

**UNITED STATES PATENT AND TRADEMARK OFFICE**

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**BEFORE THE PATENT TRIAL AND APPEAL BOARD**

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THE INTEGRATION GROUP OF AMERICAS,  
Petitioner

v.

SITEPRO, INC.,  
Patent Owner

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Case No. IPR 2024-00740

U.S. Patent No. 11,726,504

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**PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 11,726,504**

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**PETITIONER'S EXHIBIT LIST**

| <b><u>EXHIBIT</u></b> | <b><u>DESCRIPTION</u></b>                                                       |
|-----------------------|---------------------------------------------------------------------------------|
| Ex. 1001              | U.S. Patent No. 11,726,504                                                      |
| Ex. 1002              | Declaration of Dr. Gary Wooley                                                  |
| Ex. 1003              | Curriculum Vitae of Dr. Gary Wooley                                             |
| Ex. 1004              | File Wrapper for U.S. Patent No. 11,726,504                                     |
| Ex. 1005              | U.S. Patent Application No. 2015/0308244 to Cardamone                           |
| Ex. 1006              | U.S. Patent No. 7,424,399 to Kahn                                               |
| Ex. 1007              | SCADA: Supervisory Control and Data Acquisition, 4 <sup>th</sup> Edition (2010) |
| Ex. 1008              | Claim Construction Order (Dkt. 93)                                              |

## **I. INTRODUCTION**

Petitioner requests *Inter Partes* Review (“IPR”) of claims 1-20 (the “Challenged Claims”) of U.S. Patent No. 11,726,504 (“the ‘504 Patent”).

This petition (IPR 2024-00740) is part of a set of seven petitions, including IPR 2024-00724, IPR 2024-00738, IPR 2024-00739, IPR 2024-00741, IPR 2024-00737, and IPR 2024-00742, which challenge claims of U.S. Patent Nos. 8,649,909 (the “‘909 Patent”); 9,342,078 (the “‘078 Patent”); 9,898,014 (the “‘014 Patent”); 10,488,871 (the “‘871 Patent”); 11,175,680 (the “‘680 Patent”); and 11,294,403 (the “‘403 Patent”) (collectively, with the ‘504 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 ‘504 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 ‘504 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 ‘504 Patent identified in this Petition. Any additional fees for this IPR may be charged to Deposit Account No. DA505990.

**IV. BACKGROUND**

The Challenged Patents relate to the remote 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.

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.

## **V. THE ALLEGED INVENTION OF THE '504 PATENT**

The '504 Patent entitled "Remote Control of Fluid-Handling Devices," describes a fluid processing system having a first computer system disposed at a first fluid handling site that is configured to receive information comprising one or more properties of a first fluid from one or more sensors disposed at a first fluid tank itself disposed at the first fluid-handling site, the fluid-handling site comprising one or more fluid-handling devices, the one or more fluid-handling devices comprising one or more of a first pump, a first filter, and a first valve; and provide remote control of

a first fluid-handling device of the one or more fluid-handling devices; and a server system. Ex. 1001, Claim 1.

The server system receives a first fluid property of the one or more properties associated with the first fluid sensed by a first sensor of the one or more sensors; obtains credentials from a first client computing device; determines that a user of the first client computing device is authorized to interact with the first fluid handling site, provides information by which a first client computing device presents a user interface indicating the first fluid property, receives a first command to change a state of the first fluid-handling device and changing the state of the first fluid-handling device to a sequence of different target states that change over time. *Id.*

**A. Summary of Prosecution History (Ex. 1004)**

The application resulting in the ‘504 Patent was filed on 2/25/2022. The ‘504 Patent is a continuation of U.S. Patent Appl. 17 /513,539 filed on October 28, 2021. U.S. Patent Application 17/513,539 is a continuation of 16/656,319 filed on October 17, 2019, which 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. 1004.

In the first office action, the Examiner rejected Claims 1-20 under 35 U.S.C. 101 as claiming the same invention as that of claims 1-20 of prior U.S. Patent No. 11,294,403. Ex. 1004, at 1653-64. On March 7, 2023, the Applicant filed an Amendment and Response to the office action canceling claims 2, 3, 15, 18, and 20, amending claims 1, 6-7, 9, 11, 13-14, and 17, and adding new claims 21- 25. *Id.* at 587-607. Finally, the Applicant filed a terminal disclaimer to limit the patent term to that of U.S. Patent No. 11,294,403. *Id.*, at 1653-64.

On March 17, 2023, the Examiner issued a Notice of Allowability allowing Claims 1, 4-14, 16-17, 19, and 21-25. *Id.*, at 560-71.

## **VI. OVERVIEW OF THE PRIOR ART**

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

### **A. Cardamone (Ex. 1005)**

U.S. Patent Application No. 2015/0308244 to Cardamone was filed on November 26, 2013, and claims the benefit of Provisional Patent Application No. 61/729,815 filed on November 26, 2012. Cardamone is prior art under pre-AIA § 102(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. 1005, Abstract.

**B. Kahn (Ex. 1006)**

U.S. Patent No. 7,424,399 to Kahn was filed on June 10, 2006, and claims priority to Provisional Patent Application 60/689,257 filed on June 10, 2005. Kahn is prior art under pre-AIA § 102(a). Kahn teaches a well site data communication system and method receiving fluid test data generated from multiple different entities. Ex. 1006, Abstract.

**C. 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); *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

Petitioner notes that the Federal District Court for the Western District of Texas has construed certain claim terms. *See* Ex. 1008. But Petitioners respectfully submit that no terms need to be construed to resolve the issues raised in this Petition because the prior art discloses all limitations under the plain meaning as well as under any plausible construction.

## **VIII. GROUNDS FOR PETITION**

### **A. Ground 1: Cardamone Anticipates Claims 1-16, and 20.**

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

## 1. Claim 1

### a. [1.1] A fluid processing system, comprising:

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

A POSITA would readily recognize that the deep well linear pump system is a fluid processing system. Ex. 1002, ¶ 46. Thus, Cardamone discloses this claim element.

### b. [1.2] a first computer system disposed at a first fluid handling site, wherein the first computer system is configured to: receive information comprising one or more properties of a first fluid from one or more sensors disposed at a first fluid tank itself disposed at the first fluid-handling site, the fluid-handling site comprising one or more fluid-handling devices, the one or more fluid-handling devices comprising one or more of a first pump, a first filter, and a first valve; and

Cardamone discloses control and communication computer 126 arranged at the surface of the deep oil well. Ex. 1005, ¶ 0024. Control and communication computer 126 includes data sampling and storage mechanisms for receiving and storing sensory data from both pump system 122 and motor driver 124. *Id.* The available data includes inlet pressure, which can be used to determine the depth of fluids remaining in the well, and monitoring pump frequency to monitor the volume

of fluids extracted from the well. Ex. 1005, ¶¶ 0029-30, 0044-45, 0049. Cardamone discloses that the raw sensor signals collected by control and communication computer 126 include 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. 1005, ¶ 0042.

Cardamone discloses that the fluid handling site has a pump, valve, and tank that handles a fluid in its disclosure of down-hole pump 228 includes a standing valve, a traveling valve, a piston or plunger, inlet 227, and outlet 231. Ex. 1005, ¶ 0029.

A POSITA would understand that the deep oil system and oil wells described in Cardamone include a tank to store the oil that is pumped up the surface of the oil well. Ex. 1005, ¶ 0022; Ex. 1002, ¶ 47.

Thus, Cardamone discloses this claim element.

**c. [1.3] provide remote control of a first fluid-handling device of the one or more fluid-handling devices; and**

Cardamone discloses that data server 134 provides the functionality of GUI Computer 130. Ex. 1005, ¶ 0046. Cardamone discloses that users connect to GUI computer 130 to interface with control and communication computer 126, through application 131. Ex. 1005, ¶ 0042, *see also id.*, ¶¶ 0011, 0021, 0026, 0041.

