

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 2024-00737

U.S. Patent No. 11,175,680

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 11,175,680

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PETITIONER'S EXHIBIT LIST

<u>EXHIBIT</u>	<u>DESCRIPTION</u>
Ex. 1001	U.S. Patent No. 11,175,680
Ex. 1002	Declaration of Dr. Gary Wooley
Ex. 1003	Curriculum Vitae of Dr. Gary Wooley
Ex. 1004	File Wrapper for U.S. Patent No. 11,175,680
Ex. 1005	U.S. Patent No. 8,887,901 to Almadi
Ex. 1006	U.S. Patent Application No. 2015/0308244 to Cardamone
Ex. 1007	U.S. Patent No. 9,709,995 to Gutierrez
Ex. 1008	SCADA: Supervisory Control and Data Acquisition, 4 th Edition (2010)
Ex. 1009	Case Management Order (Dkt. 53)
Ex. 1010	Claim Construction Order (Dkt. 93)
Ex. 1011	Time to Trial for the Western District of Texas

I. INTRODUCTION

Petitioner requests *Inter Partes* Review (“IPR”) of claims 1-20 (the “Challenged Claims”) of U.S. Patent No. 11,175,680 (“the ‘680 Patent”).

This petition (IPR 2024-00737) is part of a set of seven petitions, including IPR 2024-00724, IPR 2024-00740, IPR 2024-00738, IPR 2024-00739, IPR 2024-00741, and IPR 2024-00742, which challenge claims of U.S. Patent Nos. 8,649,909 (the “’909 Patent”); 11,726,504 (the “’504 Patent”); 9,342,078 (the “’078 Patent”); 9,898,014 (the “’014 Patent”); 10,488,871 (the “’871 Patent”); and 11,294,403 (the “’403 Patent”) (collectively, with the ‘680 Patent, the “Challenged Patents”) respectively. Petitioner requests that the PTAB 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 ‘680 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 Challenged Patents 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 ‘680 Patent is available for IPR and that the Petitioner is not barred or estopped from requesting *inter partes* review of claims 1-20 of the ‘680 Patent. Any additional fees for this IPR may be charged to Deposit Account No. DA505990.

IV. BACKGROUND

The Challenged Patents relate to the remote operation of fluid-handling devices. In the oil and gas industry, fluid handling systems direct, measure, and

maintain the flow of fluids—liquid chemicals or condensed gases—across a manufacturing plant or factory. 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. The on-site sensors detect operational information such as temperature, pressure, pH, or flow rate and deliver that information to associated controller devices. *See, e.g.*, Ex. 1007, 1:41-45. The fluid handling components also include actuator functions that allow for electronic control of the components, thus enabling remote operation of system components, for example, motors, pumps, or valves, based on commands received from a controller device. *See generally*, Ex. 1005, Ex. 1006, Ex. 1007.

V. THE ALLEGED INVENTION OF THE ‘680 PATENT

The ‘680 Patent, entitled, “Remote Control of Fluid-Handling Devices” describes a process for remotely controlling fluid-handling devices. The process

includes receiving a command to change the state of a fluid-handling device to a target state and translating the received command into a translated command operative to cause the controller of the fluid-handling device to the target state. The controller of the fluid-handling device is responsive to the command and feedback from the fluid-handling device which indicates whether the fluid-handling device is in the target state; and sends the translated command to the local controller. Ex. 1001, Abstract.

A. Summary of Prosecution History (Ex. 1004)

The application resulting in the '680 Patent was filed on October 17, 2019. The '680 Patent is a continuation of U.S. Patent Application 15/867,077 filed on January 10, 2018, which is a continuation of U.S. Patent Application 14/984,422 filed on December 30, 2015, which is a continuation of U.S. Patent Application 14/147,190, issued as U.S. Patent 9,342,078, filed on January 3, 2014, which is a continuation of U.S. Patent Application 13/708,557, issued as U.S. Patent 8,649,909, filed on December 7, 2012. Each of the above patents and patent applications is titled "Remote Control of Fluid Handling Devices." Ex. 1001, at Cover.

In a first office action, the Examiner rejected Claims 1-20 on the ground of nonstatutory double patenting as being unpatentable over claims 1-23 of U.S. Patent No. 9,898,014 and claims 1-34 of U.S. Patent No. 10,488,871. Additionally, the Examiner rejected claims 1, 5, 7-10, 12, and 18-20 under pre-AIA 35 U.S.C. 103(a)

as being unpatentable over U.S. Patent Publication No. 2002/0161685 (Dwinnell) in view of U.S. Patent Publication No. 2002/0018399 (Schultz) and further in view of U.S. Patent Publication No. 2003/0052180 (Huhn). Claims 2, 11, and 17 were rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Dwinnell in view of Schultz and further in view of Huhn and U.S. Patent No. 6,967,589 (Peters). Claim 3 was rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Dwinnell in view of Schultz and further in view of Huhn and U.S. Patent No. 5,149,443 (Varnam). Claims 6 and 15 were rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Dwinnell in view of Schultz and further in view of Huhn and U.S. Patent Publication No. 2002/0156837 (Batke). Claims 13-14 were rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Dwinnell in view of Schultz and further in view of Huhn and U.S. Patent Publication No. 2005/0084988 (Huang). Claim 16 was rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Dwinnell in view of Schultz and further in view of Huhn and U.S. Patent Publication No. 2011/0051645 (Hong). Ex. 1004, at 424-76.

In response to the double patenting and Section 103 rejections, the applicant canceled claims 1-20 and requested that new claims 21-40 be considered. *Id.* at 253-66. On July 22, 2021, the USPTO issued a Notice of Allowability allowing pending claims 21-40. *Id.* at 243-47.

VI. OVERVIEW OF THE PRIOR ART

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

A. Almadi (Ex. 1005)

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, in turn, for a single point of control for data collection, monitoring, and restoration. Ex. 1005, 2:64-31.

The claimed node integrates the functions of controller units, communications networking devices, and data storage servers into one unit. Embodiments of an integrated node can also, for example, support networking over multiple communication interfaces and 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). *Id.* 3:10-20.

B. Cardamone (Ex. 1006)

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(a).

Cardamone is directed to a deep well linear motor pump system comprising a pump motor driver system configured to provide drive commands to the pump motor, a surface control computer connected with the motor drive system and configured to control the pump motor, a sensor system communicating with the control computer and configured to sense operating parameters of the pump motor, including the position of the motor shaft and the temperature of the motor. Ex. 1006, Abstract.

C. Gutierrez (Ex. 1007)

U.S. Patent No. 9,709,995 to Gutierrez was filed on December 22, 2014, and published on April 16, 2015. Gutierrez is a continuation of U.S. Patent Application No. 12/794,898 filed on June 7, 2010, published on December 9, 2010, and claiming the benefit of Provisional U.S. Patent Application No. 61/184,890 filed on June 8, 2009. Gutierrez is prior art under pre-AIA §§ 102(a).

Gutierrez teaches a chemical injection system that includes a pump connected to a chemical reservoir and pipeline that can all be controlled using a local motor

controller connected to a central controller and remote computing device. Ex. 1007, Abstract. The controller in Gutierrez includes translator capabilities that allow the remote computing device to send commands that can be translated into the protocol required to control the local pump operations. *Id.*

D. SCADA (Ex. 1008)

SCADA: Supervisory Control and Data Acquisition, 4th Edition was published in 2010 and is prior art under pre-AIA § 102(a). SCADA teaches enabling a human operator, in a location central to a widely distributed process-such as a pipeline system, oil or gas field, hydroelectric generating complex, or irrigation network to make set point changes on distant process controllers, to open or close valves or switches, to monitor alarms, and to gather measurement information. Ex. 1007 at 397.

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).

Petitioner notes that the Western District of Texas has construed certain claim terms. *See* Ex. 1009. 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: Almadi Anticipates Claims 1-3, 6, 14, 17, and 19-20 or would be obvious to a POSITA in view of Almadi.

Independent Claims 1 and 20 and dependent Claims 2-3, 6, 9-12, 14, 17, and 19 are anticipated by U.S. Patent No. 8,887,901 (“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. [1.1] A non-transitory, machine-readable medium comprising instructions to effectuate operations, the operations comprising:**

To the extent that the Board finds that the preamble is limiting, Almadi discloses non-transitory, machine-readable medium comprising instructions to effectuate operations. Almadi discloses schematic flowcharts illustrating exemplary computer programs or computer program products according to embodiments of the present invention. Ex. 1005, FIGS. 8-11. Figure 8 discloses:

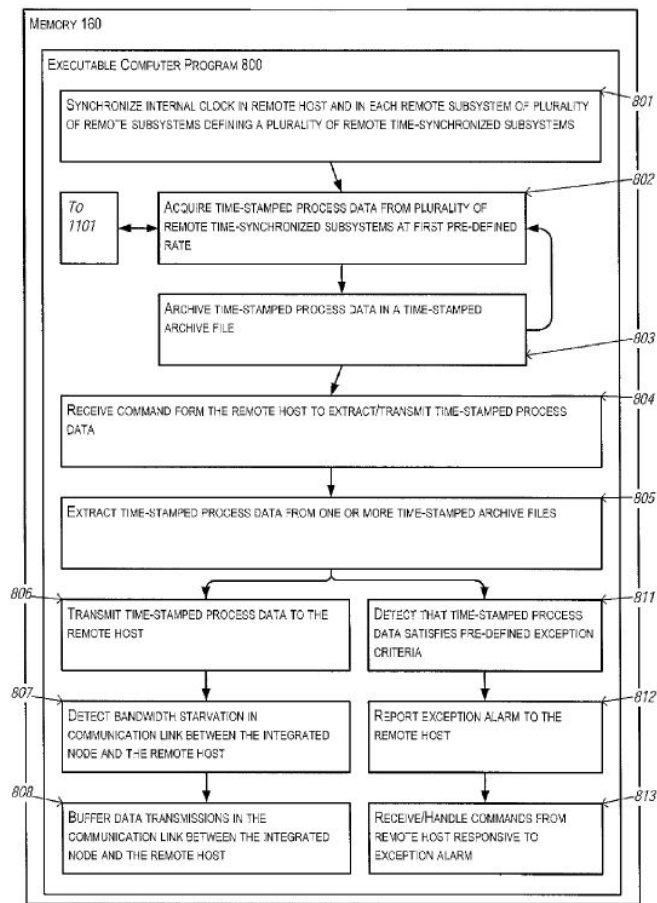


FIG. 8

A POSITA would recognize that Almadi discloses the recited non-transitory machine-readable medium. Ex. 1002, ¶ 42. Almadi discloses this claim limitation of the '680 Patent.

