from the well. Ex. 1005, ¶¶ 0029-30, 0044-45, 0049.

Therefore, a POSITA would understand that Cardamone discloses the element recited in Claim 4. Ex. 1002, ¶ 80. As such, Claim 4 is anticipated by Cardamone or would be obvious to a POSITA in view of Cardamone.

5. Claim 5

Claim 5 depends from independent Claim 1, and dependent Claims 2 and 3. Cardamone discloses Claims 1-3 for the reasons discussed above and incorporated herein.

Claim 5 recites the system of Claim 3, wherein the request is a request to view alarms issued by a fluid-handling device among the plurality of fluid handling devices, and wherein the retrieved data comprises data indicative of the alarms.

Cardamone discloses in claim 21 that the system set forth in claim 20, wherein said user signal is a warning signal or a graphical display. Ex. 1005; *see also*, *id.* ¶¶ 0036 (“if a ‘Pump Hitting’ curve is recognized in the sensory data, single-board computer 410 will attempt to send a warning to data server 134, all GUI computers 130, and all remote management computers 138”), 0043 (“software application 131 may be used to display a warning to user 101”).

Therefore, a POSITA would understand that Cardamone discloses the element recited in Claim 5. Ex. 1002, ¶ 82. As such, Claim 5 is anticipated by Cardamone or would be obvious to a POSITA in view of Cardamone.

6. Claim 6

Claim 6 depends from independent Claim 1, and dependent Claims 2 and 3. Cardamone discloses Claims 1-3 for the reasons discussed above and incorporated herein.

Claim 6 recites the system of Claim 3, wherein the retrieved data comprises messages provided to the web server regarding attempts to address the alarms.

Cardamone discloses that single-board computer 410 recognizes operating regimes, and accordingly triggers a warning and/or adjusts pump operation. Ex. 1005; ¶¶ 0009, 0036 (“computer 410 will attempt to send a warning to data server 134, all GUI computers 130, and all remote management computers 138”). After sending warnings, Cardamone discloses that single-board computer 410 will then adjust the drive command sent to motor driver 124 such that pump 122 is driven with a shorter stroke. Ex. 1005; ¶ 0036, *see also* Ex. 1005; ¶ 0045. The motor driver 124 relays its status back to control and communication computer 126, which relays the system’s attempt to address the alarms. Ex. 1005; ¶¶ 0031, 0035, 0042.

Therefore, a POSITA would understand that Cardamone discloses the element recited in Claim 6. Ex. 1002, ¶ 84. As such, Claim 6 is anticipated by Cardamone or would be obvious to a POSITA in view of Cardamone.

7. Claim 7

Claim 7 depends from independent Claim 1, and dependent Claim 2. Cardamone discloses Claims 1-2 for the reasons discussed above and incorporated herein.

Claim 7 recites 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 of the respective site master controller; and sending the command to the network interface.

Cardamone discloses control and communication computer 126 at the surface of the deep oil well, providing motor driver 124 with the proper gate drive signals for operating pump system 122. Ex. 1005, ¶ 0024. Control and communication computer 126 includes data sampling and storage mechanisms for receiving and storing sensory data from both pump system 122 and motor driver 124. *Id.* GUI Computer 130 includes software application 131 to provide an interface for connecting to control and communication computer 126 presenting “a graphical

geographical view of known pumps,” with “basic operation statuses for each of the known pumps.” Ex. 1005, ¶ 0041.

A POSITA would understand Cardamone discloses the elements of Claim 7 of the ‘909 Patent through its disclosure of control and communication computer 126 interface with GUI Computer 130 which communications with “known pumps.” Ex. 1002, ¶ 88. As such, Claim 7 is anticipated by Cardamone or would be obvious to a POSITA in view of Cardamone.

8. Claim 8

Claim 8 depends from independent Claim 1. Cardamone discloses Claim 1 for the reasons discussed above and incorporated herein.

Claim 8 recites the system of Claim 1, wherein at least some of the fluid-handling devices comprise a pump, and wherein the plurality of commands comprise a command to change the speed of the pump.

Cardamone discloses control and communication computer 126 with real-time controller/CPU for providing motor driver 124 with the proper gate drive signals for *operating pump system 122* with a desired movement profile, including adjusting pump frequency. Ex. 1005, ¶¶ 0024, 0044-45, 0049.

Therefore, a POSITA would understand that Cardamone discloses the element recited in Claim 8. Ex. 1002, ¶ 90. As such, Claim 8 is anticipated by Cardamone or would be obvious to a POSITA in view of Cardamone.

9. Claim 12

Claim 12 depends from independent Claim 1. Cardamone discloses Claim 1 for the reasons discussed above and incorporated herein.

Claim 12 recites the system of Claim 1, wherein translating the commands comprises selecting among an Internet Protocol, a Modbus protocol, and an analog output to convey the translated command.

Cardamone discloses motor drive unit with a field bus interface (326) capable of communicating through various protocols, including DeviceNet, RS485, F-NET, *Modbus*, FireWire, CANopen, *Ethernet IP*, ProfiNet, SERCOS, 12-bit Analog IN, 16-bit Analog I/O, and/or other similar bus hardware and protocols. *See, e.g.*, Ex. 1005, ¶ 0007 (emphasis added).

Therefore, a POSITA would understand that Cardamone discloses the element recited in Claim 12. Ex. 1002, ¶ 92. As such, Claim 12 is anticipated by Cardamone or would be obvious to a POSITA in view of Cardamone.

10. Claim 14

Claim 14 depends from independent claim 1. Cardamone discloses Claim 1 for the reasons discussed above and incorporated herein.

Claim 14 recites the system of Claim 1, comprising one of the following coupled to the fluid-handling devices: an oil well, a saltwater disposal well, a carbon-capture well, or a pump station.

Cardamone teaches its disclosed system operates a deep oil well pump. Ex. 1005, ¶¶ 0021-22, 0024, 0026.

Therefore, a POSITA would understand that Cardamone discloses the element recited in Claim 14. Ex. 1002, ¶ 94. As such, Claim 14 is anticipated by Cardamone or would be obvious to a POSITA in view of Cardamone.

11. Claim 17

Claim 17 depends from independent claim 1. Cardamone discloses Claim 1 for the reasons discussed above and incorporated herein.

Claim 17 teaches the system of claim 1, wherein each user account corresponds to one or more user names, one or more user passwords, billing information, and identifiers of one or more of the site master-controllers with which users under the corresponding account are authorized to interact.

Cardamone discloses that Application 131 queries user 101 for a username and password, which are then provided to control and communication computer 126 for authentication. Ex. 1005, ¶ 0042. User 101 may select an option to view the current sensory data of pump control system 110, causing application 131 to request data from control and communication computer 126, including information for known pumps. Ex. 1005, ¶ 0041.

Therefore, a POSITA would understand that Cardamone discloses the element recited in Claim 17. Ex. 1002, ¶ 96. As such, Claim 17 is anticipated by Cardamone or would be obvious to a POSITA in view of Cardamone.

12. Claim 19

Claim 19 depends from independent Claim 1. Cardamone discloses Claim 1 for the reasons discussed above and incorporated herein.

Claim 19 teaches the system of Claim 1, wherein the system is operative to provide web-based control and monitoring of oil and gas wells to multiple account holders corresponding to the user accounts.

Cardamone discloses data server 134 contains web application 136 for providing a client interface for viewing the sensory data logs on remote management computer 138. Web application 136 allows the user to set the control parameters on the control and communication server 126. Ex. 1005, ¶ 27. Cardamone further discloses that Application 131 includes a graphical view of known pumps, as well as operation statistics for the known pumps. Ex. 1005, ¶¶ 0041-42. Cardamone discloses Application 131 provides the functionality of GUI computer 130 to many potential *remote users* 102. Ex. 1005, ¶¶ 0046, 0048 (“multiple remote users”).

Therefore, a POSITA would understand that Cardamone discloses the element recited in Claim 19. Ex. 1002, ¶ 98. As such, claim 19 is anticipated by Cardamone or would be obvious to a POSITA in view of Cardamone.

13. Claim 20

Cardamone discloses each and every limitation of Claim 20, anticipating Claim 20. To the extent that the Board finds that the preamble is limiting, Cardamone discloses 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. For example, Cardamone discloses that software application 131 may also be used to adjust the operating parameters of control and communication computer 126, and application 131 allows user 101 to specify the exact movement profile for pump system 122. Ex. 1005, ¶¶ 0041-42.

Therefore, a POSITA would understand that Cardamone discloses a tangible, non-transitory machine-readable medium recited in Claim 20. Ex. 1002, ¶ 99. Claim 20's limitation 20[a] is analogous to limitation 1[g], limitation 20[b] is analogous to limitation 1[h], limitation 20[c] is analogous to limitation 1[i] and limitation 20[d] is analogous to limitation 1[j]. Each of Claim 20's limitations are disclosed by Cardamone for reasons provided above, and incorporated here. *See supra*, Section VIII(A)(1). Cardamone anticipates Claim 20.