Application 131 provides access to control and communication computer 126 to request data, including the current sensory data of pump control system 110. *Id.* Application 131 also allows the user to adjust the operating parameters with control computer 126 through “a command interface.” Ex. 1005, ¶¶ 0044-45. Cardamone also discloses that data server 134 is connected to network 132 which is linked to control and communication computer 126 through a variety of network communication types. Ex. 1005, ¶ 0027.

A POSITA would readily recognize Cardamone discloses the remote management computer and web application facilitates remote control of fluid handling devices. Ex. 1002, ¶ 48. Thus, Cardamone discloses this claim element.

**d. [1.4] a server system wherein the server system has memory storing instructions that, when executed, effectuate operations comprising:**

Cardamone discloses data server 134, a server computer remote from the oil well. Ex. 1005, ¶ 0021. Data server 134 links to control and communication computer 126 through standard wired and wireless communication links. Ex. 1005, ¶ 0024. Data server 134 receives sensory data logs from control and communication computer 126 and contains a web server/web application 136 for providing a client interface for viewing the sensory data logs on remote management computer 138. Ex. 1005, ¶ 0027. Data server 134 acts as a data storage for sensory data and configuration commands. Ex. 1005, ¶¶ 0021, 0027, 0035, 0048.

A POSITA would understand that Cardamone discloses a server system with a memory for storing instructions through its disclosure of a data storage from the disclosure of a data server and memory. Ex. 1002, ¶ 50. Thus, Cardamone discloses this claim element.

- e. [1.5] receiving, with the server system, from the first computer system, via a network, a first fluid property of the one or more properties associated with the first fluid sensed by a first sensor of the one or more sensors;**

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. Ex. 1005, ¶¶ 0002, 0024. The available data includes inlet pressure, pump frequency, and other properties associated with the fluids extracted from the well. Ex. 1005, ¶¶ 0029-30, 0044-45, 0049. Cardamone also discloses that the raw sensor signals collected by control and communication computer 126 include 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. 1005, ¶ 0042. Cardamone discloses that the fluid properties are received via a network through its disclosure that the control and communication computer includes communication transceivers to provide a network link to a data server 134. Ex. 1005, ¶ 0024.

A POSITA would understand from Cardamone's disclosure of a data server that receives sensory data logs from the first computer system, and that the sensory data logs include fluid properties sensed by the sensor. Ex. 1002, ¶ 53. Thus, Cardamone discloses this claim element.

**f. [1.6] obtaining, with the server system, credentials from a first client computing device;**

Cardamone discloses obtaining, with the server system, credentials from a first client computing device through its disclosure that application 131 queries user 101 for a *username and password*. Ex. 1005, ¶ 0042. The user queries GUI computer which, as discussed above, is connected to data server 134. *Id.*

A POSITA would readily understand that querying a user for a username and password is the obtaining credentials from a first client computing device. Ex. 1002, ¶ 54. Thus, Cardamone discloses this claim element.

**g. [1.7] determining, with the server system, based on the credentials, that a user of the first client computing device is authorized to interact with the first fluid handling site, wherein the server system hosts data about other fluid handling sites the user is not authorized to interact;**

Cardamone discloses that application 131 queries user 101 for a username and password, which are then provided to control and communication computer 126 for authentication. Ex. 1005, ¶ 0042.

A POSITA would readily understand that, after querying a user for a username and password “for authentication,” the system would only provide information about

a fluid-handling device a user is authorized to interact with, and not provide access to information about a fluid-handling device a user is not authorized to interact with.

Ex. 1002, ¶ 55.

A POSITA would further understand that the server discussed above in element 1.4 hosts user data for fluid-handling devices other than the limited set of fluid handling devices a particular user is authorized to access. Ex. 1002, ¶ 55. Thus, Cardamone discloses this claim element. *Id.*

**h. [1.8] after the determination, providing, with the server system, via the network, information by which a first client computing device presents a user interface indicating the first fluid property, the first client computing device being remote from the server system and the first computer system;**

Cardamone discloses that data server 134 provides the functionality of GUI Computer 130. Ex. 1005, ¶ 0046. Cardamone discloses that users connect to GUI computer 130 to interface with control and communication computer 126, through application 131. Ex. 1005, ¶ 0042, *see also id.*, ¶¶ 0011, 0021, 0026 (“GUI computer 130 may be a portable computer brought by a service user 101 in order to provide on-site maintenance and/or monitoring”), 0041, FIG. 1.

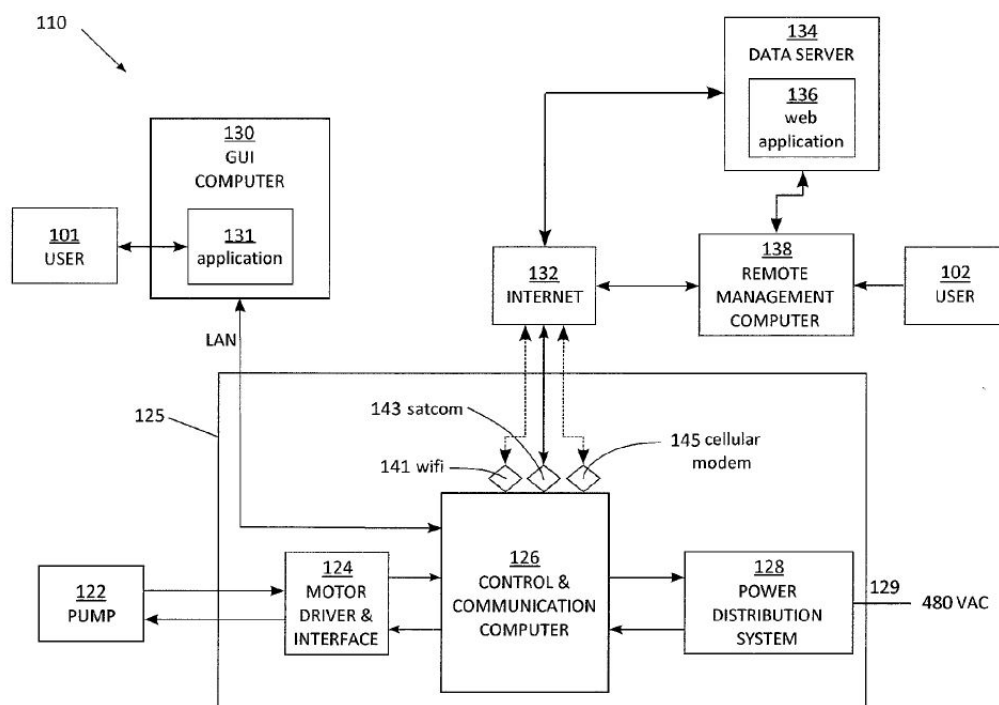


FIG. 1

The user queries GUI computer for access to the system which, as discussed above, is communicatively coupled to data server 134. Ex. 1005, ¶ 0035. Application 131 provides access to control and communication computer 126 to request data, including the current sensory data of pump control system 110. *Id.* Operational data includes sensory data from pump system 122, motor driver 124, power distribution system 128, and control and communication computer 126. Ex. 1005, ¶ 0026. Cardamone also discloses that data server 134 is connected to network 132 which is linked to control and communication computer 126 through a variety of network communication types. Ex. 1005, ¶ 0027.

A POSITA would recognize that Cardamone's disclosure of the first client computing device is the GUI computer interfacing with the user, the server is data server 134, and the first computer system is control and communication computer 126. Ex. 1002, ¶¶ 59-60.