- b. [1.2] receiving, with a server, a command comprising a target value of a fluid-handling device from a computing device via a control interface, wherein the command is received in association with a record stored on a datastore;

Almadi discloses claim element 1.2. Almadi discloses receiving, with a server, a command comprising a target value of a fluid-handling device from a computing device via a control interface through its disclosure that integrated node

100 supports a local programming interface over a computer, such as through computer terminal having one or more input devices and one or more display devices that are accessible to a human user by using the remote host computer 110. Ex. 1005, 12:10-15.

Almadi further discloses receiving a command in association with a record stored on a datastore through its disclosure 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. 1005, 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 Almadi discloses the recited receiving commands from the server comprising a target value to control specific fluid handling devices of the ‘680 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, ¶ 45. Thus, Almadi discloses this claim limitation.

- c. **[1.3] determining, with the server, a network address of a network based on the record, wherein the network address identifies a controller of the fluid-handling device, and wherein the controller accesses a sensor to measure a fluid being handled by the fluid-handling device and an actuator of the fluid-handling device;**

Almadi discloses claim element 1.3. Almadi discloses determining, with the server, a network address of a network based on the record through its disclosure that the integrated node 100 includes a network interface 103 for routing network connections with a remote host and a number of subsystems. The local network interface 103 can be, for example, a network switch including a network bridge for processing and routing functions at the data link layer. Ex. 1005, 12:60-65.

Almadi also discloses that the network address identifies a controller of the fluid-handling device through its disclosure that intelligent sensors, actuators, and controllers can be connected to a network by means of communication buses, interface boards, cables, and accessories. Ex. 1005, 12:40-43.

Almadi discloses that the controller accesses a sensor to measure a fluid being handled by the fluid-handling device and an actuator of the fluid-handling device through its disclosure that the integrated node 300 acquires data, including subsurface sensor and subsystem data, from the remote subsystem 320, at a pre-defined rate 360 by polling the remote subsystem 320. Ex. 1005, 15:62-67.

A POSITA would understand that 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 '680 Patent. Ex. 1002, ¶ 51. Thus, Almadi discloses this claim limitation.

d. [1.4] sending, with the server, the target value to the network address via the network;

Almadi discloses claim element 1.4 through its disclosure that integrated node can also, for example, employ an Ethernet switch to support networking over multiple communication interfaces and transmit process data to a remote host server over TCP/IP. Ex. 1005, 3:13-17; *see also*, FIGS. 8-11.

A POSITA would understand that transmitting process data via an Ethernet switch is the sending, with the server, the target value to the network address via the network as claimed in the '680 Patent. Ex. 1002, ¶ 53. Thus, Almadi discloses this claim limitation.

e. [1.5] receiving, with the controller, a measurement of the fluid by the sensor;

Almadi discloses claim element 1.5 through its disclosure of integrated node 100 as illustrated in FIGS. 1A-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. 1005, 11:18-21. 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. 1005, 1:28-57.

Almadi further discloses a data verifier to substitute out-of-bounds *measurements* in the time-stamped data with new measurements responsive to a preconfigured filtering scheme and to suspend data acquisition upon detecting an out-of-bounds measurement, thereby defining a plurality of verified measurements. Ex. 1005, 9:1-7.

A POSITA would understand Almadi's disclosure that the disclosed controller receives a measurement of fluid from the system's sensor, based on its discussion of modern field devices and its disclosed data verifier and data reconciler that determine the operating state of remote sub-systems based on sensor readings, as taught by the '680 Patent. Ex. 1002, ¶¶ 58-59. Thus, Almadi discloses this claim limitation.

f. [1.6] determining, with the controller, whether the measurement satisfies the target value;

Almadi discloses claim element 1.6. Almadi discloses 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. 1005, 1:45-49; *see also id.* 25:26-37 ("switching a pump off if the flow is below a certain limit or activating some bounds or streams based on some readings/conditions"). Almadi also discloses a data verifier to substitute *out-of-bounds measurements* with new measurements

responsive to a preconfigured filtering scheme and to suspend data acquisition upon detecting an out-of-bounds measurement. Ex. 1005, 9:1-7.

A POSITA would understand from Almadi's disclosure that the disclosed controller determines whether the measurement satisfies the target value. Ex. 1002, ¶ 60. Thus, Almadi discloses this claim limitation.

- g. [1.7] in response to a determination that the measurement does not satisfy the target value, obtaining, with the controller, a set point based on the command; and**

Almadi discloses claim element 1.7. Almadi discloses obtaining a set point based on the command in response to a determination that the measurement does not satisfy a target value through its disclosure of a data verifier to substitute out-of-bounds measurements with new measurements responsive to a preconfigured filtering scheme and to suspend data acquisition upon detecting an out-of-bounds measurement. Ex. 1005, 9:1-11. More specifically, Almadi discloses 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. 1005, 1:45-49; *see also id.* 25:26-37 ("switching a pump off if the flow is below a certain limit or activating some bounds or streams based on some readings/conditions").

A POSITA would recognize that limits or bounds apply a set point, which would be set by a user in a command. Ex. 1002, ¶ 61.

A POSITA would recognize that to verify measurements and determine whether a measurement was out-of-bounds, a set point would have to be obtained by the data verifier located on the controller and compared by the data reconciler also located on the controller. *Id.* Thus, Almadi discloses this claim limitation.

h. [1.8] controlling, with the controller, the actuator based on the set point.

Almadi discloses claim element 1.8. Almadi discloses controlling, with the controller, the actuator based on the set point through its disclosure that integrated node 100, as illustrated in FIGS. 1A-1B, which describes how remote host 110 interfaces with a plurality of remote subsystems 120. Ex. 1005, 11:18-21. Almadi further discloses 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. 1005, 1:45-49; *see also id.* 25:26-37 (“switching a pump off if the flow is below a certain limit or activating some bounds or streams based on some readings/conditions”).

A POSITA would understand that Almadi discloses the controlling of the actuator based on the set point of the ‘680 Patent through its disclosure of the

intelligent field systems and the data verifier and reconciler. A POSITA would understand that the data is verified and reconciled and that a command can be sent by the controller to control any number of actuators in intelligent field systems within limits or bounds, i.e. set points. Ex. 1002, ¶ 62.

Claim 1 is anticipated by Almadi or would be obvious to a POSITA in view of Almadi.

2. Claim 2

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

a. [2.1] The medium of claim 1, wherein: the controller is a site master controller;

Almadi discloses claim element 2.1. Almadi discloses the controller is a site master controller through its disclosure 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, and flow meter systems, and any of the types of Intelligent Equipment Devices (“IED”). Ex. 1005, 1:18-57, 12:27-59.

A POSITA would understand that Almadi discloses the site master controller of the ‘680 Patent through its disclosure of the plurality of remote sub-systems which can perform tasks including processing of measurement and control data and signal conversion. Ex. 1002, ¶ 63. Thus, Almadi discloses this claim element.

- b. [2.2] the site master-controller controls a plurality of local controllers, the plurality of local controllers comprising a first local controller in communication with the actuator;**

Almadi discloses claim element 2.2. Almadi discloses the site master-controller controls a plurality of local controllers through its disclosure that a plurality of remote subsystems 120 can include, for example, intelligent field systems. Ex. 1005, 1:18-57, 12:27-59. Remote subsystems 120 can perform tasks including processing of measurement and control data and signal conversions. Ex. 1005, 12:27-59.

Almadi further discloses the plurality of local controllers comprising a first local controller in communication with the actuator through its disclosure that remote subsystems 120 communicate with other field devices independent of the integrated node, such as intelligent sensors, actuators, and controllers. Ex. 1005, 12:37-44.

A POSITA would understand that permanent downhole monitoring systems, electrical submersible pump systems, and smart well completion systems have actuators that can be remotely controlled by a computer. Ex. 1002, ¶ 64. Additionally, a POSITA would understand that Almadi discloses a first local controller in communication with an actuator of the '680 Patent through its disclosure of the functionality of remote subsystems 120 that include intelligent field

devices controlling intelligent sensors, actuators, and other controllers. *Id.* Thus, Almadi discloses this claim element.

c. [2.3] controlling the actuator with the controller based on the set point comprises: sending the set point from the site master-controller to the first local controller; and

Almadi discloses claim element 2.3. Almadi discloses sending the set point from the site master-controller to the first local controller through its disclosure that field devices are connected to machines known as controllers that operate at the system level to process the data collected and issue commands back to the field devices, or other field devices, in response to processing the collected data. The repeated process of receiving collected data and issuing commands constitutes control over the operation of the automated process. Ex. 1005, 1:35-41.

Almadi discloses 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. 1005, 1:45-49; *see also id.* 25:26-37.

A POSITA would understand that Almadi discloses sending a set point from a site-master controller to the first local controller through its disclosure that field devices can obtain operational information and variables and deliver that

information to system-level controller devices. Ex. 1002, ¶ 65. Thus, Almadi discloses this claim element.

d. [2.4] actuating, with the first local controller, the actuator based on the set point.