14. Claim 21

To the extent that the Board finds that the preamble is limiting, Cardamone discloses a method. *See, e.g.*, Ex. 1005, ¶¶ 0049-0050. Therefore, a POSITA would understand that Cardamone discloses the element recited in Claim 21.

Ex. 1002, ¶ 100. Claim 21's limitation 21[a] is analogous to limitation 1[g], limitation 21[b] is analogous to limitation 1[h], limitation 21[c] is analogous to limitation 1[i] and limitation 21[d] is analogous to limitation 1[j]. Each of Claim 21's limitations are disclosed by Cardamone for reasons provided above, and incorporated here. *See supra*, Section VIII(A)(1). Cardamone anticipates Claim 21.

B. Ground 2: Almadi Anticipates Claims 1, 5, 6, 9-11, 14, and 19-21.

Independent claims 1, 20, and 21 and dependent claims 5, 6, 9-11, 14, and 19 of the '909 Patent are anticipated by U.S. Patent No. 8,667,091 ("Almadi") under 35 U.S.C. § 102, or would be obvious to a POSITA in view of Almadi under 35 U.S.C. § 103.

1. Claim 1

- a. 1[p] - A system for remotely controlling a fluid-handling device of an oil well, a petro water disposal or re-injection facility, or a petroleum pumping station, the system comprising**

To the extent that the Board finds that the preamble is limiting, Almadi discloses a system for remotely controlling a fluid-handling device of an oil well, a petro water disposal or re-injection facility, or a petroleum pumping station.

For example, Almadi discloses that the present invention relates to the control of, and acquisition of data from, remote and in-plant subsystems in automated industrial processes. *See, e.g.*, Ex. 1006, Abstract; 1:18-22.

Almadi further discloses that the automation architecture of modern industrial operations, such as that found in modern oil and gas field applications, is enabled at the field level and process level by various interconnected devices referred to as remote subsystems or field devices. *See, e.g.*, Ex. 1006, 1:28-35. These field devices monitor and collect data, such as measurements of fluid pressure, temperature, or flow, reflective of the operations of the automated process. *Id.*

A POSITA would recognize that the system disclosed by Almadi remotely monitors and controls a fluid handling device pump at oil wells, water disposal sites, re-injection facilities, or petroleum pumping stations. Ex. 1002, ¶ 102. Therefore, Almadi discloses a system for remotely controlling a fluid-handling device of an oil well, a petro water disposal or re-injection facility, or a petroleum pumping station.

- b. 1[a] - a command-center server having a data store storing multiple user accounts, each user account corresponding to a set of one or more oil wells, petro water disposal or re-injection facilities, or petroleum pumping stations, or a combination thereof, each set being operated by a different entity corresponding to the respective user account; and**

Almadi discloses integrated node 100, as illustrated in Figures 1A and 1B, having a central processing unit 105 and a memory 160 to allow a remote host 110 to interface with a plurality of remote subsystems 120. Ex. 1006, 11:18-21. Integrated node 100 is a programmable logic controller (“PLC”), meaning any PLC,

remote terminal unit (“RTU”), computer, server, system, node, or unit. Ex. 1006, 11:21-28.

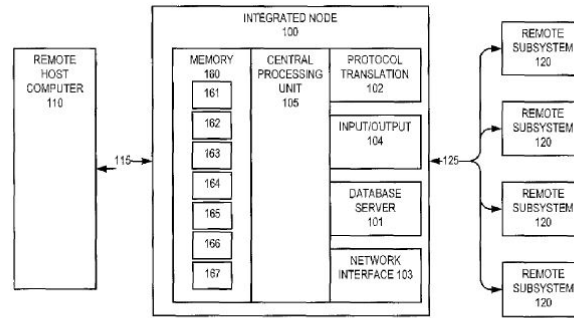


FIG. 1A

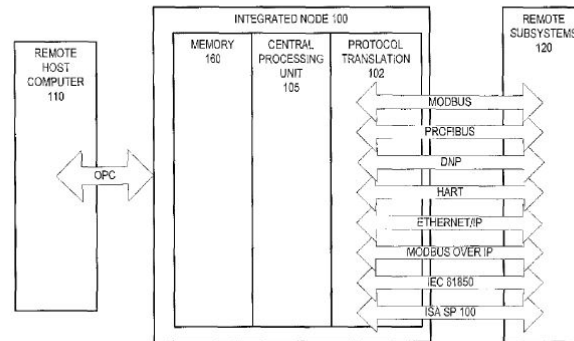


FIG. 1B

Ex. 1006, FIGS 1A-1B.

Almadi discloses that the plurality of remote subsystems 120 can include, for example, intelligent field systems such as permanent downhole monitoring (“PDHM”) systems, electrical submersible pump (“ESP”) systems, smart well completion (“SWC”) systems, flow meter systems, and any of the types of Intelligent Equipment Devices (“IED”). Ex. 1006, 12:27-35. Almadi discloses that the present invention can serve different networking operating environments, including, for example, intelligent field for *oil and gas*, substations/power grids, and remote

security, and can be utilized and can be extended for enterprise applications. Ex. 1006, 11:18-12:59; *see also* Abstract; 1:18-22, 1:28-35.

A POSITA would understand that Almadi discloses the command-center server of the ‘909 Patent through its disclosure of the integrated node 100. Ex. 1002, ¶ 103.

A POSITA would understand that Almadi discloses each set of facilities being operated by a different entity corresponding to the respective user account of the ‘909 Patent through its disclosure of multiple different network operating environments and applications applicable to different entities who would each have a respective user account. *Id.*

Thus, Almadi discloses the recited command-center server.

- c. **1[b]- a plurality of geographically distributed site master controllers, each site master controller corresponding to a respective one of the oil wells, petro water disposal or re-injection facilities, or petroleum pumping stations, each site master controller comprising:**

Almadi discloses a plurality of remote subsystems 120 can include, for example, intelligent field systems such as PDHM systems, ESP systems, SWC systems, flow meter systems, and any other types of IED. Ex. 1006, 12:27-59. Remote subsystems 120 can perform tasks including processing of measurement and control data and signal conversions. *Id.*

A POSITA would understand Almadi discloses a plurality of geographically

distributed site master controllers where the site master controller corresponds to an oil well, petro water disposal or re-injection facilities, or petroleum pumping station of the '909 Patent through its disclosure of remote subsystems 120. Ex. 1002, ¶ 104. Thus, Almadi discloses the recited geographically distributed site master controllers.

d. 1[c] - a communication module operable to communicate with a plurality of fluid-handling devices;

Almadi discloses that remote subsystems 120 can be adapted to be programmed to communicate with other field devices, for example, independent of the integrated node, as well as intelligent sensors, actuators, and controllers can be connected to the network by means of communication busses, interface boards, cables, and accessories. Ex. 1006, 12:27-59. Almadi further discloses an integrated node 100, as can be shown in FIG. 1A and FIG. 2A, for example, includes an input/output unit 104 positioned to transfer communications between the integrated node 100 the plurality of remote subsystems 120, and the remote host computer 110. Ex. 1006, 13:47-14:9 (disclosing various communication protocols).

A POSITA would understand that Almadi discloses the communication module of the '909 Patent through its disclosure of input/output unit 104 that provides communications capabilities between remote subsystems 120 and integrated node 100. Ex. 1002, ¶ 105. Thus, Abdallah discloses the recited communication module.

e. 1[d] - a network interface;

Almadi discloses that the integrated node 100 is connected to any of the remote host computers 110 or remote subsystems 120 by way of communication links 115 and 125, respectively, as would be understood by a POSITA. Ex. 1006, 11:31-35. Almadi further discloses that The input/output unit 104 provides both serial and Ethernet interfaces over communication links 115 and 125. Ex. 1006, 13:51-14:9 (disclosing various communication protocols).

A POSITA would understand that Almadi discloses a network interface of the '909 Patent through its disclosure of various wired or wireless interfaces for remote subsystems 120 to connect to integrated node 100. Ex. 1002, ¶ 106. Thus, Almadi discloses the recited network interface.

f. 1[e] - memory; and

Almadi discloses that any of the measurements or values can be output by storing to a storage medium such as memory 160 or database 101, by transmitting to remote host computer 110, or by transmitting to any other computer or interface in communication with the integrated node 100 over the input/output unit, such as the local interface 190 or any computer terminal having a graphical user interface as will be understood by those having skill in the art. Ex. 1006, 27:2-10. Remote subsystems 120 connect to integrated node 100 over the input/output unit. Ex. 1006, 13:47-51; *see also id.*, 1:18-57, 11:18-12:59.

From Almadi's disclosure that measurements or values can be stored in memory or output to any other computer or interface in communication with the integrated node 100 over the input/output unit, a POSITA would understand requires remote subsystems 120 to have a memory. Ex. 1002, ¶¶ 107-08.

A POSITA would understand that Almadi discloses a memory for the site master controller of the '909 Patent through its disclosure of remote subsystems 120. *Id.* Thus, Almadi discloses the recited memory.