A POSITA would recognize that Cardamone's disclosure of web a GUI computer for providing a client interface for viewing the sensory data logs on remote management computer 138 is the presenting a user interface indicating the first fluid property found in claim of the '504 Patent. *Id.*

Thus, Cardamone discloses this claim element.

- i. [1.9] receiving, with the server system, from the first client computing device, a first command to change a state of the first fluid-handling device; and**

Cardamone discloses that data server 134 provides the functionality of GUI Computer 130. Ex. 1005, ¶ 0046. Cardamone discloses that users connect to GUI computer 130 to interface with control and communication computer 126, through application 131. Ex. 1005, ¶ 0042, *see also* ¶¶ 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. 1005, ¶¶ 0044-45; *see also id.*, ¶ 0026 ("software application (131) for allowing a user (101) to view sensor

data, and view and set control computer operating parameters and algorithms”). Cardamone also discloses that data server 134 is connected to network 132 which is linked to control and communication computer 126 through a variety of network communication types. Ex. 1005, ¶ 0027.

A POSITA would readily recognize that that setting operational parameters disclosed in Cardamone is the receiving a first command to change a state of the first fluid-handling device in claim 1 of the ‘504 Patent. Ex. 1002, ¶ 60. Thus, Cardamone discloses this claim element.

- j. [1.10] causing, with the server system, the first computer system disposed at the first fluid handling site to effectuate the command by changing the state of the first fluid-handling device to a sequence of different target states that change over time.**

Cardamone discloses the determining of different target states of a given one of the fluid-handling devices over time. Ex. 1005, ¶¶ 0009, 0021, 0022, 0025, 0026, 0029, 0036. Cardamone discloses that the “control algorithm may control the motor drive system and/or pump as a function of sensory data.” Ex. 1005, ¶ 0009; *see also id.*, Claims 11 (“control computer is programmed to provide an output command as a function of one or more of said operating parameters from said sensor system”), 12 (“the output command is a motor drive command”), 13 (“the motor drive command is a function of a change in pressure sensed by said pump inlet pressure sensor”).

Cardamone discloses that data server 134 provides the functionality of GUI Computer 130. Ex. 1005, ¶ 0046. Cardamone discloses that users connect to GUI computer 130 to interface with control and communication computer 126, through application 131. Ex. 1005, ¶ 0042, *see also id.*, ¶¶ 0011, 0021, 0026, 0041, FIG. 1. 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. Ex. 1005, ¶ 0044. Application 131 allows the user to program the operating function to control computer 126 based upon sensory data. Ex. 1005, ¶ 0045. For example, 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 the causing, with the server system, the first computer system disposed at the first fluid handling site to effectuate the command by changing the state of the first fluid-handling device to a sequence of different target states that change over time is provided by Cardamone in its disclosure of control computer being programmed to provide an output command as a function of one or more of said operating parameters (i.e. different target states) from said sensor

system which is communicatively coupled to the data server. Ex. 1002, ¶ 62. Thus, Cardamone discloses this claim element

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

## **2. Claim 2**

Cardamone discloses Claim 1 for the reasons discussed above and incorporated herein.

**a. The system of claim 1, wherein: the sequence of different target states that change over time are configured to ramp up or down a speed of the first fluid-handling device.**

Cardamone discloses that the “control algorithm may control the motor drive system and/or pump as a function of sensory data.” Ex. 1005, ¶ 0009; *see also id.*, Claims 11 (“control computer is programmed to provide an output command as a function of one or more of said operating parameters from said sensor system”), 12 (“the output command is a motor drive command”), 13 (“the motor drive command is a function of a change in pressure sensed by said pump inlet pressure sensor”). 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. Ex. 1005, ¶ 0044; *see also id.*, ¶ 0036.

A POSITA would readily understand that adjusting pump operation based on measurements or predefined functions would necessarily include adjusting pump operation of ramping up or down of the fluid handling device as feedback to maintain the operating regimen. Ex. 1002, ¶ 63.

As such, Claim 2 is anticipated by Cardamone or would be obvious to a POSITA in view of Cardamone.

### **3. Claim 3**

Cardamone discloses Claim 1 for the reasons discussed above and incorporated herein.

- a. [3] The system of claim 1, wherein: the sequence of different target states that change over time are determined with steps for mitigating shocks to up-stream or down-stream fluid-handling devices relative to the first fluid-handling device**

As discussed above for Claim 1.10, and incorporated by reference herein, Cardamone discloses the sequence of different target states that change over time.

Cardamone discloses that the control and communication computer has a control algorithm to control the motor drive system as a function of sensory data, and that detects various shocks to up-stream or down-stream fluid-handling. Ex. 1005, ¶¶ 0009, 0035-0036 (“if a “Pump Hitting” curve is recognized in the sensory data, computer 410 will attempt to send a warning to data server 134,”).

A POSITA would understand from Cardamone the sequence of different target states that change over time are determined with steps for mitigating shocks to up-stream or down-stream fluid-handling device. Ex. 1002, ¶ 64.

As such, Claim 2 is anticipated by Cardamone or would be obvious to a POSITA in view of Cardamone.

#### 4. Claim 4

Cardamone discloses Claim 1 for the reasons discussed above and incorporated herein.

- b. **[4] The system of claim 1, wherein: at least some of the sequence of different target states that change over time are determined by the first computer system in response to a rate of change in the first fluid property, wherein the first fluid property corresponds to a level of the first fluid in the first tank.**

Cardamone discloses the determining of different target states of a given one of the fluid-handling devices over time. Ex. 1005, ¶¶ 0009, 0021, 0022, 0025, 0026, 0029, 0036. Cardamone discloses that the “control algorithm may control the motor drive system and/or pump as a function of sensory data.” Ex. 1005, ¶ 0009; *see also id.*, Claims 11 (“control computer is programmed to provide an output command as a function of one or more of said operating parameters from said sensor system”), 12 (“the output command is a motor drive command”), 13 (“the motor drive command is a function of a change in pressure sensed by said pump inlet pressure sensor”).

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. Ex. 1005, ¶ 0044. Application 131 allows 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.* Cardamone discloses that inlet pressure can be used to determine the depth, i.e. level, of oil remaining in the oil well. Ex. 1005, ¶ 0030. Cardamone discloses that the sequence of different target states that the change over time in response to a rate of change in the first fluid property, through its disclosure the motor drive command is a function of a change in pressure sensed by said pump inlet pressure sensor. Ex. 1005, Claim 13.

A POSITA would understand that changing target states over time as determined by the first computer system in response to a rate of change of a level of the first fluid in the first tank is provided by Cardamone in its disclosure of commanding the motor drive, where the motor drive command is a function of a change in pressure sensed by the pump inlet pressure sensor, which indicates the level of fluid in a tank. Ex. 1002, ¶ 66.

As such, Claim 4 is anticipated by Cardamone or would be obvious to a POSITA in view of Cardamone.

## **5. Claim 5**

Cardamone discloses Claim 1 for the reasons discussed above and incorporated herein.

- a. **[5] The system of claim 1, wherein: the server system is configured to interface with both a web browser on the client computing device and a special-purpose application executing on the client computing device to present the user interface indicating the first fluid property, wherein the first fluid property corresponds to a first fluid level.**

Cardamone discloses claim 5 of the '504 Patent. Cardamone discloses the server system is configured to interface with both a web browser on the client computing device through its disclosure that control and communication computer 126 also contains communication systems for interacting with data server 134 and GUI computer 130. Ex. 1005, ¶ 0021. Cardamone further discloses that the server system is configured to interface special-purpose application executing on the client computing device through its disclosure that Data server 134 includes web application 134 which provides an interface to remote management computer 138. Ex. 1005, ¶ 0021.