Almadi discloses claim element 2.4. Almadi discloses that 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 based on set points. Ex. 1005, 25:26-37. The sensor and actuator functions, at the process level, are supported by a controller or several controllers, at the system level, which receive information from the sensors and transmit information to the actuators. Ex. 1005, 1:45-52.

A POSITA would understand that Almadi discloses actuating the actuator based on a set point through its disclosure that field devices can obtain operational information and variables (set point) and issue commands back to the field devices, including the actuator. Ex. 1002, ¶¶ 66-67.

Claim 2 is anticipated by Almadi or would be obvious to a POSITA in view of Almadi.

3. Claim 3

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

- a. **[3.1] The medium of claim 1, wherein: obtaining the set point comprises determining a sequence of set points based on the command; and**

Almadi discloses claim element 3.1. Almadi discloses 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. 1005, 1:45-49; *see also id.* 25:26-37.

Almadi discloses determining a sequence of set points based on the command through its disclosure that “[t]he repeated process of receiving collected data and issuing commands thereby constitutes control over the operation of the automated process.” Ex. 1005, 1:39-41 (emphasis added). Field devices perform sensor functions to sense operational information and variables such as temperature, pressure, pH, or flow rate and deliver that information to the system-level controller devices. Ex. 1005, 1:45-52.

A POSITA would understand Almadi discloses determining a sequence of set points based on a command through its disclosure of field devices that are connected to controllers that perform sensor functions to sense operational information and variables such as temperature, pressure, pH, or flow rate and deliver that information

to the system-level controller devices. Ex. 1002, ¶ 68. Thus, Almadi discloses this claim element.

- b. [3.2] controlling the actuator comprises controlling the actuator to a plurality of different states based on the sequence of set points.**

Almadi discloses claim element 3.2, “*the sensor and actuator functions, at the process level, are supported by a controller or several controllers, at the system level, which receives information from the sensors and transmits information to the actuators.*” Ex. 1005, 1:49-52 (emphasis added). Almadi discloses control over a plurality of different states through its disclosure that field devices perform sensor functions to sense operational information and variables across multiple variables, including temperature, pressure, pH, or flow rate, and deliver that information to the system-level controller devices. *Id.*

A POSITA would understand from the above disclosure that Almadi discloses controlling the actuator to a plurality of different states based on the sequence of set points through its disclosure of the field devices being capable of collecting operational information and variables (set points) and performing actuator functions. Ex. 1002, ¶ 69.

Claim 3 is anticipated by Almadi or would be obvious to a POSITA in view of Almadi.

4. Claim 6

Claim 6 depends from independent Claim 1. Almadi discloses Claim 1 for the reasons discussed above and incorporated herein.

a. [6.1] The medium of claim 1, wherein: the set point is a first set point;

Almadi discloses claim element 6.1. Almadi discloses that the set point is a first point through its disclosure that field devices monitor and collect data, such as measurements of fluid pressure, temperature, or flow, reflective of the operations of the automated process. Ex. 1005, 1:32-35, 25:26-37. Almadi further discloses that field devices perform sensor functions to sense operational information and variables such as temperature, pressure, pH, or flow rate and deliver that information to the system-level controller devices. Ex. 1005, 1:41-45.

A POSITA would recognize that Almadi discloses a first point through its disclosure of monitoring and collection, measurement, operational information, and variables. Ex. 1002, ¶ 70. A POSITA would further understand that a first set point is included in the collected data. *Id.* Thus, Almadi discloses this claim element.

b. [6.2] the command comprises the first set point and a second set point;

Almadi discloses claim element 6.2. Almadi discloses the command comprises the first set point and a second set point through its disclosure that field devices use multiple data streams, such as measurements of fluid pressure,

temperature, or flow, reflective of the operations of the automated process to control said process. Ex. 1005, 1:32-35, 25:26-37. Almadi further discloses that field devices perform sensor functions to sense operational information and variables such as temperature, pressure, pH, or flow rate and deliver that information to the system-level controller devices. Ex. 1005, 1:41-45.

A POSITA would recognize that Almadi discloses set points through its disclosure of monitoring and collection, measurement, operational information, and variables. Ex. 1002, ¶ 71. A POSITA would further understand that the collected operational information and variables can include first and second set points. *Id.* Thus, Almadi discloses this claim element.

c. [6.3] obtaining the first set point comprises obtaining the first set point and the second set point from the command;

Almadi discloses claim element 6.3. Almadi discloses obtaining the first set point and the second set point from the command through its disclosure that field devices use multiple data streams to control automated processes, including measurements of fluid pressure, temperature, or flow, reflective of the operations of the automated process. Ex. 1005, 1:32-35; 25:26-37.

A POSITA would recognize that Almadi discloses obtaining first and second set points from a command through its disclosure of monitoring and collection, measurement, operational information, and variables. Ex. 1002, ¶ 72. A POSITA

would further understand the operational information includes commands to obtain first and second set points. *Id.* Thus, Almadi discloses this claim element.

d. [6.4] the measurement is a first measurement;

Almadi discloses the measurement is a first measurement. Almadi discloses that these field devices monitor and collect data, such as *measurements* of fluid pressure, temperature, or flow, reflective of the operations of the automated process. Ex. 1005, 1:32-35.

A POSITA would recognize that Almadi discloses a first measurement through its disclosure of monitoring and collection, measurement, operational information, and variables. Ex. 1002, ¶ 73. Thus, Almadi discloses this claim element.

e. [6.5] the operations further comprises: receiving, with the controller, a second sensor measurement after controlling the actuator based on the first set point;

Almadi discloses claim element 6.5. Almadi discloses receiving, with the controller, a second sensor measurement after controlling the actuator based on the first set point through its disclosure that 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. 1005, 1:41-49, 25:26-37.

A POSITA would recognize Almadi discloses receiving a second sensor measurement after controlling the actuator disclosure of monitoring and collection, measurement, operational information, and variables. A POSITA would further understand that the controller continues to transmit sensor measurements after controlling the actuator. Ex. 1002, ¶ 74. Thus, Almadi discloses this claim element.

f. [6.6] determining, with the controller, whether the second sensor measurement satisfies a criterion based on the first set point; and

Almadi discloses claim element 6.6. Almadi discloses determining, with the controller, whether the second sensor measurement satisfies a criterion based on the first set point through its disclosure that these field devices monitor and collect data, such as measurements of fluid pressure, temperature, or flow, reflective of the operations of the automated process. Ex. 1005, 1:32-35. These field devices are connected to machines known as controllers that operate at the system level to process the data collected and issue commands back to the field devices, or other field devices, in response to processing the collected data. Ex. 1005, 1:35-39; 25:26-37.

A POSITA would recognize that Almadi discloses determining whether the second sensor measurement satisfies a criteria through its disclosure of monitoring and collection, measurement, operational information, and variables. Ex. 1002, ¶ 75. A POSITA would further understand that determining measurements satisfy certain

criteria is included in the monitoring of collected data. *Id.* Thus, Almadi discloses this claim element.

g. [6.7] in response to a determination that the first set point is satisfied, controlling the actuator based on the second set point.

Almadi discloses claim element 6.7. Almadi discloses in response to a determination that the first set point is satisfied, controlling the actuator based on the second set point through its disclosure that 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. 1005, 1:41-45; 25:26-37.

A POSITA would recognize that Almadi discloses a controlling the actuator based on a second set point through its disclosure of monitoring and collection, measurement, operational information, and variables and its disclosure that the field devices can perform actuator functions. Ex. 1002, ¶ 76. A POSITA would further understand that a first set point is included in the data collected. *Id.*

Claim 6 is anticipated by Almadi or would be obvious to a POSITA in view of Almadi.

5. Claim 14

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

- a. **[14] The medium of claim 1, wherein the sensor comprises a level sensor of a separation tank to indicate a level at which a first fluid phase meets a second fluid phase.**

Almadi discloses claim 14 of the '680 Patent. Almadi discloses a level sensor of a separation tank to indicate a level at which a first fluid phase meets a second fluid phase through its disclosure that a plant-wide model 704, for example, can be configured for any group of units and can define a mass balancing loop for the plant-based on crude switches, operation scenarios, and open and closed transactions (for example, *when there is a change in the level status of tanks* or the operation of pumps). Ex. 1005, 25:11-16. Almadi further discloses the plant-wide model can reflect balancing calculations and methods for a *user-initiated allocation of tanks*, for example, when a service change occurs. Ex. 1005, 25:22-25.

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. 1005, 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 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, ¶ 77. A

POSITA would recognize an oil/water separation tank as a standard process unit/chamber in oil processing streams. *Id.*

Almadi's configuration interface, e.g., balances calculations for inputs, outputs, and inventories of receipts, charges, processing, intermediate products, and final products. Ex. 1005, 24:4-26:19.

A POSITA would understand that Almadi discloses the sensor comprises a level sensor of a separation tank to indicate a level at which a first fluid phase meets a second fluid phase the tanks disclosed in Almadi include a separation tank through its disclosure of the change in the level of tanks and allocation of tanks. Ex. 1002, ¶ 77. Claim 14 is anticipated by Almadi or would be obvious to a POSITA in view of Almadi.

6. Claim 17

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

a. [17] The medium of claim 1, wherein controlling the actuator based on the set point comprise steps for controlling the actuator

Almadi discloses claim 17 of the '680 Patent. Almadi discloses 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. 1005, 1:45-49; *see also* Ex. 1005, 25:26-37.

A POSITA would recognize that Almadi discloses controlling the actuator based on the set point comprises steps for controlling the actuator through its disclosure that the sensor and actuator functions, at the process level, are supported by a controller or several controllers, at the system level, which receives information from the sensors and transmits information to the actuators based on limits or readings/conditions. Ex. 1002, ¶ 78. Claim 17 is anticipated by Almadi or would be obvious to a POSITA in view of Almadi.