- g. 1[f] - one or more processors communicatively coupled to the communication 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:**

Almadi discloses that remote subsystems 120 can include, for example, intelligent field systems that can perform tasks including processing and accepting programming. Ex. 1006, 11:18-12:59. Almadi discloses that its "intelligent field devices" (i.e. remote subsystems 120) include the ability to process data, self-monitor, self-regulate, self-calibrate, or provide early warnings with respect to malfunctions or predictive maintenance. Ex. 1006, 1:18-57.

A POSITA would understand that Almadi's disclosure of processing by remote subsystems 120 necessarily requires a processor. Ex. 1002, ¶ 109. A POSITA would further understand because remote subsystems 120 can also adapted

to be programmed so as to communicate with other field devices that a processor is required. Ex. 1002, ¶ 109.

A POSITA would understand Almadi's disclosure of intelligent field device processing data, self-monitoring, self-regulating, etc. requires remote subsystems 120, to store in memory instructions that when executed will cause remote subsystems 120's processors to execute the instruction's steps. *Id.*

Thus, Almadi discloses the recited processors, communication modules, memory, and network interfaces in remote subsystems 120.

- h. 1[g] - receiving, via the network interface, from the command-center server, a plurality of commands encoded in a first protocol to control the fluid-handling devices from a user corresponding to one of the user accounts, different commands among the plurality of commands being directed to different fluid handling devices among the plurality of fluid-handling devices;**

Almadi discloses that integrated node 100 supports a local programming interface over a computer, such as through computer terminals having one or more input devices and one or more display devices that are accessible to a human user (not pictured) or, for example, by using the remote host computer 110. Ex. 1006, 12:10-15. The remote host 110 can be any type of remote host computer for management or hosting of process automation functions as will be known or available to those having skill in the art, for example, a SCADA host. Ex. 1006, 12:55-59.

Almadi discloses that the PLC or RTU functions of the integrated node 100 enable data processing in the integrated node 100 and also enable data collection from, and control of, the plurality of remote subsystems 120. Ex. 1006, 11:51-63; *see also id.* 22:32-36 (“The DVRM 164 enhances the accuracy of data acquired by the integrated node 100, which also enhances the effectiveness of the integrated node 100 in controlling the plurality of remote subsystems 120.”).

A POSITA would understand that Almadi discloses the recited receiving commands from the command center server to control specific fluid handling devices of the ‘909 Patent through its disclosure of receiving commands from a user through remote host 110, which connects through integrated node 100 to individually addressable remote subsystems 120 for controlling operation of well site components. Ex. 1002, ¶ 110.

Thus, Almadi discloses receiving, via the network interface, from the command-center server, a plurality of commands encoded in a first protocol to control the fluid-handling devices from a user corresponding to one of the user accounts.

- i. **1[h] - for at least some of the plurality of commands, determining a plurality of different target states of a given one of the fluid-handling devices over time, wherein the respective site-master controller is operative to maintain control of the fluid handling devices in the absence of a network connection to the command-center server;**

Almadi discloses that modern field devices monitor and collect data, such as measurements of fluid pressure, temperature, or flow, reflective of the operations of the automated process. Ex. 1006, 1:28-57. Almadi further discloses that modern field devices may be termed “intelligent field devices,” generally, in the sense that they may also incorporate more robust functionality, such as the ability to process data, self-monitor, self-regulate, self-calibrate, or provide early warning with respect to malfunctions or predictive maintenance. Ex. 1006, 1:18-57. Almadi discloses that remote subsystems 120 can include a variety of intelligent field systems. *See generally*, Ex. 1006, 12:27-59.

A POSITA would understand Almadi’s disclosure of monitoring and collecting data, such as measurements of fluid pressure, temperature, or flow determines a plurality of different target states of a given one of the fluid-handling devices over time as claimed in the ‘909 Patent. Ex. 1002, ¶¶ 111-13. A POSITA would further understand from Almadi’s disclosure that “intelligent field devices” process data, self-monitor, self-regulate, and self-calibrate among other operations

necessary to maintain control of the fluid handling devices without requiring network connectivity to a command center server as claimed in the '909 Patent. *Id.*

Thus, Almadi discloses determining a plurality of different target states of a given one of the fluid-handling devices over time, where the local node device is operative to maintain control in the absence of a network connection to the central communication device gateway.

- j. **1[i] - translating the plurality of commands into translated commands encoded in a plurality of 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; and**

Almadi discloses that integrated node 100 can further include a protocol translator or translation server 102 to translate communications with each of the remote subsystems 120 according to any one or more of a plurality of messaging protocols, as demonstrated with reference to the arrows connecting protocol translator or translation server 102 and the plurality of remote subsystems 120. Ex. 1006, 14:10-17, FIG. 1B; *see also*, Ex. 1006, 11:35-41.

Almadi discloses that the protocol translator or translation server 102 can be configured by a user to support communications according to various protocols, including serial and Ethernet physical interfaces, Serial Modbus, Modbus over IP (Internet Protocol), Highway Addressable Remote Transducer (HART) Protocol, Foundation Fieldbus, Distributed Network Protocol (DNP), IEC 61850, ISA100.11a, Wireless HART, ZigBee, and Ethernet/IP (Ethernet Industrial Protocol), including supporting subsystems data exchange. Ex. 1006, 14:17-28; *see also* FIG. 2D.

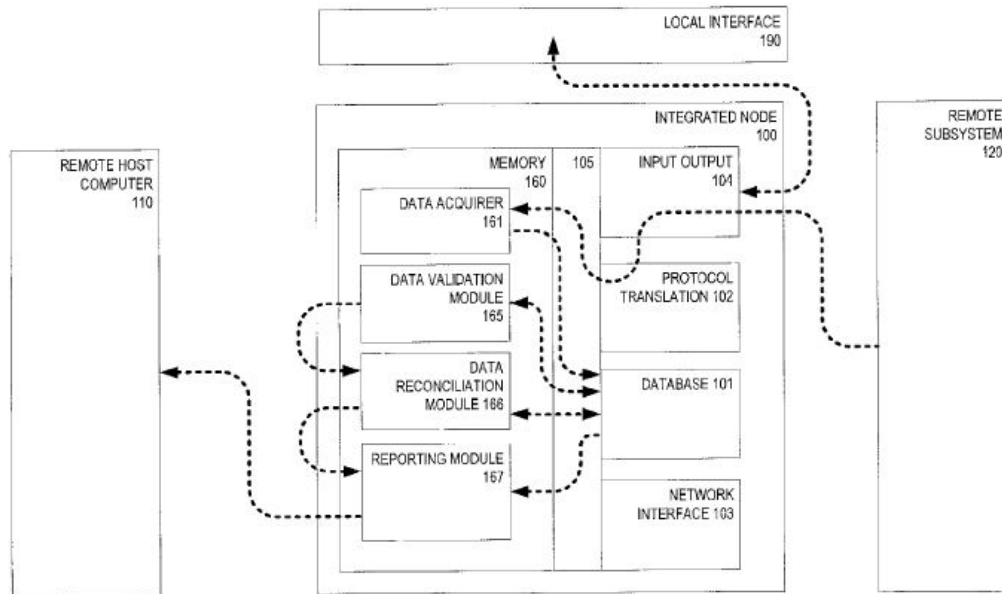


FIG. 2D

Almadi discloses translated commands used by the local controller to drive the fluid handling device to a particular target state: “field devices can perform actuator functions to receive information, such as commands, from the system level

to thereby affect or control the operation of an automated process, for example, through motors and pumps.” Ex. 1006, 1:45-49, 12:27-59; *see also id.*, 25:26-37 (“switching a pump off if the flow is below certain limit or activating some bounds or streams based on some readings/conditions”).

A POSITA would understand that the use of different protocols by the protocol translator requires that the protocols must be translated as claimed in the ‘909 Patent. Ex. 1002, ¶ 114. Thus, Almadi discloses translating the plurality of commands into translated commands encoded in a plurality of protocols different from the first protocol.

k. 1[j] - sending the translated commands to respective local controllers of the respective fluid-handling devices to which the respective commands are directed.

Almadi discloses that integrated node 100 can further include a protocol translator or translation server 102 to translate communications with each of the remote subsystems 120 according to any one or more of a plurality of messaging protocols. Ex. 1006, 14:10-17, FIG. 1B; *see also*, Ex. 1006, 11:35-41. Almadi discloses sending translated commands to the local controller to drive the fluid handling device to a particular target state: “field devices can perform actuator functions to receive information, such as commands, from the system level to thereby affect or control the operation of an automated process, for example, through motors and pumps.” Ex. 1006, 1:45-49; 12:27-59; *see also id.*, 25:26-37 (“switching

a pump off if the flow is below certain limit or activating some bounds or streams based on some readings/conditions”).

A POSITA would understand that integrated node 100 translating communications with each of the remote subsystems 120 requires sending the translated commands as claimed in the ‘909 Patent. Ex. 1002, ¶ 115. Thus, Almadi discloses sending the translated commands to respective local controllers of the respective fluid-handling devices.