Cardamone discloses that the special-purpose application presents the user interface indicating a first fluid level through its disclosure that through interaction via web application 136, remote management computer 138 provides user 102 with

a user interface for reviewing sensory data and setting operational parameters of control and communication computer 126. Ex. 1005, ¶ 0021. Cardamone discloses that inlet pressure can be monitored to determine the depth, i.e. level, of oil remaining in the oil well. Ex. 1005, ¶ 0030.

A POSITA would readily understand that the server system is configured to interface with both a web browser on the client computing device and a special-purpose application executing on the client computing device to present the user interface indicating the first fluid property, wherein the first fluid property corresponds to a first fluid level is provided by Cardamone in its disclosure of the GUI computer 130, which contains a web browser and the web application 134 (special/purpose application) which provides an interface to remote management computer 138 to provide fluid properties, including inlet pressure, an indication of fluid level. Ex. 1002, ¶ 68.

As such, Claim 5 is anticipated by Cardamone or would be obvious to a POSITA in view of Cardamone.

## **6. Claim 6**

Cardamone discloses Claim 1 for the reasons discussed above and incorporated herein.

- a. The system of claim 1, wherein: the first computer system is configured to communicate with the server system via a cellular wireless connection.**

Cardamone discloses 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. 1005, ¶ 0027.

A POSITA would understand that the communicating with the server system via a cellular wireless connection is provided by Cardamone in its disclosure of the communication link including cellular data connections. Ex. 1002, ¶ 70.

As such, Claim 6 is anticipated by Cardamone or would be obvious to a POSITA in view of Cardamone.

## **7. Claim 7**

Cardamone discloses Claim 1 for the reasons discussed above and incorporated herein.

- a. The system of claim 1, wherein the first computer system is configured to translate a plurality of commands from the server system, including the command, from an input format to a plurality of different formats and protocols configured to effectuate changes in states of a plurality of different fluid-handling devices at the first fluid handling site.**

Cardamone discloses data server 134 connected to network 132 linked to control and communication computer 126 through one of a variety of communication link types, including hardwire connection, or internet connection via wire, wifi, satellite modem, and/or cellular data connections. Ex. 1005, ¶¶ 0024,

0027. Whereas, the pump drive unit 318 interfaces with control and communication computer 126 over digital interface bus 326. Ex. 1005, ¶ 0031; *see also* ¶¶ 0029-31 (describing Pump System 122). Bus 326 has multiple protocols implemented including DeviceNet, RS485, F-NET, Modbus, FireWire, CANopen, Ethernet IP, ProfiNet, and SERCOS. Ex. 1005, ¶ 0031. These protocols, which include but are not limited to internet or computer networking protocols, drive the fluid-handling device. Ex. 1005, ¶ 0007. And other similar protocols may also be used as alternatives, through either analog or digital signal transfer. Ex. 1005, ¶ 0030-31. Cardamone further discloses that the system is programmed to provide an output command as a function of one or more of said operating parameters from said sensor system. Ex. 1005, ¶ Claim 4.

Cardamone discloses a plurality of “known pumps” and references pipelines. Ex. 1005, ¶ 0041, 0049. A POSITA would readily understand that oil well sites include a plurality of below ground extraction pumps and above ground transportation (pipeline) related pumps at a fluid handling site. Ex. 1002, ¶ 74.

A POSITA would readily understand that Cardamone discloses the claimed translated plurality of commands from the server. Ex. 1002, ¶ 74.

As such, Claim 7 is anticipated by Cardamone or would be obvious to a POSITA in view of Cardamone.

## **8. Claim 8**

Cardamone discloses Claims 1 and 7 for the reasons discussed above and incorporated herein.

**a. [8] The system of claim 7, wherein translating the plurality of commands comprises steps for translating commands.**

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

A POSITA would readily understand that the claimed translation of protocols is required to permit the data interface and bus to operate and communicate with various types of devices using multiple different types of protocols. Ex. 1002, ¶ 75.

As such, Claim 8 is anticipated by Cardamone or would be obvious to a

POSITA in view of Cardamone.

**9. Claim 9**

Cardamone discloses Claims 1 and 7 for the reasons discussed above and incorporated herein.

- a. The system of claim 7, wherein the plurality of different formats and protocols comprise: modbus remote terminal unit protocol; and analog electrical signals**

Cardamone discloses plurality of different formats and protocols comprising Modbus remote terminal unit protocol through its disclosure that Bus 326 has multiple protocols implemented including *Modbus*. Ex, 1005, ¶ 0007. Cardamone further discloses the plurality of different formats and protocols comprising analog electrical signals through its disclosure that the data interface may be implemented using alternative protocols for either *analog* or digital signal transfer. Ex, 1005, ¶ 0030. A POSITA would understand from the disclosures that Cardamone discloses a Modbus protocol and analog signals. Ex. 1002, ¶ 76.

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

**10. Claim 10**

Cardamone discloses Claims 1 and 7 for the reasons discussed above and incorporated herein.

- a. [10] The system of claim 7, wherein at least some of the plurality of different fluid-handling devices comprise**

**proportional-integral-derivative controllers configured to drive respective fluid-handling devices to different target setpoints determined by the first computer system responsive to corresponding commands from the server system.**

Cardamone discloses the determining of different target states of a given one of the fluid-handling devices over time. Ex. 1005, ¶ 0009, 0021, 0022, 0025, 0026, 0029, 0036. Cardamone discloses that the “control algorithm may control the motor drive system and/or pump as a function of sensory data.” Ex. 1005, ¶ 0009; *see also id.*, Claims 11 (“control computer is programmed to provide an output command as a function of one or more of said operating parameters from said sensor system”), 12 (“the output command is a motor drive command”), 13 (“the motor drive command is a function of a change in pressure sensed by said pump inlet pressure sensor”).

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. Ex. 1005, ¶ 0044. Application 131 allows 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.*

Cardamone discloses that at least some of the plurality of different fluid-handling devices comprise proportional-integral-derivative (“PID”) controllers through its disclosure that a program on control computer 126 recognizes that the motor force vs. pump displacement data produces a curve similar to one of the error conditions shown in FIGS. 7 or 8, a descriptive warning may be flashed on GUI computer 130's display. Ex. 1005, ¶¶ 0036, 0043.

Cardamone discloses a plurality of “known pumps” and references pipelines. Ex. 1005, ¶¶ 0041, 0049. A POSITA would readily understand that oil well sites include a plurality of different fluid handling devices including below-ground extraction pumps and above-ground transportation (pipeline) related pumps at a fluid handling site. Ex. 1002, ¶ 78.

A POSITA would further understand that a proportional–integral–derivative controller operates through continuously modulated feedback control. Ex. 1002, ¶ 78. A POSITA would further understand that driving motors based on sensor conditions of the fluid-handling devices as described in Cardamone, above, requires PID controllers. *Id.*

As such, Claim 10 is anticipated by Cardamone or would be obvious to a POSITA in view of Cardamone.

## 11. Claim 11

Cardamone discloses Claims 1 and 7 for the reasons discussed above and incorporated herein.

- a. **[11.1] The system of claim 7, wherein: the first computer system is coupled to at least some of the plurality of different fluid-handling devices via a bus; and**

Cardamone discloses the first computer system is coupled to at least some of the plurality of different fluid-handling devices via a bus through its disclosure that the motor drive unit 318 (fluid-handling device) interfaces with control and communication computer 126 (first computer system) over ***digital interface bus 326***. Ex. 1005, ¶ 0031 (emphasis added). Sensory data from lines 237 and 239 is relayed to computer 126 over ***bus 326***. *Id.*; Ex. 1002, ¶ 80. Thus, Cardamone discloses this claim limitation.