7. Claim 19

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

- a. [19] The medium of claim 1, wherein the controller is communicatively coupled to the fluid-handling device via a frame-based carrier-sense multiple access protocol.**

Almadi discloses claim 19. Almadi discloses the controller is communicatively coupled to the fluid-handling device via a frame-based carrier-sense multiple access protocol. *See, e.g.*, Ex. 1005, 12:60-13:25.

A POSITA would recognize that Almadi discloses a frame-based carrier-sense multiple access protocol because a POSITA would know that frame-based

carrier-sense multiple access protocol, as recited in the '680 Patent, is an Ethernet networking technology. Ex. 1002, ¶ 88.

A POSITA would understand that the controller would be coupled to a fluid-handling device frame-based carrier-sensor multiple access protocol. *Id.* Claim 19 is anticipated by Almadi or would be obvious to a POSITA in view of Almadi.

8. Claim 20

Almadi discloses every limitation of Claim 20. Claim 20's preamble is analogous to limitation 1.1, limitation 20.2 is analogous to limitation 1.2, limitation 20.3 is analogous to limitation 1.3, limitation 20.4 is analogous to limitation 1.4, limitation 20.5 is analogous to limitation 1.5, limitation 20.6 is analogous to limitation 1.6, limitation 20.7 is analogous to limitation 1.7, and limitation 20.8 is analogous to limitation 1.8. *Supra* section VIII(A)(1), Ex. 1002, ¶ 89. Claim 20 is anticipated by Almadi or would be obvious to a POSITA in view of Almadi.

B. Ground 2: Cardamone Anticipates Claims 1, 9-13, 15-18, and 20 or would be obvious to a POSITA in view of Cardamone.

1. Claim 1

- a. [1.1] A non-transitory, machine-readable medium comprising instructions to effectuate operations, the operations comprising:**

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. Ex. 1006, ¶¶ 0041-42. Cardamone discloses that software application 131 may also be used to adjust the operating parameters of control computer 126. *Id.* After viewing sensory data, user 101 may decide that the pump should be operating at a decreased frequency. Application 131 provides user 101 with a command interface to set a new operating frequency. *Id.* More specifically, application 131 allows user 101 to specify the exact movement profile for pump system 122. *Id.*

A POSITA would understand that Cardamone discloses a tangible computer-readable medium from its disclosure of software applications. Ex. 1002, ¶ 90. Thus, Cardamone discloses a tangible, non-transitory machine-readable medium. This claim element is anticipated by Cardamone or would be obvious to a POSITA in view of Cardamone.

- b. [1.2] receiving, with a server, a command comprising a target value of a fluid-handling device from a computing device via a control interface, wherein the command is received in association with a record stored on a datastore;**

Cardamone discloses that data server 134 provides the functionality of GUI Computer 130. Ex. 1006, ¶ 0046. Cardamone discloses that users connect to GUI computer 130 to interface with control and communication computer 126, through application 131. *Id.*, ¶ 0042. Cardamone also discloses that 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 computer 126 through “a command interface.” *Id.*, ¶ 0044-45.

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. *Id.*, ¶ 0046. Cardamone discloses data server 134, a server computer remote from the oil well. *Id.*, ¶ 0021. Data server 134 links to control and communication computer 126 through standard wired and wireless communication links. *Id.*, ¶ 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. *Id.*, ¶ 0027. Data server 134 acts as a data storage for sensory data. *Id.*, ¶ 0027; *see also id.*, Claim 30, ¶ 0041.

A POSITA would understand that Cardamone discloses the receiving target status of a fluid-handling device from a computing device through its disclosure of a data server that can receive sensory data from fluid-handling devices and acts as data storage for sensory data. Ex. 1002, ¶ 91. Thus, Cardamone discloses this claim limitation.

- c. **[1.3] determining, with the server, a network address of a network based on the record, wherein the network address identifies a controller of the fluid-handling device, and wherein the controller accesses a sensor to measure a fluid being handled by the fluid-handling device and an actuator of the fluid-handling device;**

Cardamone discloses determining, with the server, a network address of a network based on the record through its disclosure that data server 134 is connected to network 132 which is linked to control and communication computer 126 through one of a variety of communication link types, including hardwire connection, or internet connection via wire, wifi, satellite modem, and/or cellular data connections. Ex. 1006, ¶ 0024.

GUI Computer 130 includes a 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. 1006, ¶ 0041. More specifically, Cardamone discloses the network address identifying an individual controller of the fluid-handling device through its disclosure that sensory data from lines 237 and 239 is relayed to computer 126 over bus 326, allowing computer 126 to relay drive commands to motor drive unit 318. Ex. 1006, ¶ 0031.

Cardamone discloses that application 131 provides access to control and communication computer 126 to request data, including the current sensory data of

pump control system 110. Ex. 1006, ¶ 0042, *see also id.* ¶¶ 0011, 0021, 0026, 0041. Application 131 also allows the user to adjust the operating parameters with control computer 126 through “a command interface.” Ex. 1006, ¶¶ 0044-45; *see also id.* ¶ 0006, Claim 1.

A POSITA would understand that determining the network address of a controller and measuring a fluid is disclosed by Cardamone in its disclosure of using a local area network of controller computer to view sensory data and adjust the operating parameters of the control computer. Ex. 1002, ¶ 92. Thus, Cardamone discloses this limitation.

d. [1.4] sending, with the server, the target value to the network address via the network;

Cardamone discloses sending, with the server, the target value to the network address via the network through its disclosure that software application 131 may also be used to adjust the operating parameters of control computer 126. Ex. 1006, ¶¶ 0044-0045. After viewing sensory data, user 101 may decide that the pump should be operating at a decreased frequency. *Id.*, ¶ 0044. Application 131 provides user 101 with a command interface to set a new operating frequency. *Id.* Cardamone also discloses that users “set thresholds.” *Id.*, ¶ 0045.

A POSITA would understand that setting a threshold, or a new operating frequency specifying an exact movement that a pump system is to be driven at sends

a target value to the network address. Ex. 1002, ¶ 93. Thus, Cardamone discloses this claim limitation.

e. [1.5] receiving, with the controller, a measurement of the fluid by the sensor;

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. 1006, ¶ 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. 1006, ¶¶ 0029-30, 0044-45, 0049.

A POSITA would understand that inlet and outlet pressure sensor data being streamed to the control computer disclosed in Cardamone is the receiving of a measurement of fluid by a sensor. Ex. 1002, ¶ 94. Thus, Cardamone discloses this claim limitation.

f. [1.6] determining, with the controller, whether the measurement satisfies the target value;

Cardamone discloses the determining a plurality of different target states of a given one of the fluid-handling devices over time. Ex. 1006, ¶¶ 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.” *Id.*, ¶ 0009. Cardamone further

discloses that application 131 also allows the user to adjust the operating parameters of control computer 126 through “a command interface” to specify the “movement profile” for the pump system, including through a distance vs. time curve, or a force vs. time curve for an operation cycle of the pump. *Id.*, ¶ 0044. Application 131 allows the user to program the operating function to control computer 126 based upon sensory data. *Id.*, ¶ 0045. User 101 may program control computer 126 to set the pump frequency to be equal to the inlet pressure times a constant . . . or more complex functions . . . based upon a whole range of sensory input conditions. *Id.*

A POSITA would understand that 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, ¶ 95. Thus, Cardamone discloses this claim limitation.

- g. [1.7] in response to a determination that the measurement does not satisfy the target value, obtaining, with the controller, a set point based on the command; and**

Cardamone discloses that the control and communication computer includes a control algorithm for controlling the motor drive system, and/or pump system. The control algorithm may control the motor drive system and/or pump as a function of sensory data, as discussed above for element 1.6 and incorporated herein. The “movement profile” control disclosed by Cardamone controls the pump system by adjusting parameters when a measurement indicates that a value has moved out of a

set range, to maintain a distance vs. time curve, or a force vs. time curve for an operation cycle of the pump. Ex. 1006, ¶ 0044.

Cardamone further discloses that the control computer is programmed to provide an output command as a function of one or more of said operating parameters from said sensor system. *Id.*, Claim 4.

A POSITA would understand that the central algorithm operating on the control computer can determine a set point in response to sensing operational parameters not satisfying a target value. Ex. 1002, ¶ 96. Thus, Cardamone discloses this claim limitation.

h. [1.8] controlling, with the controller, the actuator based on the set point.

Cardamone discloses controlling, with the controller, the actuator based on the set point through its disclosure that the control and communication computer may have a control algorithm for controlling the motor drive system, and/or pump system. The control algorithm may control the motor drive system and/or pump as a function of sensory data, as discussed above for elements 1.6-1.7, and incorporated herein. *See, e.g.*, Ex. 1006, ¶¶ 0009, 0044-0045.

A POSITA would understand that motor drive systems and pump systems include actuators. Ex. 1002, ¶ 97. A POSITA would further understand that the sensory data from the pump system includes measurement data for optimal operation of the system (i.e., set point). *Id.*

Claim 1 is anticipated by Cardamone or would be obvious to a POSITA in view of Cardamone.

2. Claim 9

Claim 9 depends from independent claim 1. Cardamone discloses Claim 1 for the reasons discussed above and incorporated herein.

- a. **[9] The medium of claim 1, wherein the measurement comprises at least one of a fluid flow rate, a fluid temperature, or a fluid pressure.**

Cardamone discloses the measurement of a fluid flow rate, a fluid temperature, or a fluid pressure through its disclosure that inlet 227 has *temperature sensor 225 for providing the temperature* at the inlet and *pressure sensor 226* for providing oil or fluid pressure at the inlet. Ex. 1006, ¶ 0030. A POSITA would understand that Cardamone discloses a measurement comprising at least one of a fluid flow rate, a fluid temperature, or a fluid pressure through its disclosure of a temperature sensor 225 for providing the temperature and a pressure sensor 226. Ex. 1002, ¶ 98.