Almadi therefore anticipates Claim 1 or would be obvious to a POSITA in view of Almadi.

2. Claim 5

Claim 5 depends from dependent Claim 3, which depends from dependent Claim 2. Almadi discloses the elements of Claim 1 for the reasons discussed above and incorporated herein.

Claim 5 recites that the system of Claim 3, wherein the request is a request to view alarms issued by a fluid-handling device among the plurality of fluid handling devices, and wherein the retrieved data comprises data indicative of the alarms.

Claim 3 recites 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 password corresponding to a selected one of the user accounts; receiving, from the 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 of the selected one of the user accounts; 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.

Claim 2 recites 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 device obtained by sensors of the fluid-handling device; and sending, to a remote data store, the received sensor data.

Almadi discloses that integrated node 100 may be accessed by a user through a computer terminal having one or more input devices and one or more display devices that are accessible to a human user (not pictured) or, for example, by using the remote host computer 110. Ex. 1006, 12:10-15.

Almadi discloses that the integrated node 100 collects data from remote subsystems 120. Ex. 1006, 11:51-55; 13:47-14:9. Almadi discloses that field devices perform sensor functions to collect data such as temperature, pressure, pH, or flow rate and deliver that information to the system-level controller devices. Ex. 1006, 1:41-45. Almadi discloses that the remote subsystem can further communicate or report 812 an alarm to the integrated node. Ex. 1006, 17:1-28. Almadi discloses that the reporting of an exception alarm includes data transmissions through input/output

unit 104 and network interface 103 and in communication with the remote host computer 110. *Id.* Almadi discloses that the remote host can then execute instructions responsive to the alarm, for example, to relay or present the alarm to a human user or to cause the remote host to issue a command to the integrated node in response to the alarm. Ex. 1006, 5:33-36.

Almadi discloses a system intended to serve in various networking operating environments, including, for example, intelligent field for oil and gas, substations/power grid, and remote security, and can be utilized and can be extended for enterprise applications. Ex. 1006, 12:48-59, 13:20-25. A POSITA would understand that Almadi requires users of such systems would be required to input a username and password for accessing the remote host computer. Ex. 1002, ¶ 117.

A POSITA would understand that Almadi discloses the elements of Claim 5 of the '909 Patent through its disclosure of exemption and alarm reporting. *Id.* As such, Claim 5 is anticipated by Almadi or would be obvious to a POSITA in view of Almadi.

3. Claim 6

Claim 6 depends from independent Claim 1, and dependent Claims 2 and 3. Almadi discloses Claim 1 for the reasons discussed above and incorporated herein. Almadi further discloses Claims 2 and 3 for the reasons discussed above for Claim 5 and incorporated herein.

Claim 6 discloses the system of claim 3, wherein the retrieved data comprises messages provided to the web-server regarding attempts to address the alarms.

Almadi discloses that *the remote host can then execute instructions responsive to the alarm*, for example, to relay or present the alarm to a human user or to cause the remote host to issue a command to the integrated node in response to the alarm, which the integrated node may later receive and process to thereby affect the operation of the integrated node or any remote subsystem. Ex. 1006, 5:21-39.

Therefore, a POSITA would understand that Almadi discloses the element recited in Claim 6. Ex. 1002, ¶ 119. As such, Claim 6 is anticipated by Almadi or would be obvious to a POSITA in view of Almadi.

4. Claim 9

Claim 9 depends from dependent Claim 1. Almadi discloses Claim 1 for the reasons discussed above and incorporated herein.

Claim 9 discloses a remote terminal unit through which the one or more processes communicate with a fluid-handling device among the plurality of fluid-handling devices, wherein translating the received commands 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.

Almadi discloses identifying an address on a serial bus corresponding to a component of the fluid-handling device responsive to the received command through its disclosure that the protocol translator or translation server 102 can be configured by a user to support communications according to various protocols, including serial and Ethernet physical interfaces, for example, Serial Modbus. Ex. 1006, 14:17-28; *see also* FIG. 2D.

Similarly, Almadi discloses identifying a command code operative to cause the component to execute the received command through its disclosure that the protocol translator or translation server 102 can be configured by a user to support communications according to the Serial Modbus protocol. Ex. 1006, 14:17-28; *see also* FIG. 2D.

Finally, Almadi discloses sending to the address on the serial bus the command code that the input/output unit 104 provides both serial and Ethernet interfaces over communication links 115 and 125, which can be any type of serial or Ethernet links. Ex. 1006, 13:47-14:9.

A POSITA would understand from the above disclosure that Almadi discloses identifying an address on a serial bus such as a Serial Modbus, identifying a command code operative to cause the component to execute the received command using the protocol translator or translation server 102, and sending to the address on the serial bus such as the command code that the input/output unit 104 provides both

serial and Ethernet interfaces communication links 115 and 125. Ex. 1002, ¶ 125.

As such, Claim 9 is anticipated by Almadi or would be obvious to a POSITA in view of Almadi.

5. Claim 10

Claim 10 depends from dependent Claim 1. Almadi discloses Claim 1 for the reasons discussed above and incorporated herein.

Claim 10 recites The system of Claim 1, comprising a digital-to-analog converter, wherein a fluid-handling device among the plurality of fluid-handling devices comprises a valve responsive to an output signal of the digital-to-analog converter, and wherein translating the received commands comprises changing an output signal of the digital-to-analog converter responsive to a received command among the plurality of received commands.

Almadi discloses that the input/output unit 104 can support, for example, any analog inputs, analog outputs, digital inputs, digital outputs, pulse inputs, and pulse outputs for both wired and wireless instrumentation interfaces (analog, digital, and wireless ISA 100.11a/WHART/Zigbee).

A POSITA would understand that analog and digital inputs and outputs disclosed in Almadi are the changing of an output signal of the digital-to-analog converter responsive to a received command among the plurality of received

commands of claim 10. Ex. 1002, ¶ 129. As such, Claim 10 is anticipated by Almadi or would be obvious to a POSITA in view of Almadi.

6. Claim 11

Claim 11 depends from dependent Claim 1. Almadi discloses Claim 1 for the reasons discussed above and incorporated herein.

Claim 11 recites the system of Claim 1, wherein receiving the commands comprises receiving the commands via a first network socket, and wherein sending the translated command comprises sending at least some of the translated commands via a second network socket.

Almadi discloses that the input/output unit 104 provides both serial and Ethernet interfaces over communication links 115 and 125, which can be any type of serial or Ethernet links. Ex. 1006, 13:47-14:9.

Therefore, a POSITA would understand that receiving the commands via a serial interface is done via a first network socket, and sending the translated command using an Ethernet interface is done via a second network socket. Ex. 1002, ¶ 131. As such, Claim 11 is anticipated by Almadi or would be obvious to a POSITA in view of Almadi.

7. Claim 14

Claim 14 depends from independent Claim 1. Almadi discloses Claim 1 for the reasons discussed above and incorporated herein.

Claim 14 discloses the system of Claim 1, comprising one of the following coupled to the fluid-handling devices: an oil well, a saltwater disposal well, a carbon-capture well, or a pump station.

Almadi discloses that the present invention can serve different networking operating environments, including, for example, intelligent field for *oil and gas* Ex. 1006, 11:18-12:59 (emphasis added); *see also* Abstract; 1:18-22, 1:28-35.

A POSITA would understand that Almadi discloses the element recited in Claim 14. Ex. 1002, ¶ 133. As such, Claim 14 is anticipated by Almadi or would be obvious to a POSITA in view of Almadi.

8. Claim 15

Claim 15 depends from independent Claim 1. Almadi discloses Claim 1 for the reasons discussed above and incorporated herein.

Claim 15 recites the system of Claim 1, wherein a fluid-handling device among the plurality of fluid-handling devices comprises a separation unit configured to separate oil from water, and wherein the command comprises a command operative to change a level of the separation unit at which oil meets water.

Almadi teaches a configuration interface to identify process streams between plants and different numbers and types of process units, such as tanks, crude switches, and other process units that will be known to those having skill in the art. Ex. 1006, 23:51-24:53. For comparison, the '909 Patent broadly recites that “the

fluid-handling devices may be a valve, a pump, a process chamber (for instance an oil/water separation tank).” Ex. 1001, at 5:30-34.

A POSITA would understand that a process chamber as recited in the ’909 Patent is the same as the “process unit” disclosed by Almadi. Ex. 1002, ¶ 135. A POSITA would recognize an oil/water separation tank as a standard process unit/chamber in oil processing streams. *Id.*

Almadi’s configuration interface includes methods such as balance calculations for inputs, outputs, and inventories of receipts, charges, processing, intermediate products, and final products. Ex. 1006, 24:4-26:19.

A POSITA would understand that the balancing calculations and inventory at industrial plants include process streams at plants for oil and water separation units that adjust the level of water in a tank to change the interface level to remove oil through valves placed above the water level. Ex. 1002, ¶ 136.

As such, Claim 15 is anticipated by Almadi or would be obvious to a POSITA in view of Almadi.