- b. **[11.2] the first computer system comprises means for controlling which fluid-handling devices are permitted to transmit signals on the bus at a given point in time.**

Cardamone discloses the first computer system comprises means for controlling which fluid-handling devices are permitted to transmit signals on the bus at a given point in time through its disclosure that motor drive unit 318 interfaces with control and communication computer 126 over digital interface bus 326. Sensory data from lines 237 and 239 is relayed to computer 126 over bus 326. Ex. 1005, ¶ 0031. A POSITA would readily understand that transmission of sensory

data is permitted at a given point in time sensory data is required to be viewed or to operate fluid-handling devices. Ex. 1002, ¶ 81.

As such, Claim 11 is anticipated by Cardamone or would be obvious to a POSITA in view of Cardamone.

## **12. Claim 12**

Cardamone discloses Claims 1 and 7 for the reasons discussed above and incorporated herein.

- a. [12] The system of claim 7, wherein the plurality of different formats and protocols comprise three different protocols communicated over three different types of control busses to corresponding fluid handling devices among the plurality of different fluid-handling devices.**

Cardamone discloses the plurality of different formats and protocols comprise three different protocols communicated over three different types of control busses through its disclosure that bus 326 has multiple protocols implemented including DeviceNet, RS485, F-NET, Modbus, FireWire, CANopen, Ethernet IP, ProfiNet, and SERCOS. Ex. 1005, ¶ 0031. Cardamone disclosure that bus 326 is also used by computer 126 to relay drive commands to motor drive unit 318. Ex. 1005, ¶ 0031.

A POSITA would recognize from the disclosure that at least three different protocols are provided in Cardamone. Ex. 1002, ¶ 81. A POSITA would also understand that the three different protocols are transmitted on a bus specific to that protocol and that the specific bus corresponds to the fluid-handling device. Ex. 1002.

Cardamone discloses a plurality of “known pumps” and references pipelines. Ex. 1005, ¶¶ 0041, 0049. A POSITA would readily understand that oil well sites include a plurality of different fluid handling devices including below-ground extraction pumps and above-ground transportation (pipeline) related pumps at a fluid handling site. Ex. 1002, 81.

As such, Claim 12 is anticipated by Cardamone or would be obvious to a POSITA in view of Cardamone.

### **13. Claim 13**

Cardamone discloses Claims 1 and 7 for the reasons discussed above and incorporated herein.

- a. The system of claim 7, wherein the plurality of different formats and protocols comprise command code format, an on-off signal format, and an application-program interface format.**

Cardamone discloses the plurality of different formats and protocols comprise command code format, an on-off signal format, and an application-program interface format that the field bus interface may include DeviceNet, RS485, F-NET, Modbus, FireWire, CANopen, Ethernet IP, ProfiNet, SERCOS, 12-bit Analog IN, 16-bit Analog I/O, and/or other similar bus hardware and protocols. Ex. 1005, ¶ 0031.

A POSITA would readily recognize that the above formats and protocols include command code format, an on-off signal format, and an application-program interface format. Ex. 1002, ¶ 82.

As such, Claim 13 is anticipated by Cardamone or would be obvious to a POSITA in view of Cardamone.

#### **14. Claim 14**

Cardamone discloses Claims 1 and 7 for the reasons discussed above and incorporated herein.

- a. The system of claim 7, wherein the first computer system is configurable to operate in an automatic mode, a mixed automatic mode, and a manual mode.**

Cardamone discloses the first computer system is configurable to operate in an automatic mode, a mixed automatic mode, and a manual mode through its disclosure that control computer 126 may be programmed to *automatically* adjust the movement profile based upon predefined conditions, such as the operating regimes defined in FIGS. 7 and 8. Ex. 1005, ¶ 0045; *see also id.*, ¶¶ 0051-0052.

A POSITA would readily understand the automatic adjustment of the movement profile is operating in an automatic mode. Ex. 1002.

Cardamone also discloses that GUI computer 130 also provides user 101 with a mechanism for changing operational parameters of control and communication computer 126. *See, e.g.*, Ex. 1005, ¶ 0026.

A POSITA would readily understand that a user providing on-demand instructions is operating in a manual mode. Ex. 1002, ¶ 84.

The '504 Patent explains that in a mixed automatic mode “the user selects which devices are manually controlled while other devices are automatically controlled.” Ex. 1001, 10:23-28.

A POSITA would readily understand from Cardamone’s disclosure of both automatic and manual operation, that a user could direct Cardamone’s plurality of devices with some fluid handling devices in manual mode, and others in automatic mode. Ex. 1002, ¶ 84.

As such, Claim 14 is anticipated by Cardamone or would be obvious to a POSITA in view of Cardamone.

### **15. Claim 15**

Cardamone discloses Claims 1 and 7 for the reasons discussed above and incorporated herein.

- a. The system of claim 7, wherein translating the plurality of commands comprises steps for identifying protocols and control busses.**

Cardamone discloses data server 134 connected to network 132 linked to control and communication computer 126 through one of a variety of communication link types, including hardwire connection, or internet connection via wire, wifi, satellite modem, and/or cellular data connections. Ex. 1005, ¶¶ 0024, 0027. Whereas, the pump drive unit 318 interfaces with control and communication computer 126 over digital interface bus 326, which supports multiple protocols

implemented including DeviceNet, RS485, F-NET, Modbus, FireWire, CANopen, Ethernet IP, ProfiNet, and SERCOS. Ex. 1005, ¶ 0031; *see also id.*, ¶¶ 0029-31 (describing Pump System 122). These protocols, which include but are not limited to internet or computer networking protocols, drive the fluid-handling device. Ex. 1005, ¶ 0007. And other similar protocols may also be used as alternatives, through either analog or digital signal transfer. Ex. 1005, ¶¶ 0030-31.

A POSITA would readily understand that the claimed translation of protocols requires the system to identify protocols and control busses. Ex. 1002, ¶ 85.

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

## **16. Claim 16**

Cardamone discloses Claim 1 for the reasons discussed above and incorporated herein.

- a. The system of claim 1 wherein the first computing system is configured to receive and transmit data and commands via a remote terminal unit protocol wherein the data and commands comprise redundant bits.**

Cardamone discloses the first computing system is configured to receive and transmit data and commands via a remote terminal unit protocol through its disclosure the control and communication computer 126 can interface with fluid-handling devices via digital interface bus 326. Ex. 1005, ¶ 0031. Cardamone further

discloses that bus 326 uses Modbus protocol (Ex. 1005, ¶ 0031) which a POSITA would recognize is a remote terminal unit protocol. Ex. 1002, ¶ 86.

Cardamone further discloses that the data and commands transmitted via a remote terminal unit protocol comprises redundant bits through its disclosure that User 101 may select an option to view the current sensory data of pump control system 110, causing application 131 to request a data stream from control and communication computer 126. Ex. 1005, ¶ 0042.

A POSITA would further understand that redundant bits are extra binary bits added externally into the original data bit to prevent damage to the transmitted data and are also needed to recover the original data. Ex. 1002, ¶ 86. A POSITA would understand that in order to protect data transmissions described in Cardamone, redundant bits are needed. *Id.*

As such, Claim 16 is anticipated by Cardamone or would be obvious to a POSITA in view of Cardamone.

#### **17. Claim 20**

Cardamone discloses each and every limitation of claim 20, anticipating claim 20. Claim 20's preamble is non-limiting. Claim 20's limitation 20.2 is analogous to limitation 1.2, limitation 20.3 is analogous to limitation 1.2, limitation 20.4 is analogous to limitation 1.2, 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,

limitation 20.8 is analogous to limitation 1.8, limitation 20.9 is analogous to limitation 1.9, and limitation 20.10 is analogous to limitation 1.10. Each of Claim 20's limitations are disclosed by Cardamone for reasons provided above, and incorporated here. Claim 20 is anticipated by Cardamone.