Claim 9 is anticipated by Cardamone or would be obvious to a POSITA in view of Cardamone.

3. Claim 10

Claim 10 depends from independent Claim 1. Cardamone discloses Claim 1 for the reasons discussed above and incorporated herein.

- a. **[10.1] The medium of claim 1, wherein the fluid-handling device is a first fluid-handling device of a plurality of fluid-handling devices, the operations further comprising: polling, with the controller, the plurality of fluid-handling devices to collect a set of data comprising the measurement; and**

Cardamone discloses application 131 providing access to control and communication computer 126 to request data, including the current sensory data of pump control system 110. Ex. 1006, ¶ 0042, *see also id.* ¶¶ 0011, 0021, 0026, 0041.

A POSITA would understand that the collecting of raw sensor signals (which includes measurements) disclosed in Cardamone is the polling fluid handling device to collect a set of measurement data. Ex. 1002, ¶ 99. Thus, Cardamone discloses this claim limitation.

- b. **[10.2] sending the set of data from the controller to the server.**

Cardamone discloses claim element 10.2. Cardamone discloses data server 134, a server computer remote from the oil well. Ex. 1006, ¶ 0021. Data server 134 receives sensory data logs from control and communication computer 126 and contains web server/web application 136 for providing a client interface for viewing the sensory data logs on remote management computer 138. Ex. 1006, ¶ 0027, Claim 28. Data server 134 acts as a data storage for sensory data. *Id.*

Cardamone also discloses sending the set of data from the controller to the server through its disclosure that the control computer 126 may send daily data logs to data server 134. *Id.*, ¶ 0048.

A POSITA would understand that Cardamone discloses sending the set of data from the controller to the server through its disclosure of a control computer 126 that sends daily data logs, a set of data, to a data server. Ex. 1002, ¶ 100. Claim 10 is anticipated by Cardamone or would be obvious to a POSITA in view of Cardamone.

4. Claim 11

Claim 11 depends from independent Claim 1. Cardamone discloses Claim 1 for the reasons discussed above and incorporated herein.

- a. [11] The medium of claim 1, wherein the network comprises a wireless network, and sending the command comprises sending the command via a wireless signal.**

Cardamone discloses a wireless network through its disclosure that control and communication computer 126 includes communications transceivers including wifi modem 141, satellite modem 143, and cellular data modem 145. The communications transceivers provide a network link to data server 134. Ex. 1006, ¶ 0024; *see also id.* FIG. 1.

Cardamone discloses sending the command comprises sending the command via a wireless signal through its disclosure that the disclosed system provides for remote monitoring and control via various redundant communications channels including internet, wifi, cellular data, or satcom. Ex. 1006, ¶ 0052.

A POSITA would recognize that Cardamone discloses a wireless network, and sending the command comprises sending the command via a wireless signal

through its disclosure of a wifi modem 141, satellite modem 143, and cellular data modem 145. Ex. 1002, ¶ 101. Claim 11 is anticipated by Cardamone or would be obvious to a POSITA in view of Cardamone.

5. Claim 12

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

- a. **[12.1] The medium of claim 1, wherein: the measurement is a first measurement of a plurality of measurements of the sensor;**

Cardamone discloses claim element 12.1. Cardamone discloses that the raw sensor signals collected by control and communication computer 126 are forwarded to application 131 including motor output force, motor position, motor temperature, pump inlet and outlet pressure, inlet temperature, pump inclination, motor driver state, motor driver output current, power distribution system state and temperature, and power distribution system output voltage and current. Ex. 1006, ¶ 0042.

Cardamone also discloses that the “control algorithm may control the motor drive system and/or pump as a function of sensory data.” *Id.*, ¶ 0009. Cardamone further discloses that application 131 also allows the user to adjust the operating parameters of control computer 126 through “a command interface” to specify the “movement profile” for the pump system, including through a distance vs. time curve, or a force vs. time curve for an operation cycle of the pump. *Id.*, ¶ 0044.

Application 131 allows the user to program the operating function to control computer 126 based upon sensory data. *Id.*, ¶ 0045. User 101 may program control computer 126 to set the pump frequency to be equal to the inlet pressure times a constant . . . or more complex functions . . . based upon a whole range of sensory input conditions. *Id.*

A POSITA would recognize that Cardamone discloses that measurement is a first measurement of a plurality of measurements of the sensor through its disclosure that any of the measurements raw sensor signals collected by control and communication computer 126 is a first measurement, as well as multiple-based on the disclosure of control algorithm's movement profile control. Ex. 1002, ¶ 102. Thus, Cardamone discloses this claim element.

b. [12.2] wherein the target value is a value of a pattern of values; and

Cardamone discloses claim element 12.2. Cardamone discloses that the “control algorithm may control the motor drive system and/or pump as a function of sensory data.” Ex. 1006, ¶ 0009. Cardamone further discloses that application 131 also allows the user to adjust the operating parameters of control computer 126 through “a command interface” to specify the “movement profile” for the pump system, including through a distance vs. time curve, or a force vs. time curve for an operation cycle of the pump. *Id.*, ¶ 0044. Application 131 allows the user to program the operating function to control computer 126 based upon sensory data. *Id.*, ¶ 0045.

User 101 may program control computer 126 to set the pump frequency to be equal to the inlet pressure times a constant . . . or more complex functions . . . based upon a whole range of sensory input conditions. *Id.*

A POSITA would understand that Cardamone discloses the target value is a value of a pattern of values through its disclosure of the movement profile determined from the operating parameters and used to drive the pump system. Ex. 1002, ¶ 103. Thus, Cardamone discloses this claim element.

c. [12.3] determining whether the measurement satisfies the target value comprises determining whether the plurality of measurements satisfies the pattern of values.

Cardamone discloses claim element 12.3. As detailed above for elements 12.1 and 12.2, and incorporated herein by reference, Cardamone comprises determining whether the plurality of measurements satisfies the pattern of values based on sensory data through user-defined movement profiles. Ex. 1006, ¶¶ 0009, 0044, 0045.

A POSITA would understand that determining the measurement profile to command a motion driver based on a range of sensory inputs is determining whether the plurality of measurements satisfies the pattern of values. Ex. 1002, ¶ 104. Claim 12 is anticipated by Cardamone or would be obvious to a POSITA in view of Cardamone.

6. Claim 13

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

a. [13] The medium of claim 12, wherein the pattern of values comprises a pattern of valve configurations.

Cardamone discloses the pattern of values comprises a pattern of valve configuration through its disclosure that standard operating profiles include traveling valve leak or upstroke pump wear, standing valve leak or worn standing valve, combination of leaking standing and traveling valve and gas compression, tubing movement, inoperative pump, pump hitting, fluid friction and drag friction. Ex. 1006, ¶ 0009, Claim 17.

A POSITA would recognize that standard operating profiles for the pipes, pumps, and valves disclosed in Cardamone is a pattern of valve configurations. Ex. 1002, ¶ 105. Claim 13 is anticipated by Cardamone or would be obvious to a POSITA in view of Cardamone.

7. Claim 15

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

a. [15.1] The medium of claim 1, wherein: the server comprises a web server; and

Cardamone discloses claim element 15.1. Cardamone discloses data server 134, a server computer remote from the oil well. Ex. 1006, ¶ 0021. Data server 134 links to control and communication computer 126 through standard wired and wireless communication links. *Id.*, ¶ 0024. Data server 134 receives sensory data logs from control and communication computer 126 and contains web server/web application 136 for providing a client interface for viewing the sensory data logs on remote management computer 138. *Id.*, ¶ 0027.

A POSITA would understand that Cardamone discloses the server comprising a web server through its disclosure of web server/web application 136. Ex. 1002, ¶ 108. Thus, Cardamone discloses this claim limitation.

b. [15.2] the controller comprises a site server distinct from the web server

Cardamone discloses claim element 15.2. Cardamone discloses the controller comprises a site server distinct from the web server through its disclosure that system 110 generally includes deep well pump system 122, motor driver 124, control and communication computer 126, and power distribution system 128. Cardamone discloses control and communication computer 126 arranged at the surface of the deep oil well. Ex. 1006, ¶ 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.*

A POSITA would recognize the control and communications computer of Cardamone can be a server and is distinct from the data server. Ex. 1002, ¶ 109. Claim 15 is anticipated by Cardamone or would be obvious to a POSITA in view of Cardamone.

8. Claim 16

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

- a. **[16.1] The medium of claim 15, wherein: the server communicates with a plurality of user devices via a first network port of the web server, wherein the plurality of user devices comprises the computing device; and**

Cardamone discloses claim element 16.1. Cardamone discloses the server communicates with a plurality of user devices via a first network port of the web server through its disclosure that the control and communication computer system may include a router (419), a switch (421), *a wifi access port* (141), GSM modem (145), a satcom modem or port (143), and a single board computer (410). Ex. 1006, ¶ 0008; FIG. 4. Cardamone further discloses the plurality of user devices comprises the computing device through its disclosure that GUI computer 130 may be a portable computer brought by a service user 101 to provide on-site maintenance and/or monitoring. *Id.*, ¶ 0026.

A POSITA would understand that Cardamone discloses this limitation through its disclosure of the control and communication computer system including a wifi access port and the disclosure of GUI computers. Ex. 1002, ¶ 110. Thus, Cardamone discloses this claim limitation.