9. Claim 16

Claim 16 depends from independent Claim 1 and dependent Claim 15. Almadi discloses Claims 1 and 15 for the reasons discussed above and incorporated herein.

Claim 16 recites the system of Claim 15, wherein the separation unit comprises a pump having a variable-frequency drive, and wherein the local

controller is operative to adjust the frequency of the variable-frequency drive until the level of the separation unit reaches a target level corresponding to the target state.

Almadi teaches predefined rules and conditions 712, for example, switching a pump off if the flow is below a certain limit or activating some bounds or streams based on some readings/conditions. Ex. 1006, 25:26-26:19.

A POSITA would understand that switching off a pump and activating some bounds, such as adjusting a frequency in a variable drive motor, based on readings and conditions to reach a target level, at least in part because this approach would decrease the risk of spilling oil or waste products. Ex. 1002, ¶ 139. As such, Claim 16 is anticipated by Almadi or would be obvious to a POSITA in view of Almadi.

10. Claim 19

Claim 19 depends from independent Claim 1. Almadi discloses Claim 1 for the reasons discussed above and incorporated herein.

Claim 19 discloses the system of Claim 1, wherein the system is operative to provide web-based control and monitoring of oil and gas wells to multiple account holders corresponding to the user accounts.

Almadi discloses that the present invention can serve different networking operating environments, including, for example, intelligent field for *oil and gas*, substations/power grids, and remote security, and can be utilized and can be extended for enterprise applications. Ex. 1006, 11:18-12:59; *see also* Abstract; 1:18-

22, 1:28-35. Almadi discloses that wherein the plurality of remote subsystems includes one or more intelligent field systems selected from the following: permanent downhole monitoring (PDHM) systems, electrical submersible pump (ESP) systems, smart well completion (SWC) systems, and flow meter systems. Ex. 1006, 12:27-59.

A POSITA would understand that Almadi discloses each set of facilities being operated by a different entity corresponding to the respective user account of the '909 Patent through its disclosure of multiple different network operating environments and remote subsystem applications, applicable to different entities each having a respective user account. Ex. 1002, ¶ 141.

A POSITA would understand that Almadi discloses multiple account holders as recited in Claim 19. *Id.* As such, Claim 19 is anticipated by Almadi or would be obvious to a POSITA in view of Almadi.

11. Claim 20

To the extent that the Board finds that the preamble is limiting, Almadi discloses a system for remotely controlling a fluid-handling device of an oil well, a petro water disposal or re-injection facility, or a petroleum pumping station. *See, e.g.,* Ex. 1006, Abstract; 1:18-22, 1:28-35.

To the extent that the Board finds that the preamble is limiting, Almadi discloses that the present invention provides machines, computer-readable media

having computer programs or computer program products stored thereon, and computer-implemented methods to provide an integrated node for data acquisition from process automation remote subsystems. *See, e.g.*, Ex. 1006, Abstract, 11:18-12:26.

Almadi discloses Claim 20[a]-[d] for the reasons discussed above for Claim elements 1[g]-[j] and incorporated herein.

Therefore, a POSITA would understand that Almadi discloses 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. Ex. 1002, ¶ 142. As such, Claim 20 is anticipated by Almadi or would be obvious to a POSITA in view of Almadi.

12. Claim 21

To the extent that the Board finds that the preamble is limiting, Almadi discloses a method. *See, e.g.*, Ex. 1006, Abstract.

Almadi discloses Claim 21[a]-[d] for the reasons discussed above for Claim elements 1[g]-[j] and incorporated herein.

A POSITA would understand that Almadi discloses a method, as recited in Claim 21. Ex. 1002, ¶ 143. As such, Claim 21 is anticipated by Almadi or would be obvious to a POSITA in view of Almadi.

C. Ground 3: Abdallah Anticipates Claims 1 and 20-21.

Independent Claims 1, 20, and 21 anticipated by the disclosure, either express or inherent, in U.S. Patent Application No. 2008/0316048 (“Abdallah”) under 35 U.S.C. § 102, or would be obvious to a POSITA in view of Abdallah under 35 U.S.C. § 103.

1. Claim 1

- a. 1[p] - A system for remotely controlling a fluid-handling device of an oil well, a petro water disposal or re-injection facility, or a petroleum pumping station, the system comprising**

To the extent that the Board finds that the preamble is limiting, Abdallah discloses a system for remotely controlling a fluid-handling device of an oil well, a petro water disposal or re-injection facility, or a petroleum pumping station.

For example, Abdallah discloses that the present invention relates to the control of, and acquisition of data from, remote and in-plant subsystems in automated industrial processes. *See, e.g.*, Ex. 1007, ¶ 0006. Abdallah specifically discloses that a well site 100 may be provided with several monitoring and control devices for remote operations at the site. *See, e.g.*, Ex. 1007, ¶¶ 00051-55.

A POSITA would recognize that the system disclosed by Abdallah remotely monitors and controls a fluid handling device pump at oil wells, water disposal sites, re-injection facilities, or petroleum pumping stations. Ex. 1002, ¶ 147. Therefore, Abdallah discloses a system for remotely controlling a fluid-handling device of an

oil well, a petro water disposal or re-injection facility, or a petroleum pumping station.

- b. 1[a] - a command-center server having a data store storing multiple user accounts, each user account corresponding to a set of one or more oil wells, petro water disposal or re-injection facilities, or petroleum pumping stations, or a combination thereof, each set being operated by a different entity corresponding to the respective user account; and**

Abdallah discloses a command center server as its central communication gateway 202 that connects the remote system's sensor and control nodes through network 200. Ex. 1007, ¶ 0056; *see also id.*, ¶ 0055. Abdallah discloses central communication gateway 202 is a data store server because each includes a processor, memory, and database. Ex. 1007, FIG. 2.

Abdallah discloses that the remote nodes provide sensor data and control access to well-site equipment, such as pumps, valves, and tanks. *See, e.g.*, Ex. 1007, ¶¶ 0049-0059. Abdallah discloses that multiple accounts, i.e. well sites, may be connected to the gateways. Ex. 1007, ¶ 206 ("Multiple well sites may be monitored using more local gateways").

A POSITA would understand that Abdallah discloses the command-center server of the '909 Patent through its disclosure of the central communication device gateway. Ex. 1002, ¶ 148. Thus, Abdallah discloses the recited command center server.

- c. **1[b]- a plurality of geographically distributed site master controllers, each site master controller corresponding to a respective one of the oil wells, petro water disposal or re-injection facilities, or petroleum pumping stations, each site master controller comprising:**

Abdallah discloses that the remote nodes provide sensor data and control access to well-site equipment, such as pumps, valves, and tanks. *See, e.g.*, Ex. 1007, ¶¶ 0049-0059. More specifically, Abdallah discloses that central communication gateway 202 connects to the remote system's local nodes that connect to well-site equipment. *Id.*, ¶¶ 0055-0056, 0058, FIG. 2.

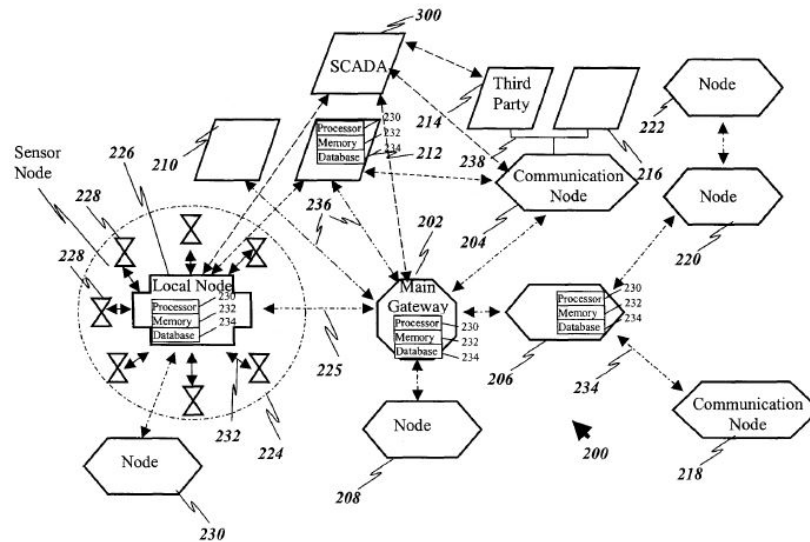


FIG. 2

A POSITA would understand that Abdallah discloses a plurality of geographically distributed site master controllers where the site master controller corresponds to an oil well, petro water disposal or re-injection facilities, or petroleum

pumping station of the ‘909 Patent through its disclosure of well site sensor nodes. Ex. 1002, ¶ 149-50. Thus, Abdallah discloses a plurality of geographically distributed site master controllers.

d. 1[c] - a communication module operable to communicate with a plurality of fluid-handling devices;

Abdallah discloses that the well site nodes have “output control interfaces coupled to well site tools such as valves 128, 138 for controlling at least some operations at the well site.” Ex. 1007, ¶ 0051; *see also, e.g., id.*, ¶¶ 0035-36.