**B. Ground 2: Kahn Anticipates Claims 1 and 17-20.**

Independent claims 1 and 20 and dependent claims 17-19 are anticipated by U.S. Patent No. 7,424,399 ("Kahn") under 35 U.S.C. § 102, or would be obvious to a POSITA in view of Kahn under 35 U.S.C. § 103.

**1. Claim 1**

**a. [1.1] A fluid processing system, comprising:**

To the extent that the Board finds that the preamble is limiting, Kahn discloses a "Distribution system" that "includes any system of fluid distribution . . . , which in the case of water distribution, currently commonly manifest themselves as contiguous systems of pipes and/or systems of reservoirs, channels, pipes and treatment plants." Ex. 1006, 4:12-17.

A POSITA would readily recognize that Kahn discloses a system. Ex. 1002, ¶ 88. Therefore, Kahn discloses a system.

**b. [1.2] a first computer system disposed at a first fluid handling site, wherein the first computer system is configured to: receive information comprising one or more properties of a first fluid from one or more sensors disposed at a first fluid tank itself disposed at the first fluid-handling site, the fluid-handling site comprising one**

**or more fluid-handling devices, the one or more fluid-handling devices comprising one or more of a first pump, a first filter, and a first valve; and**

Kahn discloses a system with Sensor unit 110 that includes multiple sensors (e.g., first sensor 111A and second sensor 111B) a communication unit that connects via a network to centralized data collection points. *See, e.g.*, Ex. 1006, 5:62-6:16, 9:37-43, 10:18-67, 13:46-52, 17:18-30, 18:40-19:2, 19:5-20:39, 22:12-20, 23:22-50, FIG. 1A, FIG. 3. A hallmark of the distribution system in Kahn is the ability to identify the location of and communicate with the system's individual sensor units. Ex. 1006, 4:12-25, 11:2-15; *see also id.*, 10:8-13; 23:51-62. Kahn discloses that the production sites are unique, disclosing separate control systems for designated location, i.e. fluid handling site. *See, e.g.*, Ex. 1006, 16:40-18:52. For example, Sensor unit 110 can be located at any desired point in a fluid distribution system. *See, e.g.*, Ex. 1006, 11:2-15.

Kahn discloses a first fluid tank disposed at the first fluid-handling site through its disclosure of distribution systems that include fluids in tanks, including reservoirs, wells, large pools, and water treatment plants. Ex. 1006, 1:46-50, 2:1, 4:12-32.

Kahn discloses that the fluid-handling site includes a first pump, a first filter, and a first valve. Ex. 1006, 8:6-7, 8:19-30; 10:62-67, 11:2-5, 11:18-13:58, 13:34-36, 15:50-16:5, 16:56, 20:64-67, 21:1, FIG. 1C-FIG. 1D., FIG. 1F, FIG. 1G.

A POSITA would readily understand that Kahn discloses receiving information comprising fluid properties from one or more sensors disposed at a first fluid-handling site, the fluid-handling site through its disclosure of a computer system that receives first fluid test data from sensors. Ex. 1002, ¶¶ 90-91.

A POSITA would also understand that Kahn comprising one or more fluid-handling devices comprising one or more of a first pump, a first filter, and a first valve through its disclosure valves, filters, and a pump. *Id.*

Finally, A POSITA would understand that the system disclosed in Kahn necessarily includes a tank through its disclosure of distribution systems that includes reservoirs, water treatment plants, and contain water, all of which includes tanks. *Id.* Thus Kahn discloses this claim element.

**c. [1.3] provide remote control of a first fluid-handling device of the one or more fluid-handling devices; and**

Kahn further discloses that sensor unit 110 includes communication equipment with actuators configured to manipulate fluid flow at respective fluid-handling facilities. *See, e.g.*, Ex. 1006, 8:19-21, 10:62-67; *see also id.*, 14:35-15:2, 15:62-16:32.

A POSITA would understand from Kahn's disclosure of remote communication devices that Kahn discloses a provide remote control of a first fluid-

handling device of the one or more fluid-handling devices. Ex. 1002, ¶ 92. Thus, Kahn discloses this claim element.

**d. [1.4] a server system wherein the server system has memory storing instructions that, when executed, effectuate operations comprising:**

Kahn discloses a data collection network with centralized data collection points. *See, e.g.*, Ex. 1006, 8:51-59, 9:53-58, 17:18-30, 18:48-52, 63-65, 19:5-23, 19:58-65, 23:27-31. Kahn discloses that the centralized data collection point is a server. Ex. 1006, 10:52-61, 23:27-31. Kahn discloses that servers are computers, i.e. include processors. Ex. 1006, 32:58-63. Kahn discloses that processing unit is a generic term meaning one or more processing units programmed at a software, firmware or hardware level, including, for example, ASIC (application specific integrated circuit). Ex. 1006, 4:49-53. Kahn discloses that the server system has memory storing instructions for its operation. Ex. 1006, 8:54-59, 33:4-14, 33:15-21.

A POSITA would understand from the above disclosure of a central communication device, e.g., a server that Kahn discloses a server system wherein the server system has memory storing instructions. Ex. 1002, ¶ 94. Thus, Kahn discloses this claim element.

**e. [1.5] receiving, with the server system, from the first computer system, via a network, a first fluid property of**

**the one or more properties associated with the first fluid sensed by a first sensor of the one or more sensors;**

Kahn discloses a data collection network with centralized data collection points. *See, e.g.*, Ex. 1006, 8:51-59, 9:53-58, 17:18-30, 18:48-52, 63-65, 19:5-23, 19:58-65, 23:27-31.

Kahn discloses that the centralized data collection points receive sensor information via a network from a facility interface module, Sensor unit 110. *See, e.g.*, Ex. 1006, 5:62-6:2, 9:37-43, 10:18-67, 13:46-52, 17:18-30, 18:40-19:2, 19:5-20:39, 22:12-20, 23:22-50, FIG. 1A, FIG. 3.

Kahn discloses that its sensors may detect any measurable fluid property including but not limited to physical properties (e.g., temperature), chemical properties (e.g., presence of organic and/or inorganic chemical species), biological properties (e.g., presence of cryptosporidium, ecoli, etc.) and radiological properties (e.g., presence of radium, tritium, etc.). Ex. 1006, 25:26-34; *see also* Ex. 1006, 5:62-6:14, 20:10-13, FIG. 6.