- b. [16.2] the site server communicates with facilities via a second network port of the computing device, wherein the second network port being different from the first network port, and wherein a facility of the facilities comprises the fluid-handling device.**

Cardamone discloses the site server communicates with facilities via a second network port of the computing device through its disclosure that the control and communication computer system may include a router (419), a switch (421), a wifi 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. 1006, ¶ 0008. Further, Cardamone discloses the second network port being different from the first network port through its disclosure of a wifi access port that is different from the satcom port. *Id.*, ¶ 0008. Finally, Cardamone discloses the facilities comprising the fluid-handling device through its disclosure system (110) for operating a downhole pump with a linear motor, including a pump system (122), a motor drive system (124), a control and communication computer system (126), and a power distribution system (128). *Id.*, ¶ 0005.

A POSITA would understand that Cardamone discloses a second network port of the computing device, wherein the second network port (satcom port) being different from the first network port (wifi port). Ex. 1002, ¶ 111. A POSITA would further understand that a facility of the facilities comprises the fluid-handling device through its disclosure of a downhole pump including a pump system. Ex. 1002, ¶ 111. Claim 16 is anticipated by Cardamone or would be obvious to a POSITA in view of Cardamone.

9. Claim 17

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

a. [17] The medium of claim 1, wherein controlling the actuator based on the set point comprise steps for controlling the actuator.

Cardamone discloses claim 17. Cardamone discloses that the control algorithm controls the motor drive system and/or pump as a function of sensory data, as discussed above for element 1.6 and incorporated herein. The “movement profile” control disclosed by Cardamone controls the pump system by adjusting parameters when a measurement indicates that a value has moved out of a set range, to maintain a distance vs. time curve, or a force vs. time curve for an operation cycle of the pump. Ex. 1006, ¶ 0044. The sensory data may be data from the pump system, the

motor drive system, the power distribution system, and/or the data server. Ex. 1006, ¶ 0009.

A POSITA would understand that the adjusting control of the motor drives as a function of operating regimes includes steps for controlling the actuator. Ex. 1002, ¶ 112. Claim 17 is anticipated by Cardamone or would be obvious to a POSITA in view of Cardamone.

10. Claim 18

Claim 18 depends from independent claim 1. Cardamone discloses Claim 1 for the reasons discussed above and incorporated herein.

- a. [18] The medium of claim 1, wherein receiving the command comprises receiving the command via a web interface on the computing device.**

Cardamone discloses claim 18. Cardamone discloses that users connect to GUI computer 130 to interface with control and communication computer 126, through application 131. Ex. 1006, ¶ 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 computer 126 through “a command interface.” Ex. 1006, ¶¶ 0044-45, *see also id.*, ¶ 0021; FIG. 1.

A POSITA would recognize that Cardamone discloses receiving the command via a web interface on the computing device through its disclosure of a web application 134 which provides an interface to remote management computer 138. Ex. 1002, ¶ 113. Claim 20 is anticipated by Cardamone or would be obvious to a POSITA in view of Cardamone.

11. Claim 20

Cardamone discloses every limitation of claim 20. Claim 20's preamble is analogous to limitation 1.1, limitation 20.2 is analogous to limitation 1.2, limitation 20.3 is analogous to limitation 1.3, limitation 20.4 is analogous to limitation 1.4, limitation 20.5 is analogous to limitation 1.5, limitation 20.6 is analogous to limitation 1.6, limitation 20.7 is analogous to limitation 1.7, and limitation 20.8 is analogous to limitation 1.8. Each of Claim 20's limitations are disclosed by Cardamone for reasons provided above and incorporated here. *Supra* Section VII (B)(1). To the extent that the Board finds that the preamble is limiting, Cardamone discloses a method. Ex. 1006, ¶¶ 0049-0050. Claim 20 is anticipated by Cardamone or would be obvious to a POSITA in view of Cardamone

C. Ground 3: Gutierrez Anticipates Claims 1, 7, and 20 or would be obvious to a POSITA in view of Gutierrez.

1. Claim 1

- a. [1.1] A non-transitory, machine-readable medium comprising instructions to effectuate operations, the operations comprising:**

Gutierrez discloses controller 130 that includes a combination of software, middleware, and hardware configured as the communication module 140, translation module 145, and processor. 150. Ex. 1007, 8:39-42. Thus, Gutierrez discloses this claim element.

- b. [1.2] receiving, with a server, a command comprising a target value of a fluid-handling device from a computing device via a control interface, wherein the command is received in association with a record stored on a datastore;**

Gutierrez discloses a server receiving values for operational parameters of the transmission system based on a command received from a user, as well as transmitting commands based on one or more operational parameters to adjust control parameters in the system, such as the speed of a motor. Ex. 1007, 3:40-45, 5:58-67, 6:1-10, 6:13-23, 6:24-44, 9:21-25, 9:55-64, 10:27-30, 10:39-43, 11:18-26, 13:9-26.

Gutierrez discloses the command is received in association with a record stored on a datastore through its disclosure that the memory may also include any other appropriate data such as data classes or object interfaces, and software sub-

applications or sub-systems. Ex. 1007, 8:50-52. Gutierrez discloses receiving, with a server, a command comprising a target value of a fluid-handling device from a computing device via a control interface through its disclosure that a graphical user interface receives the commands, and sends them to the fluid-handling system. Ex. 1007, 11:16-33 (“the system 300 includes a computer 305 displaying a graphical user interface (GUI) 315, one or more remote chemical injection systems 310”), 13:9-26.

Gutierrez discloses that the production sites are unique, disclosing separate control systems for “each system.” Ex. 1007, 6:28-35; 10:22-24, 10:34-38, 10:43-59 (“data may be wirelessly transmitted directly to each chemical injection system . . . some or all of the processing of data and command generation may occur at the remote control center 220 rather than each individual chemical injection system 220.”), 11:55-61 (“each computer 305 may monitor, receive data from, and/or generate commands transmitted to a single chemical injection system 310 or multiple chemical injection systems 310.”), 11:62-12:3, 13:10-26 (“a user or operator may utilize the GUI 315 to control one or more components of the chemical injection system 310”); Claim 1.

A POSITA would recognize that Gutierrez discloses receiving a command including a target value of a fluid-handling device as recited in the ’680 Patent because the disclosed GUI transmits commands including a target value of a fluid-

handling device, i.e, components of the chemical injection system. Ex. 1002, ¶ 116.

Gutierrez discloses this limitation of the '680 Patent.

- c. **[1.3] determining, with the server, a network address of a network based on the record, wherein the network address identifies a controller of the fluid-handling device, and wherein the controller accesses a sensor to measure a fluid being handled by the fluid-handling device and an actuator of the fluid-handling device;**

Gutierrez discloses records that include network communications addresses for the monitoring and control equipment in various fluid-handling facilities through its disclosures that the production sites are uniquely addressable by the network connection through individualized control systems for “each.” Ex. 1007, 6:28-35; 10:22-24, 10:34-38, 10:43-59, 11:55-61, 11:62-12:3, 13:10-26; Claim 1.

Gutierrez discloses monitoring and control equipment including sensors configured to measure fluid handled at respective fluid-handling facilities. Ex. 1007, 9:4-13 (“one or more electronic sensors monitoring the pipeline”); 9:21-25 (“wireless sensors may detect various operations parameters of the pipeline 120, such as line pressure and/or chemical concentrate”), 10:7-16 (“a wireless pressure sensor”), 10:40-46, 13:12-17.

Gutierrez discloses monitoring and control equipment including actuators configured to manipulate fluid flow at respective fluid-handling facilities. Ex. 1007, 6:45-8:38 (describing chemical injection system with controllers for activating pumps to manipulate fluid flow), 9:54-10:16, 11:62-12:29, 13:23-26.

Gutierrez discloses that fluid-handling facilities have sets of both sensors and actuators. Ex. 1007, 6:45-7:2, 9:65-10:16, 10:17-11:4, 11:16-33, 11:55-61, 13:9-26.

A POSITA would recognize that Gutierrez discloses determining the network address of a network, where the network address identifies the controller of fluid-handling devices in the '680 Patent because the network address would have to be known for commands to be sent to that fluid-handling device. Ex. 1002, ¶ 117. Gutierrez discloses this limitation of the '680 Patent.

d. [1.4] sending, with the server, the target value to the network address via the network;

Gutierrez discloses transmitting commands based on one or more operational parameters to adjust control parameters in the system, such as the speed of a motor. Ex. 1007, 3:40-45, 5:58-67, 6:1-10, 6:13-23, 6:24-44, 9:21-25, 9:55-64, 10:27-30, 10:39-43, 11:18-26, 13:9-26.

Gutierrez discloses sending, with the server, the target value to the network address via the network through its disclosure that the user computing device interfaces with the fluid handling system to send instructions to control the actuators of the fluid handling system. Ex. 1007, 11:16-33, 13:9-12, 315, 13:21-26.

A POSITA would recognize from the above disclosures that Gutierrez discloses sending the target value to the network address as recited in the '680 Patent. Ex. 1002, ¶ 118. Gutierrez discloses this limitation of the '680 Patent.

e. [1.5] receiving, with the controller, a measurement of the fluid by the sensor;

Gutierrez discloses claim element 1.5. Gutierrez discloses monitoring and control equipment including sensors configured to measure fluid handled at respective fluid-handling facilities. Ex. 1007, 9:4-13 (“one or more electronic sensors monitoring the pipeline”); 9:21-25 (“wireless sensors may detect various operations parameters of the pipeline 120, such as line pressure and/or chemical concentrate”), 10:7-16 (“a wireless pressure sensor”), 10:40-46, 13:12-17.

A POSITA would recognized the enterprise or secured networks require individual user log-in, and that Gutierrez inherently discloses a plurality of accounts including first-group accounts with access permitted for control. Ex. 1002, ¶ 119. Gutierrez discloses this limitation of the ’680 Patent.

f. [1.6] determining, with the controller, whether the measurement satisfies the target value;

Gutierrez discloses determining, with the controller, whether the measurement satisfies the target value through its disclosure of monitoring and control equipment including sensors configured to measure fluid handled at respective fluid-handling facilities. Ex. 1007, 9:4-13, 9:21-25, 10:7-16, 10:40-46, 13:12-17.