A POSITA would understand that Abdallah discloses the communication module operable to communicate with the fluid handling device of the ‘909 Patent through its disclosure of output control interfaces that couple to well-site tools. Ex. 1002, ¶ 152. Thus, Abdallah discloses a communication module.

e. 1[d] - a network interface;

Abdallah discloses communication among the nodes forming the network 200 as well as between the nodes and third-party devices to share information and receive commands from users. Ex. 1007, ¶¶ 0055-56, 0058 (wired or wireless examples), 0060 (wired or wireless, short range or long range, and a mix of different methodologies disclosed including short-range wireless UCMP, long range wireless UCMP short-range Modbus and long-range wireless Modbus).

A POSITA would understand that Abdallah discloses the network interface of the '909 Patent through its disclosure of various wired or wireless interfaces. Ex. 1002, ¶ 153. Thus, Abdallah discloses a network interface.

f. 1[e] - memory; and

Abdallah discloses that both local and main gateway nodes in the network include processor, memory, and database. Ex. 1007, ¶ 0056, FIG. 2.

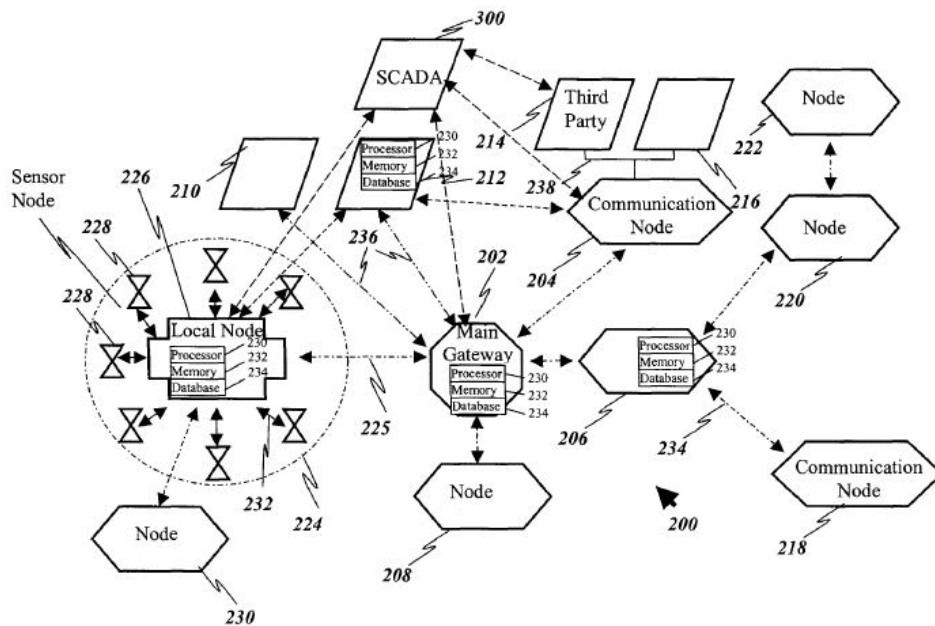


FIG. 2

A POSITA would understand that Abdallah discloses the recited memory of the '909 Patent through its disclosure of memory in each node. Ex. 1002, ¶ 154. Thus, Abdallah discloses a memory.

- g. 1[f] - one or more processors communicatively coupled to the communication 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:**

Abdallah discloses that both local and main gateway nodes in the network include processor, memory, database, and network connection. Ex. 1007, ¶ 0051-0056, FIG. 2.

Abdallah discloses that monitoring devices are strategically located at several locations of the well site 100 to monitor parameters relating to the produced products and/or well site tools. Ex. 1007, ¶ 0051. The sensors include monitoring downhole and surface parameters of a well site, with a wide range of listed functionalities. Ex. 1007, ¶¶ 0053, 0054, 0059. Abdallah further discloses that the well site monitoring devices include nodes with “output control interfaces coupled to well site tools such as valves 128, 138 for controlling at least some operations at the well site.” Ex. 1007, ¶ 0051; *see also, e.g.*, Ex. 1007, ¶¶ 0035-36, FIG. 2.

A POSITA would understand that Abdallah discloses the recited processor of the ‘909 Patent through its disclosure of processors in the local node, coupled to the well site monitoring device. Ex. 1002, ¶ 155.

A POSITA would understand that Abdallah discloses the recited instructions stored in memory of the ‘909 Patent through its disclosure of sensor nodes with

output control interfaces coupled to the well site monitoring device, which receive commands over the network. *Id.*

Thus, Abdallah discloses one or more processors coupled to the communication module network, interface, and memory-storing instructions for the site controller.

- h. 1[g] - receiving, via the network interface, from the command-center server, a plurality of commands encoded in a first protocol to control the fluid-handling devices from a user corresponding to one of the user accounts, different commands among the plurality of commands being directed to different fluid handling devices among the plurality of fluid-handling devices;**

Abdallah discloses that the central gateway 202 is in communication with the sensor nodes. Ex. 1007, ¶ 0058. Abdallah further discloses that the monitoring network establishes “two-way communication with every node, including every remote node and every gateway node in the network.” Ex. 1007, ¶ 0056. Abdallah also discloses that every node and gateway in the system are “individually addressable and can be in direct communication with each other and a third party communication device, such as a SCADA system through a mesh network.” *Id.*

A POSITA would understand that Abdallah discloses the recited receiving commands from the command center server encoded in a first protocol, a computer networking protocol, to control specific fluid handling devices of the ‘909 Patent through its disclosure of networked individually addressable nodes for controlling

operation of well site components. Ex. 1002, ¶ 157. Thus, Abdallah discloses receiving, via the network interface, from the command-center server, a plurality of commands encoded in a first protocol to control the fluid-handling devices from a user corresponding to one of the user accounts.

- i. **1[h] - for at least some of the plurality of commands, determining a plurality of different target states of a given one of the fluid-handling devices over time, wherein the respective site-master controller is operative to maintain control of the fluid handling devices in the absence of a network connection to the command-center server;**

Abdallah discloses monitoring devices strategically located at several locations of the well site 100 to monitor parameters relating to the produced products and/or well site tools. Ex. 1007, ¶ 0051. The sensors include monitoring downhole and surface parameters of a well site, with a wide range of listed functionalities. Ex. 1007, ¶¶ 0053, 0054, 0059. Abdallah further discloses the well site monitoring devices include nodes with “output control interfaces coupled to well site tools such as valves 128, 138 for controlling at least some operations at the well site.” Ex. 1007, ¶ 0051; *see also, e.g.*, Ex. 1007, ¶¶ 0035-36, FIG. 2.

Abdallah discloses determining different target states, including selecting a real-time transmission mode when an input signal change rate is less than a predetermined value and selecting a buffered data transmission mode when the signal change rate is greater than or equal to the predetermined value; and

transmitting the data in the selected transmission mode from a wireless oil field environment. Ex 1007, ¶ 0010; *see also* Ex. 1007, ¶ 0045, 0047.

A POSITA would understand that the number of parameters corresponds to a plurality of different target states. Ex. 1002, ¶ 159. A POSITA would further understand that the “sensing a signal change rate for an input signal from an oil field apparatus; selecting a real-time transmission mode when the signal change rate is less than a predetermined value” described in Abdallah determines a plurality of different target states of a given one of the fluid-handling devices over time in the absence of a network connection to the command-center server. *Id.* Thus, Abdallah discloses determining a plurality of different target states of a given one of the fluid-handling devices over time.

Abdallah also discloses that every node and gateway in the system are “individually addressable and can be in direct communication with each other and a third party communication device, such as a SCADA system through a mesh network.” Ex. 1007, ¶ 0056.

A POSITA would understand that the local node controller controlling at least some operations at an individually addressable well site requires determining from a set of target states parameters that are used to control the operations at the well site without active communications with the command server. Ex. 1002, ¶ 160.

Thus, Abdallah discloses determining a plurality of different target states of a

given one of the fluid-handling devices over time, where the local node device is operative to maintain control in the absence of a network connection to the central communication device gateway.

- j. **1[i] - translating the plurality of commands into translated commands encoded in a plurality of 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; and**

Abdallah discloses the translating of the plurality of commands into translated commands encoded in a plurality of protocols different from the first protocol of the '909 Patent. The claimed device in Abdallah is "configured as a protocol translator to change the received information from the first communication protocol to the second communication protocol." Ex. 1007, Abstract; *see also, e.g.*, Ex. 1007, ¶¶ 0008, 0009 ("translating the received data from the first communication protocol to a second communication protocol"); Claim 12.

For example, Abdallah discloses FIG. 3 is a non-limiting example of anode gateway 300. Ex. 1007, ¶ 0051. The gateway 300 communicates with other nodes and devices as described above and shown in FIG. 2 using one or more protocols.

Ex. 1007, ¶ 0097. Abdallah discloses Modbus RTU serial protocol, SNMP, Modbus Universal Plug and Play, as well as other proprietary protocols. *Id.*; *see also* FIG. 6; Ex. 1007, ¶¶ 0098 (“the gateway 300 may further include a protocol translator 306”); 0209. Abdallah further discloses in Figure 6 that the node sends a response related to the command back to the user. Ex. 1007, FIG. 6; ¶¶ 107, 209.