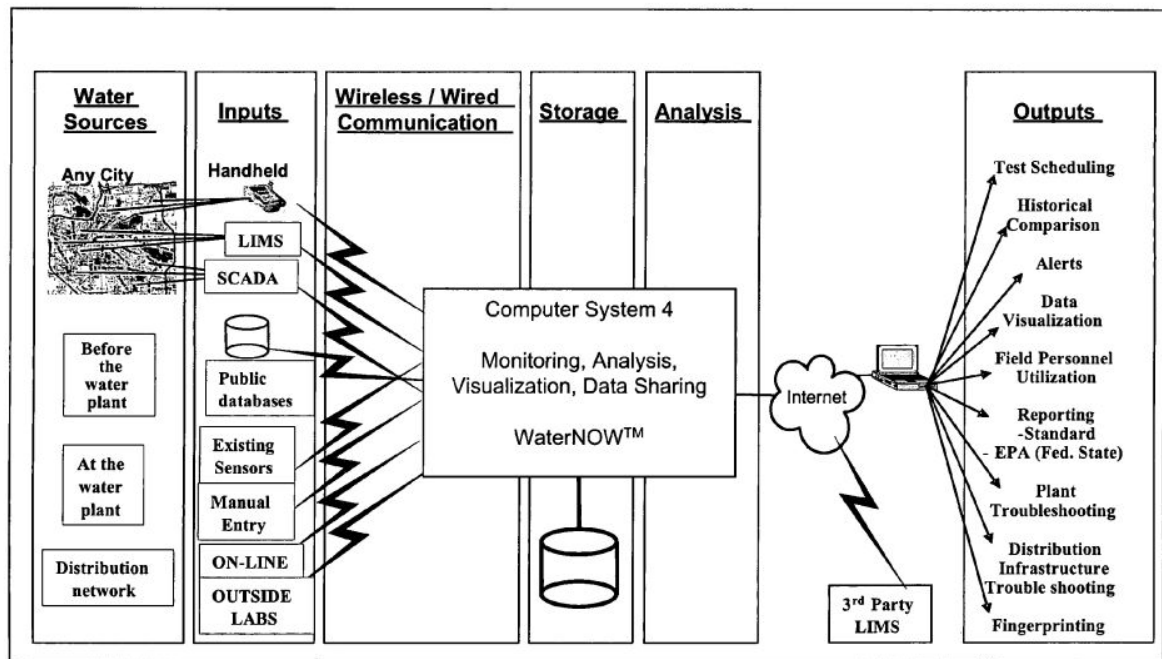


FIG. 6

A POSITA would understand from the above disclosure and figure that Kahn discloses receiving, with the server system, from the first computer system, via a network, a first fluid property of the one or more properties associated with the first fluid sensed by a first sensor of the one or more sensors. Ex. 1002, ¶ 95. Thus, Kahn discloses this claim element.

**f. [1.6] obtaining, with the server system, credentials from a first client computing device;**

Kahn discloses that any suitable technique can be used to verify that the identity of a present user is an authorized user of the device. Ex. 1006, 25:1-2; 28:35-37 (“After the user has “logged in” to the service by inputting a username and

password in a conventional manner”). Kahn further discloses that an authorized Account A (first user 5 a) can be authorized by a first entity. Ex. 1006, 25:48-51. Finally, Kahn discloses that an authorized Account B (second user 5 b) second user can be authorized by a second entity. Ex. 1006, 25:55-58.

A POSITA would understand from Kahn’s disclosure of authenticated accounts and suitable techniques for verification of the identity of present users as authorized users that Kahn discloses that credentials can be obtained from a first client computer. Ex. 1002, ¶ 97. This Kahn discloses this claim element.

**g. [1.7] determining, with the server system, based on the credentials, that a user of the first client computing device is authorized to interact with the first fluid handling site, wherein the server system hosts data about other fluid handling sites the user is not authorized to interact;**

Kahn discloses determining, with the server system, based on the credentials, that a user of the first client computing device is authorized to interact with the first fluid handling site through its disclosure of that an authorized Account A (first user 5a) can be authorized by a first entity. *See, e.g.*, Ex. 1006, 25:48-51. Finally, Kahn discloses that an authorized Account B (second user 5 b) second user can be authorized by a second entity. *See, e.g.*, Ex. 1006, 25:55-58.

Kahn discloses that server system hosts data about other fluid handling sites the user is not authorized to interact through its disclosure that only fluid test measurements which the user is authorized to see are displayed. *See, e.g.*, Ex. 1006,

28:43-45, 25:48-26:67, *see also* Ex. 1006, 2:50-60, 19:58-65, 21:50-22:44, 22:62-23:50, 24:44-25:2, 25:5-12, 27:39-28:7.

A POSITA would recognize that Kahn discloses determining, with the server system, based on the credentials, that a user of the first client computing device is authorized to interact with the first fluid handling site from its disclosure of multiple-user accounts which only permits access to certain aspects of test data and the computer system. Ex. 1002, ¶ 97.

A POSITA would further understand that the server system hosts data about other fluid handling sites the user is not authorized to interact. Ex. 1002, ¶ 97. Thus, Kahn discloses this claim element.

**h. [1.8] after the determination, providing, with the server system, via the network, information by which a first client computing device presents a user interface indicating the first fluid property, the first client computing device being remote from the server system and the first computer system;**

Kahn discloses a system that includes a remote computing system with a processor displaying a graphical user interface (GUI) showing data from the system's sensors. Ex. 1006, Abstract, 1:28-36, 2:50-3:2, 25:5-25, 25:48-26:19, 28:8-25, 29:5-37. Kahn discloses that Sensor unit 110 connects via a network to centralized data collection points. *See, e.g.*, Ex. 1006, 5:62-6:2, 9:37-43, 10:18-67, 13:46-52, 17:18-30, 18:40-19:2, 19:5-20:39, 22:12-20, 23:22-50, FIG. 1A, FIG. 3.

Kahn discloses that the centralized data collection points are a server. Ex. 1006, 10:54-56, 23:29-30. Kahn discloses that users log into the system on respective user computing devices. *See, e.g.*, Ex. 1006, 2:50-45, 25:5-12, 28:35-37, 30:45-49. Kahn discloses a variety of users and entities having different levels of authorized access. Ex. 1006, 25:48-26:67, *see also id.*, 2:50-60, 19:58-65, 21:50-22:44, 22:62-23:50, 24:44-25:2, 25:5-12, 27:39-28:7.

Kahn further discloses that sensor unit 110 includes communication equipment with actuators configured to manipulate fluid flow at respective fluid-handling facilities, to facilitate the measurement of data requested through the graphical user interface. *See, e.g.*, Ex. 1006, 10:62-67; *see also id.*, 14:35-15:2, 15:62-16:32.

Kahn discloses that its sensors may detect any measurable fluid property including but not limited to physical properties (e.g., temperature), chemical properties (e.g., presence of organic and/or inorganic chemical species), biological properties (e.g., presence of cryptosporidium, ecoli, etc.) and radiological properties (e.g., presence of radium, tritium, etc.). Ex. 1006, 25:26-34; *see also id.*, 5:62-6:14, 20:10-13. The sensor outputs are presented to the user through the GUI on the remote user's computer. Ex. 1006, 2:50-54, 2:61-65, 25:5-12, 26:3-7, Claim 36, FIG. 5, FIG. 6.

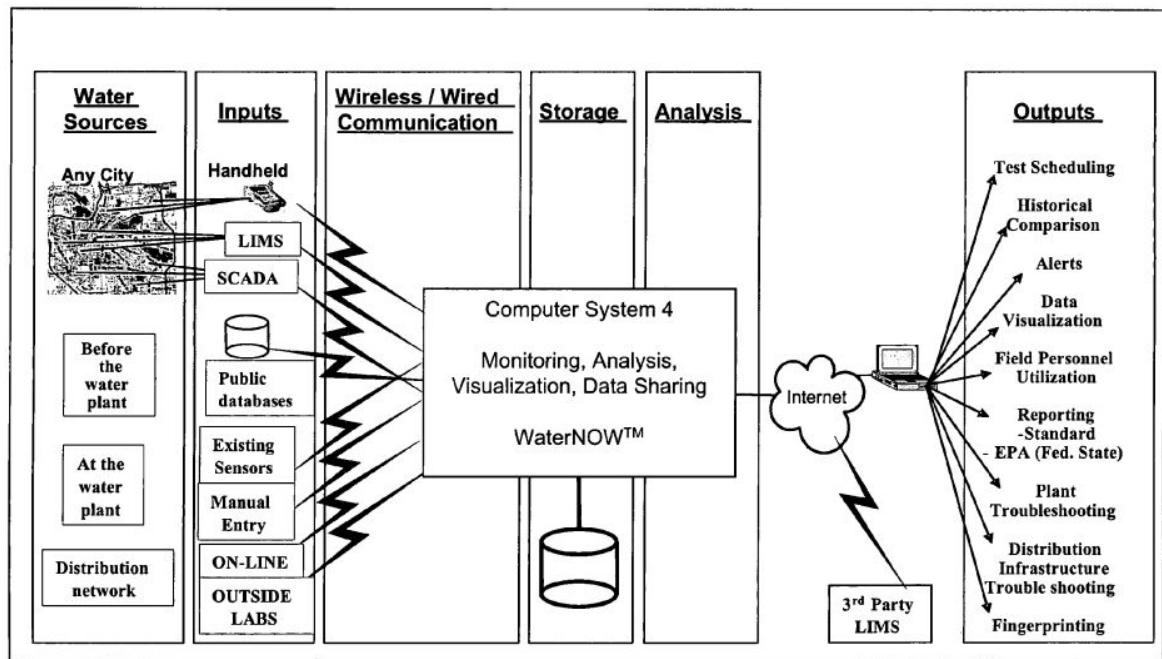


FIG. 6

A POSITA would recognize Kahn discloses a providing, a user interface indicating the first fluid property, the first client computing device being remote from the server system and the first computer system through its disclosure of a graphical user interface for monitoring fluid quality. Ex. 1002, ¶ 98. Thus, Kahn discloses this claim element.