Gutierrez discloses that fluid-handling facilities have sets of both sensors and actuators. Ex. 1007, 6:45-7:2, 9:65-10:16, 10:17-11:4, 11:16-33, 11:55-61, 13:9-26.

A POSITA would recognize from the above disclosures that Gutierrez discloses determining whether the measurements satisfy the target value as recited in the '680 Patent. Ex. 1002, ¶ 120. Gutierrez discloses this limitation of the '680 Patent.

- g. [1.7] in response to a determination that the measurement does not satisfy the target value, obtaining, with the controller, a set point based on the command; and**

Gutierrez discloses obtaining, with the controller, a set point based on the command through its disclosure monitoring and control equipment including sensors configured to measure fluid handled at respective fluid-handling facilities. Ex. 1007, 9:4-13, 9:21-25, 10:7-16, 10:40-46, 13:12-17.

Gutierrez discloses that fluid-handling facilities have sets of both sensors and actuators. Ex. 1007, 6:45-7:2, 9:65-10:16, 10:17-11:4, 11:16-33, 11:55-61 (“each computer 305 may monitor, receive data from, and/or generate commands transmitted to a single chemical injection system 310 or multiple chemical injection systems 310”), 13:9-26.

A POSITA would recognize that Gutierrez discloses obtaining a set point based on a determination that a measurement does not satisfy a target value in the '680 Patent. Ex. 1002, ¶ 121. Gutierrez discloses this limitation of the '680 Patent.

h. [1.8] controlling, with the controller, the actuator based on the set point.

Gutierrez discloses controlling, with the controller, the actuator based on the set point through its disclosure of monitoring and control equipment including actuators configured to manipulate fluid flow at respective fluid-handling facilities. *See, e.g.*, Ex. 1007, 6:45-8:38 (describing chemical injection system with controllers for activating pumps to manipulate fluid flow), 9:54-10:16, 11:62-12:29, 13:23-26.

Gutierrez discloses that fluid-handling facilities have sets of both sensors and actuators. Ex. 1007, 6:45-7:2, 9:65-10:16, 10:17-11:4, 11:16-33, 11:55-61, 13:9-26.

A POSITA would recognize from the above disclosure that Gutierrez discloses controlling the actuator based on a set point as recited in the '680 Patent. Ex. 1002, ¶ 122. Gutierrez discloses this limitation of the '680 Patent.

Claim 1 is anticipated by Gutierrez or would be obvious to a POSITA in view of Gutierrez.

2. Claim 7

Claim 7 depends from independent Claim 1. Gutierrez discloses Claim 1 for the reasons discussed above and incorporated herein.

- a. **[7] The medium of claim 1, wherein the record is a first record, the operations further comprising sending sensor data from the sensor to a plurality of records that comprises the first record, wherein the plurality of records is associated with a user.**

Gutierrez discloses Claim 7 of the '680 Patent. Gutierrez discloses the sending sensor data from the sensor to a plurality of records that comprises the first record through its disclosures that the communication bus 140, generally, is a wired communication connection operable to carry data between the communication module and a remote source, such as one or more electronic sensors monitoring the pipeline 120, the motor 110, the pump 105, or other component or apparatus. Ex. 1007, 9:6-11. Gutierrez further discloses that wireless sensors may detect various operational parameters of the pipeline 120, such as line pressure and/or chemical concentrate, and transmit such data to the controller 130 via the wireless antenna 160. Ex. 1007, 9:21-25.

Gutierrez discloses the plurality of records is associated with a user the translation module 145 may allow a user or operator to connect to the controller 130 and receive feedback data (e.g., operational data of the motor 110, pump 105, or any other component of the system 100) without regard to a particular protocol understood by the user's device (i.e., computer, laptop, PDA, cell phone). Ex. 1007, 9:54-59.

A POSITA would recognize that Gutierrez inherently discloses a first record from the operational parameters sensed by the sensor and that sending sensor data from the sensor to a plurality of records comprising the first record is the transmitting of operational data parameters to the controller 130. Ex. 1002, ¶ 125. Further, a POSITA would recognize that Gutierrez inherently discloses the plurality of records is associated with a user through its disclosure of a user or operator connecting to the controller 130 and receiving feedback data (e.g., operational data of the motor 110, pump 105, or any other component of the system 100) with the user's device (i.e., computer, laptop, PDA, cell phone. *Id.* Further, a POSITA would understand that the plurality of records accessed by the user on a user device would be associated with that user. *Id.*, ¶ 124. Claim 7 is anticipated by Gutierrez or would be obvious to a POSITA in view of Gutierrez.

3. Claim 20

Gutierrez discloses every limitation of Claim 20. Claim 20's preamble is analogous to limitation 1.1, limitation 20.2 is analogous to limitation 1.2, limitation 20.3 is analogous to limitation 1.3, limitation 20.4 is analogous to limitation 1.4, limitation 20.5 is analogous to limitation 1.5, limitation 20.6 is analogous to limitation 1.6, limitation 20.7 is analogous to limitation 1.7, and limitation 20.8 is analogous to limitation 1.8. Each of Claim 20's limitations are disclosed by Gutierrez for reasons provided above and incorporated here. *Supra* Section

VIII(A)(1). Claim 20 is anticipated by Gutierrez or would be obvious to a POSITA in view of Gutierrez.

D. Ground 4: SCADA Anticipates Claim 1 or would be obvious to a POSITA in view of SCADA.

Independent claims 1 and 20 are anticipated by SCADA: Supervisory Control and Data Acquisition, 4th Edition (“SCADA”) under 35 U.S.C. § 102, or would be obvious to a POSITA in view of SCADA under 35 U.S.C. § 103.

1. Claim 1

- a. [1.1] A non-transitory, machine-readable medium comprising instructions to effectuate operations, the operations comprising:**

To the extent that the Board finds that the preamble is limiting, SCADA discloses non-transitory, machine-readable medium comprising instructions to effectuate operations. SCADA discloses that “Modern RTUs are essentially microcomputers with special equipment at one end to interface with the long-range communications link and with special equipment at the other end to interface with the sensors, actuators, and calculators in the process. While the RTU is in receive mode, part of the communications interface equipment (the modem...) receives a serial signal from the communications medium...Modern RTUs accomplish these functions with the protocol driver program run by the RTU's central processing unit.” SCADA, at 92-93; Ex. 1002, ¶ 128. SCADA discloses this claim limitation of the ‘680 Patent.

- b. [1.2] receiving, with a server, a command comprising a target value of a fluid-handling device from a computing device via a control interface, wherein the command is received in association with a record stored on a datastore;**

SCADA discloses claim element 1.2. “Figure 2-1 shows the major elements of a SCADA system. At the center is the operator, who interfaces with the system through some form of input/output (I/O) device. The I/O device in turn communicates with the master terminal unit (MTU). The MTU communicates with one or more remote terminal units (RTUs), each of which communicates with sensors or actuators at the process...” SCADA, at 12; *see also id.* at 73.

SCADA further discloses receiving in command in association with a record stored on a datastore. SCADA, at 92-93.

A POSITA would understand that SCADA discloses the recited receiving commands from the server comprising a target value to control specific fluid handling devices of the ‘680 Patent through its disclosure of receiving signal through the MTU, which connects via communications interface equipment to individually addressable RTU for controlling operation of well site components. Ex. 1002, ¶ 132. Thus, SCADA discloses this claim limitation.

- c. **[1.3] determining, with the server, a network address of a network based on the record, wherein the network address identifies a controller of the fluid-handling device, and wherein the controller accesses a sensor to measure a fluid being handled by the fluid-handling device and an actuator of the fluid-handling device;**

SCADA discloses determining, with the server, a network address of a network based on the record: “The RTU also communicates with sensors that measure field equipment conditions and with actuators that change field equipment conditions...To do this, the RTU must know the language, or protocol, each device uses. It must know the name, or address, of each field device. If it is to gather information from field devices, it must know where to store the information so that it will be able to send the information onward when told to do so by the MTU.” SCADA, at 14-15.

SCADA also discloses that the network address identifies a controller of the fluid-handling device through its disclosure above the RTU above. SCADA, at 14-15.

SCADA discloses that the controller accesses a sensor to measure a fluid being handled by the fluid-handling device and an actuator of the fluid-handling device through its disclosure that if it is to gather information from field devices, it must know where to store the information so that it will be able to send the information onward when told to do so by the MTU.” SCADA, at 14-15.

A POSITA would understand that SCADA'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 '680 Patent. Ex. 1002, ¶ 136. Thus, SCADA discloses this claim limitation.

d. [1.4] sending, with the server, the target value to the network address via the network;

SCADA discloses sending, with the server, the target value to the network address via the network through its disclosure that:

“the remote terminal unit (RTU) will sample this variable and will store it in a memory register. The RTU will also sample analog variables from other flowmeters, level transmitters, or temperature transmitters, and will sample discrete variables from fire alarms and the like. Each of these variables will be sampled and stored in its memory location...Third, the RTU must listen for a request from the master terminal unit (MTU), which will periodically tell each of the RTUs in the system to report what it knows. When it receives such an order, the RTU must then confirm that the message is indeed for it and not for some other RTU. Then it must put together a message that includes all of the information requested by the MTU...Fourth, the MTU must receive this data; check it to determine if any communication errors have occurred; store the data in predetermined memory locations; and present any alarms, reports, or data screens to the process operator.”

SCADA, at 34-35.