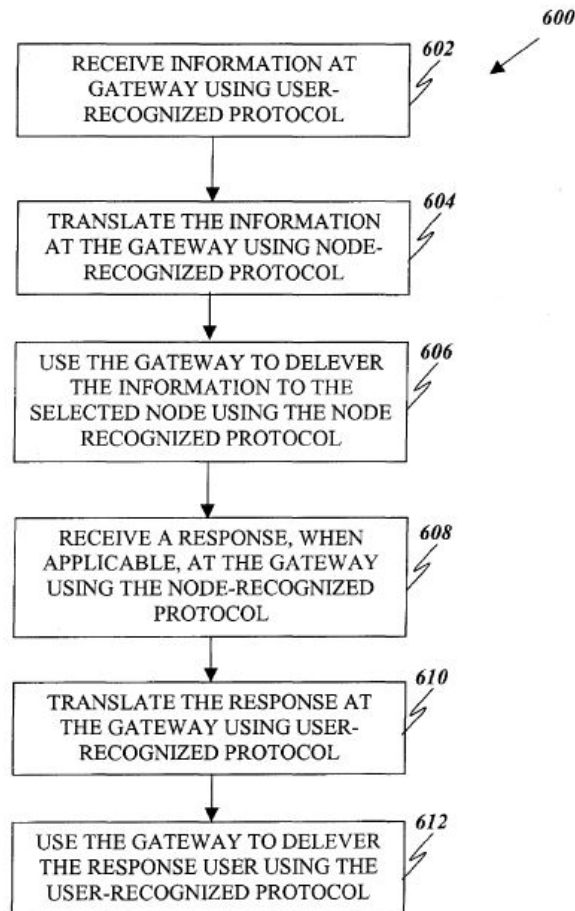


FIG. 6

A POSITA would understand that Abdallah discloses the local controller being responsive to the translated commands and providing feedback from the fluid-handling device indicative of whether the given fluid-handling device is in a targeted

state. Ex. 1002, ¶ 161.

Abdallah discloses Figures 7 and 8 show illustrative data structures used for data communication and protocol translation in different particular illustrative embodiments. Ex. 1007, ¶ 0102; FIG. 7; FIG. 8;

A POSITA would understand that the use of different protocols by the gateway 300 to communicate with other nodes and devices requires the protocols must be translated for communication between the nodes and disparate devices. Ex. 1002, ¶ 161. Thus, Abdallah discloses translating the plurality of commands into translated commands encoded in a plurality of protocols different from the first protocol.

- k. 1[j] - sending the translated commands to respective local controllers of the respective fluid-handling devices to which the respective commands are directed.**

Abdallah discloses that the translated commands described in Element 1[i] above are sent to the fluid handling device. *See, e.g.*, Ex. 1007, ¶¶ 0008; 0009 (“translating the received data from the first communication protocol to a second communication protocol”); Claim 12. Abdallah discloses that the signal transmission functionality circuit 312 may be coupled to the controller 302 and the communication interface 310 via a radio transceiver 318. Ex. 1007, ¶ 0098; *see also* Ex. 1007, ¶ 0097. FIG. 6. of Abdallah further discloses that the gateway is used to deliver the translated responses using the user-recognized protocol.

Ex. 1007, ¶ 0209; FIG. 6.

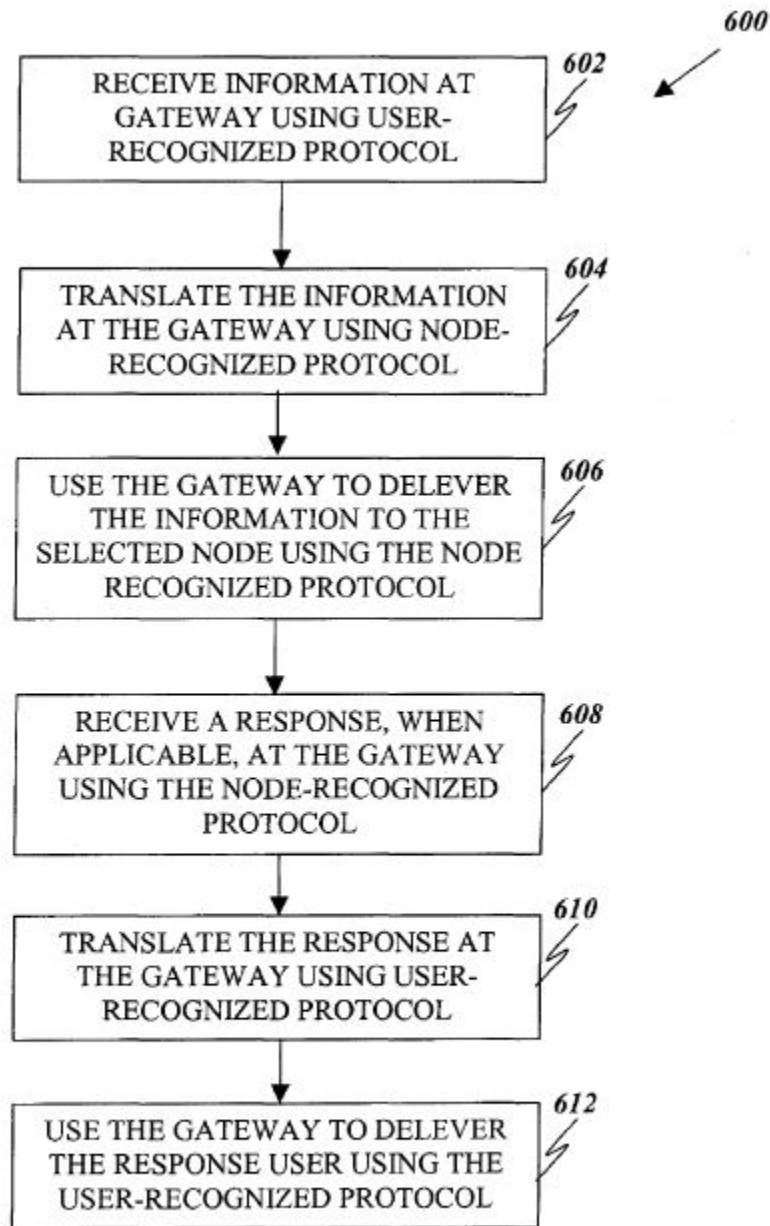


FIG. 6

A POSITA would understand that Abdallah discloses sending the translated commands to respective local controllers for fluid handling devices.

Ex. 1002, ¶ 162. Thus, Abdallah discloses sending the translated commands to respective local controllers of the respective fluid-handling devices.

As such, Claim 1 is anticipated by Abdallah or would be obvious to a POSITA in view of Abdallah.

2. Claim 20

To the extent that the Board finds that the preamble is limiting, Abdallah discloses a system for remotely controlling a fluid-handling device of an oil well, a petro water disposal or re-injection facility, or a petroleum pumping station.

For example, Abdallah discloses that the claim invention may be presented in terms of logic, software or software-implemented aspects typically encoded on a variety of computer-readable media including, but not limited to, computer-readable media, machine-readable media, program storage media or computer program product. *See, e.g.*, Ex. 1007, ¶¶ 0027, 0051, 0098. Such media may be handled, read, sensed, and/or interpreted by a computer. Ex. 1007, ¶ 0027.

Abdallah discloses Claim 20[a]-[d] for the reasons discussed above for Claim elements 1[g]-[j], and incorporated herein.

Therefore, a POSITA would understand that Abdallah discloses the elements recited in Claim 20. Ex. 1002, ¶ 164. As such, Claim 20 is anticipated by Abdallah or would be obvious to a POSITA in view of Abdallah.

3. Claim 21

To the extent that the Board finds that the preamble is limiting, Abdallah discloses a method. *See, e.g.*, Ex. 1007, Abstract.

Abdallah discloses Claim 21[a]-[d] for the reasons discussed above for Claim elements 1[g]-[j], and incorporated herein.

Therefore, a POSITA would understand that Abdallah discloses the element recited in Claim 21. Ex. 1002, ¶ 165. Thus, Abdallah discloses a tangible, non-transitory machine-readable medium. As such, Claim 21 is anticipated by Abdallah or would be obvious to a POSITA in view of Abdallah.

D. The Board Should Not Discretionarily Deny Institution

1. 35 U.S.C. §314(a) Analysis

Petitioner hereby stipulates that, if IPR of the ‘909 Patent is instituted based on this Petition, Petitioner will not assert in the Parallel Litigation invalidity of any Challenged Claim based on any ground that was raised or that reasonably could have been raised in this Petition. In light of this stipulation, this Petition should not be discretionarily denied pursuant to *Fintiv*. *See* USPTO MEMORANDUM, INTERIM PROCEDURE FOR DISCRETIONARY DENIALS IN AIA POST-GRANT PROCEEDINGS WITH PARALLEL DISTRICT COURT LITIGATION, 3 (June 21, 2022).

Further, the PTAB should not exercise its discretion to deny review where, as here, the Petition is strong on the merits. *See, e.g., Apple Inc. v. RFCyber Corp.*, No.

IPR2022-00412, Paper 11 at 33-34 (P.T.A.B. July 21, 2022); *Interim Procedure for Discretionary Denials In AIA Post Grant Proceedings With Parallel District Court Litigation (Discretionary Denial Memorandum)*, USPTO DIR.'S MEMORANDUM 9 (June 21, 2022).

2. 35 U.S.C. §325(d) Analysis.

The factors in *Becton, Dickinson & Co. v. B. Braun Melsungen AG* favor institution. IPR2017-01586, Paper 8 at 17-18 (PTAB Dec. 15, 2017); *Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH*, IPR2019-01469, Paper 6 at 8-11 (PTAB Feb. 13, 2020) (precedential).

Advanced Bionics step one, and *Becton, Dickinson* factors (a), (b), and (d) favor institution because none of the references in this Petition were before the Office during prosecution. *See* Ex. 1002, ¶¶ 30-35 (summary of prosecution history in Ex. 1004); Ex. 1001, at Cover. The references are also not cumulative of the prosecution prior art, at least because they explicitly teach “translating the plurality of commands into a plurality of translated commands” which applicants argued was not present in the examined art (Ex. 1004, at 50-51), and they disclose “a sending the translated commands to the local controllers,” which Examiner identified as part of the reasons for allowance. *Id.*, *see also id.* at 110-12. Accordingly, discretionary denial under 35 U.S.C. §325(d) is not warranted.

IX. CONCLUSION

Trial should be instituted, and the Challenged Claims should be canceled as unpatentable.

Dated: April 15, 2024

Respectfully submitted,

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**ATTORNEYS FOR PETITIONER
THE INTEGRATION GROUP OF
AMERICAS**

U.S. PATENT NO. 8,649,909 – LISTING OF CHALLENGED CLAIMS

<u>CLAIM NO.</u>	<u>CLAIM ELEMENTS</u>
1[p]	A system for remotely controlling a fluid-handling device of an oil well, a petro water disposal or re-injection facility, or a petroleum pumping station, the system comprising:
1[a]	a command-center server having a data store storing multiple user accounts, each user account corresponding to a set of one or more oil wells, petro water disposal or re-injection facilities, or petroleum pumping stations, or a combination thereof, each set being operated by a different entity corresponding to the respective user account; and
1[b]	a plurality of geographically distributed site master controllers, each site master controller corresponding to a respective one of the oil wells, petro water disposal or re-injection facilities, or petroleum pumping stations, each site master controller comprising:
1[c]	a communication module operable to communicate with a plurality of fluid-handling devices;
1[d]	a network interface;
1[e]	memory; and
1[f]	one or more processors communicatively coupled to the communication 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:
1[g]	receiving, via the network interface, from the command-center server, a plurality of commands encoded in a first protocol to control the fluid-handling devices from a user corresponding to one of the user accounts, different commands among the plurality of commands being directed to different fluid handling devices among the plurality of fluid-handling devices;
1[h]	for at least some of the plurality of commands, determining a plurality of different target states of a given one of the fluid-handling devices over time, wherein the respective site-master controller is operative to maintain control of the fluid handling

<u>CLAIM NO.</u>	<u>CLAIM ELEMENTS</u>
	devices in the absence of a network connection to the command-center server;
1[i]	translating the plurality of commands into translated commands encoded in a plurality of 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; and
1[j]	sending the translated commands to respective local controllers of the respective fluid-handling devices to which the respective commands are directed.
2	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 device obtained by sensors of the fluid-handling device; and sending, to a remote data store, the received sensor data.

<u>CLAIM NO.</u>	<u>CLAIM ELEMENTS</u>
3	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 password corresponding to a selected one of the user accounts; receiving, from the 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 of the selected one of the user accounts; 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 a fluid-handling device among the plurality of fluid handling devices, 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 of the respective site master controller; and

<u>CLAIM NO.</u>	<u>CLAIM ELEMENTS</u>
	sending the command to the network interface.
8	The system of claim 1, wherein at least some of the fluid-handling devices comprise a pump, and wherein the plurality of commands comprise 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 a fluid-handling device among the plurality of fluid-handling devices, wherein translating the received commands 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 a fluid-handling device among the plurality of fluid-handling devices comprises a valve responsive to an output signal of the digital-to-analog converter, and wherein translating the received commands comprises changing an output signal of the digital-to-analog converter responsive to a received command among the plurality of received commands.
11	The system of claim 1, wherein receiving the commands comprises receiving the commands via a first network socket, and wherein sending the translated command comprises sending at least some of the translated commands via a second network socket.
12	The system of claim 1, wherein translating the commands comprises selecting among an Internet Protocol, a modbus protocol, and an analog output to convey the translated command.
14	The system of claim 1, comprising one of the following coupled to the fluid-handling devices: an oil well, a salt water disposal well, a carbon-capture well, or a pump station.
15	The system of claim 1, wherein a fluid-handling device among the plurality of fluid handling devices comprises a separation

<u>CLAIM NO.</u>	<u>CLAIM ELEMENTS</u>
	unit configured to separate oil from water, and wherein the command comprises a command operative to change a level of the separation unit at which oil meets water.
16	The system of claim 15, wherein the 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 separation unit reaches a target level corresponding to the target state.
17	The system of claim 1, wherein each user account corresponds to one or more user names, one or more user passwords, billing information, and identifiers of one or more of the site master-controllers with which users under the corresponding account are authorized to interact.
18	The system of claim 1, wherein the system is operative to exercise two layers of control, the two layers of control including:
	a first layer of control in which targeted states of the fluid handling devices are determined by a respective site master controller in response to some of the received commands; and
	a second layer of control in which, for each targeted state specified by the first layer of control, the respective fluid-handling device exercises feedback control to drive the respective fluid-handling device to the respective targeted state.
19	The system of claim 1, wherein the system is operative to provide web-based control and monitoring of oil and gas wells to multiple account holders corresponding to the user accounts.
20[p]	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:
20[a]	receiving, via a network interface, from a remote user device, a plurality of commands to control a plurality of different fluid-handling devices, each of the plurality of commands

<u>CLAIM NO.</u>	<u>CLAIM ELEMENTS</u>
	being directed to a different one of the plurality of fluid-handling devices, and the plurality of commands being encoded in a first protocol;
20[b]	determining a plurality of different target states of the fluid-handling devices over time such that control of the fluid handling devices is maintained in the absence of a network connection with the remote user device;
20[c]	translating the plurality of commands into a plurality of translated commands operative to cause local controllers of the fluid-handling devices to drive the respective fluid-handling devices to different target states among the plurality of different target states, the plurality of translated commands including translated commands encoded in a plurality of different protocols, and the local controllers being responsive to the translated commands and feedback from a corresponding fluid-handling device among the plurality of different fluid handling devices, the feedback being indicative of whether the corresponding fluid-handling device is in a targeted state; and
20[d]	sending the translated commands to the local controllers.
21[p]	A method, comprising:
21[a]	receiving, via a network interface, from a remote user device, a plurality of commands to control a plurality of different fluid-handling devices, each of the plurality of commands being directed to a different one of the plurality of fluid-handling devices, and the plurality of commands being encoded in a first protocol;
21[b]	determining a plurality of different target states of the fluid-handling devices over time such that control of the fluid handling devices is maintained in the absence of a network connection with the remote user device;
21[c]	translating the plurality of commands into a plurality of translated commands operative to cause local controllers of the fluid-handling devices to drive the respective fluid-handling devices to different target states among the plurality of different target states, the plurality of translated commands including translated commands encoded in a plurality of

<u>CLAIM NO.</u>	<u>CLAIM ELEMENTS</u>
	different protocols, and the local controllers being responsive to the translated commands and feedback from a corresponding fluid-handling device among the plurality of different fluid handling devices, the feedback being indicative of whether the corresponding fluid-handling device is in a targeted state; and
21[d]	sending the translated commands to the local controllers.

CERTIFICATION OF COMPLIANCE WITH TYPE-VOLUME LIMITS

This Petition includes 13,967 words, as counted by Microsoft Word, and is therefore in compliance with the 14,000-word limit established by 37 C.F.R. § 42.24(a)(1)(i). Accordingly, pursuant to 37 C.F.R. § 42.24(d), lead counsel for the Petitioner hereby certifies that this Petition complies with the type-volume limits established for a petition requesting PGR.

Dated: April 15, 2024

Respectfully Submitted,

/ Winston O. Huff /

Winston O. Huff (Reg. No. 51, 825)

CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. §§ 42.6(4) and 42.105, lead counsel for Petitioners hereby certifies that on April 15, 2024, copies of this Petition, Power of Attorney, and all supporting exhibits were sent via Federal Express to the correspondence address of record for the '909 Patent:

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A courtesy copy of this Petition and supporting exhibits was also served via email on Patent Owner's counsel of record in the district court litigation.

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