A POSITA would understand that transmitting process data via an Ethernet switch is the sending, with the server, the target value to the network address via the

network as claimed in the '680 Patent. Ex. 1002, ¶ 138. Thus, SCADA discloses this claim limitation.

e. [1.5] receiving, with the controller, a measurement of the fluid by the sensor;

SCADA discloses claim element 1.5. SCADA discloses receiving, with the controller, a measurement of the fluid by the sensor through its disclosure about the RTU sampling variables and listening for a request from MTU. SCADA, at 34-35.

A POSITA would understand SCADA's disclosure that the disclosed controller receives a measurement of fluid from the system's sensor, based on its discussion of modern field devices and its disclosed data verifier and data reconciler that determine the operating state of remote sub-systems based on sensor readings, as taught by the '680 Patent. Ex. 1002, ¶ 140. Thus, SCADA discloses this claim limitation.

f. [1.6] determining, with the controller, whether the measurement satisfies the target value;

SCADA discloses the determining, with the controller, whether the measurement satisfies the target value through its disclosure that "the RTU also communicates with sensors that measure field equipment conditions and with actuators that change field equipment conditions." SCADA, at 14-15.

A POSITA would understand from SCADA's disclosure that the disclosed controller determines whether the measurement satisfies the target value. Ex. 1002,

¶ 142. Thus, SCADA discloses this claim limitation.

- g. [1.7] in response to a determination that the measurement does not satisfy the target value, obtaining, with the controller, a set point based on the command; and**

SCADA discloses obtaining a set point based on the command in response to a determination that the measurement does not satisfy a target value through its disclosure that “the RTU also communicates with sensors that measure field equipment conditions and with actuators that change field equipment conditions.” SCADA, at 14-15.

A POSITA would recognize that limits or bounds apply a set point, which would be set by a user in a command. Ex. 1002, ¶ 144. A POSITA would recognize that to verify measurements and determine whether a measurement was out-of-bounds, a set point would have to be obtained by the data verifier located on the controller and compared by the data reconciler also located on the controller. *Id.* Thus, SCADA discloses this claim limitation.

- h. [1.8] controlling, with the controller, the actuator based on the set point.**

SCADA discloses controlling, with the controller, the actuator based on the set point through its disclosure of Figure 2-1, the I/O device in turn communicating with the MTU. And the MTU communicates with one or more remote terminal units (RTUs), each of which communicating “with sensors or actuators at the process.” SCADA, at 12.

A POSITA would understand that SCADA discloses the controlling of the actuator based on the set point of the '680 Patent through its disclosure of the intelligent field systems and the data verifier and reconciler. A POSITA would understand that the data is verified and reconciled and that a command can be sent by the controller to control any number of actuators in intelligent field systems within limits or bounds, i.e., set points. Ex. 1002, ¶ 146. Thus, SCADA discloses this claim element.

Claim 1 is anticipated by SCADA or would be obvious to a POSITA in view of SCADA.

E. The Board Should Not Discretionarily Deny Institution

1. 35 U.S.C. §314(a) Analysis

Petitioner hereby stipulates that, if IPR of the '680 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 1, 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, ¶¶ 29-31 (summarizing prosecution history). 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 and they disclose “a sending the translated commands to the local controllers,” which Examiner identified as part of the reasons for allowance. *Id.* 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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U.S. PATENT NO. 11,175,680 – LISTING OF CHALLENGED CLAIMS

<u>CLAIM NO.</u>	<u>CLAIM ELEMENTS</u>
Claim 1	[1.1] A non-transitory, machine-readable medium comprising instructions to effectuate operations, the operations comprising: [1.2] receiving, with a server, a command comprising a target value of a fluid-handling device from a computing device via a control interface, wherein the command is received in association with a record stored on a datastore; [1.3] determining, with the server, a network address of a network based on the record, wherein the network address identifies a controller of the fluid-handling device, and wherein the controller accesses a sensor to measure a fluid being handled by the fluid-handling device and an actuator of the fluid-handling device; [1.4] sending, with the server, the target value to the network address via the network; [1.5] receiving, with the controller, a measurement of the fluid by the sensor; [1.6] determining, with the controller, whether the measurement satisfies the target value; [1.7] in response to a determination that the measurement does not satisfy the target value, obtaining, with the controller, a set point based on the command; and [1.8] controlling, with the controller, the actuator based on the set point.
Claim 2	[2.1] The medium of claim 1, wherein: the controller is a site master-controller;

<u>CLAIM NO.</u>	<u>CLAIM ELEMENTS</u>
	[2.2] the site master-controller controls a plurality of local controllers, the plurality of local controllers comprising a first local controller in communication with the actuator; [2.3] controlling the actuator with the controller based on the set point comprises: sending the set point from the site master-controller to the first local controller; and [2.4] actuating, with the first local controller, the actuator based on the set point.
Claim 3	[3.1] The medium of claim 1, wherein: obtaining the set point comprises determining a sequence of set points based on the command; and [3.2] controlling the actuator comprises controlling the actuator to a plurality of different states based on the sequence of set points.
Claim 4	[4.1] The medium of claim 1, wherein the command is a first command, and wherein sending the command to the network address comprises: identifying a protocol of the fluid-handling device based on the network address; [4.2] translating the first command into a translated command based on the protocol; and [4.3] sending the translated command to the controller.
Claim 5	[5] The medium of claim 4, wherein identifying the protocol comprises parsing an identifier from the first command and retrieving a corresponding record from a set of records based on the identifier, the corresponding record including a protocol identifier of the protocol.
Claim 6	[6.1] The medium of claim 1, wherein: the set point is a first set point; [6.2] the command comprises the first set point and a second set point;

<u>CLAIM NO.</u>	<u>CLAIM ELEMENTS</u>
	[6.3] obtaining the first set point comprises obtaining the first set point and the second set point from the command; [6.4] the measurement is a first measurement; [6.5] the operations further comprises: receiving, with the controller, a second sensor measurement after controlling the actuator based on the first set point; [6.6] determining, with the controller, whether the second sensor measurement satisfies a criterion based on the first set point; and [6.7] in response to a determination that the first set point is satisfied, controlling the actuator based on the second set point.
Claim 7	[7] The medium of claim 1, wherein the record is a first record, the operations further comprising sending sensor data from the sensor to a plurality of records that comprises the first record, wherein the plurality of records is associated with a user.
Claim 8	[8.1] The medium of claim 1, wherein: the actuator controls a valve; [8.2] the command comprises instructions to oscillate the valve using the actuator; and [8.3] controlling the actuator comprises translating, at the controller, the command to oscillate the valve into a sequence of high voltage and low voltage signals.
Claim 9	[9] The medium of claim 1, wherein the measurement comprises at least one of a fluid flow rate, a fluid temperature, or a fluid pressure.
Claim 10	[10.1] The medium of claim 1, wherein the fluid-handling device is a first fluid-handling device of a plurality of fluid-handling devices, the operations further comprising:

<u>CLAIM NO.</u>	<u>CLAIM ELEMENTS</u>
	[10.2] polling, with the controller, the plurality of fluid-handling devices to collect a set of data comprising the measurement; and [10.3] sending the set of data from the controller to the server.
Claim 11	[11] The medium of claim 1, wherein the network comprises a wireless network, and sending the command comprises sending the command via a wireless signal.
Claim 12	[12.1] The medium of claim 1, wherein: the measurement is a first measurement of a plurality of measurements of the sensor; [12.2] wherein the target value is a value of a pattern of values; and [12.3] determining whether the measurement satisfies the target value comprises determining whether the plurality of measurements satisfies the pattern of values.
Claim 13	[13] The medium of claim 12, wherein the pattern of values comprises a pattern of valve configurations.
Claim 14	[14] The medium of claim 1, wherein the sensor comprises a level sensor of a separation tank to indicate a level at which a first fluid phase meets a second fluid phase.
Claim 15	[15.1] The medium of claim 1, wherein: the server comprises a web server; and [15.2] the controller comprises a site server distinct from the web server.
Claim 16	[16.1] The medium of claim 15, wherein: the server communicates with a plurality of user devices via a first network port of the web server, wherein the plurality of user devices comprises the computing device; and [16.2] the site server communicates with facilities via a second network port of the computing device, wherein the second network port being different from the first network port, and

<u>CLAIM NO.</u>	<u>CLAIM ELEMENTS</u>
	wherein a facility of the facilities comprises the fluid-handling device.
Claim 17	[17] The medium of claim 1, wherein controlling the actuator based on the set point comprise steps for controlling the actuator.
Claim 18	[18] The medium of claim 1, wherein receiving the command comprises receiving the command via a web interface on the computing device.
Claim 19	[19] The medium of claim 1, wherein the controller is communicatively coupled to the fluid-handling device via a frame-based carrier-sense multiple access protocol.
Claim 20	[20.1] A method comprising: [20.2] receiving, with a server, a command comprising a target value of a fluid-handling device from a computing device via a control interface, wherein the command is received in association with a record stored on a datastore; [20.3] determining, with the server, a network address of a network based on the record, wherein the network address identifies a controller of the fluid-handling device, and wherein the controller accesses a sensor to measure a fluid being handled by the fluid-handling device and an actuator of the fluid-handling device; [20.4] sending, with the server, the target value to the network address via the network; [20.5] receiving, with the controller, a measurement of the fluid by the sensor; [20.6] determining, with the controller, whether the measurement satisfies the target value; [20.7] in response to a determination that the measurement does not satisfy the target value, obtaining, with the controller, a set point based on the command; and

<u>CLAIM NO.</u>	<u>CLAIM ELEMENTS</u>
	[20.8] controlling the actuator based on the set point.

CERTIFICATION OF COMPLIANCE WITH TYPE-VOLUME LIMITS

This Petition includes 13,786 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 IPR.

Dated: April 15, 2024

Respectfully Submitted,

/ Winston O. Huff /

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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 '680 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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