- i. [1.9] receiving, with the server system, from the first client computing device, a first command to change a state of the first fluid-handling device; and

Kahn discloses a facility interface module, Sensor unit 110, including a processor that connects via a network to centralized data collection points. *See, e.g.,*

Ex. 1006, 5:62-6:2, 9:37-43, 10:18-67, 13:46-52, 17:18-30, 18:40-19:2, 19:5-20:39, 22:12-20, 23:22-50, FIG. 1A, FIG. 3.

Kahn further discloses that sensor unit 110 includes communication equipment with actuators configured to manipulate fluid flow at respective fluid-handling facilities. *See, e.g.*, Ex. 1006, 8:3-11, 8:21-24, 10:62-67; *see also* Ex. 1006, 14:35-15:2, 15:62-16:32, 34:7-12.

A POSITA would recognize from the above disclosure that Kahn discloses receiving, with the server system, from the first client computing device, a first command to change a state of the first fluid-handling device where the command to changes a state of the fluid-handling devices is the recalibration solution. Ex. 1002, ¶ 99. Thus, Kahn discloses this claim element.

**j. [1.10] causing, with the server system, the first computer system disposed at the first fluid handling site to effectuate the command by changing the state of the first fluid-handling device to a sequence of different target states that change over time.**

Kahn discloses a facility interface module, Sensor unit 110, including a processor that connects via a network to centralized data collection points. *See, e.g.*, Ex. 1006, 5:62-6:2, 9:37-43, 10:18-67, 13:46-52, 17:18-30, 18:40-19:2, 19:5-20:39, 22:12-20, 23:22-50, FIG. 1A, FIG. 3.

Kahn further discloses that sensor unit 110 includes communication equipment with actuators configured to manipulate fluid flow at respective fluid-

handling facilities. *See, e.g.*, Ex. 1006, 8:3-11, 8:21-24, 10:62-67; *see also* Ex. 1006, 14:35-15:2, 15:62-16:32, 34:7-12.

A POSITA would recognize from Kahn's disclosure of changing the fluid and injecting by pumps that Kahn discloses receiving, with the server system, from the first client computing device, a first command to change a state of the first fluid-handling device. Ex. 1002, ¶ 100. Thus, Kahn discloses this claim element.

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

## 2. Claim 17

- a. **[17.1] The system of claim 1, wherein the system further comprises: a plurality of fluids, the plurality of fluids comprising a second fluid;**

Kahn discloses that the system measures various aspects of *water or other fluids and fluids that tend to indicate the usefulness of or danger posed by a fluid*, where either the other fluids or fluids that tend to indicate the usefulness of or danger posed by a fluid are the second fluid. Ex. 1006, 3:63-65, 5:1-3, 17:67-18:2 ("other fluids, such as natural gas").

A POSITA would readily understand that Kahn discloses a plurality of fluids comprising a second fluid. Ex. 1002, ¶ 101. Thus, Kahn discloses this claim element.

- b. [17.2] a plurality of computer systems disposed at a plurality of fluid-handling sites, the plurality of computer systems comprising a second computer system;**

Kahn discloses the plurality of computer systems comprising a second computer system through its disclosure that the software components and/or functionality may be located on a single computer or *distributed across multiple computers* depending upon the situation at hand. Ex. 1006, 33:40-43. Additionally, Kahn discloses using a graphical computer interface at a *second computer* operated by the second user. Ex. 1006, 25:48-26:2, Claim 1.

A POSITA would readily understand that Kahn discloses a plurality of computer systems comprising a second computer. Ex. 1002, ¶ 102. Thus, Kahn discloses this claim element.

- c. [17.3] a plurality of fluid tanks, the plurality of fluid tanks comprising a second fluid tank; and**

Kahn discloses plurality of fluid tanks comprising a second fluid tank in its disclosure of a “[d]istribution system” includes any system of fluid distribution, including systems of pipes and/or systems of reservoirs, channels, pipes and treatment plants, but also can include less typical distribution channels such as container water, well water within a watershed or a water table, and even large bodies of water, oceans. Ex. 1006, 4:12:-25.

A POSITA would readily understand that Kahn discloses a plurality of fluid-handling devices including a second tank through its disclosure of multiple treatment

systems for each of multiple tanks. Ex. 1002, ¶ 103. Thus, Kahn discloses this claim element.

- d. **[17.4] a plurality of fluid-handling devices, the plurality of fluid-handling devices comprising a second fluid-handling device.**

A hallmark of the system in Kahn is the ability to identify the location of and communicate with the system's sensor units. Ex. 1006, 4:12-25.

Kahn expressly discloses a second, and indeed larger numbers of fluid handling devices for detecting and locating physical events in the distribution system. Ex. 1006, 10:8-13 (“Physical events, such as a breakage of a pipe might be detected through a pattern of sensor units 110 reporting readings that deviate from historic norms, for example, reduced water pressure compared to historic norms, thereby identifying the exact location or proximate location of the breakage.”); 23:51-62. Kahn discloses that sensors units be placed at the shut off valve located at the introduction of water supply into a house, business, industrial site or government site, for instance, and that they can be placed at each individual faucet or selected faucets where it is likely that the end user 23 might drink water or otherwise consume or cause fluids to be consumed. Ex. 1006, 11:2-15; *see also* Ex. 1006, FIG. 2, 16:67-17:7.

A POSITA would readily understand that Kahn discloses a plurality of fluid-handling devices, the plurality of fluid-handling devices comprising a second fluid-handling device. Ex. 1002, ¶ 104. Thus, Kahn discloses this claim element.

As such, Claim 17 is anticipated by Kahn or would be obvious to a POSITA in view of Kahn.

### 3. Claim 18

- a. **[18.1] The system of claim 17, wherein: the first computer system, the first fluid-handling device and the first fluid tank are disposed at a water source;**

Kahn discloses a facility interface module, Sensor unit 110, including a processor that connects via a network to centralized data collection points. *See, e.g.*, Ex. 1006, 5:62-6:2, 9:37-43, 10:18-67, 13:46-52, 17:18-30, 18:40-19:2, 19:5-20:39, 22:12-20, 23:22-50, FIG. 1A, FIG. 3. Kahn discloses a first fluid tank in a contiguous distribution system of pipes and/or systems of reservoirs, channels, pipes and treatment plants. Ex. 1006, 4:12-17; *see also* FIG. 6.

A POSITA would readily understand from the above disclosure in Kahn that the treatment plants have a first fluid tank disposed at a water source. Ex. 1002, ¶ 106. Thus, Kahn discloses this claim element.

- b. **[18.2] the second computer system, the second fluid-handling device, and the second fluid tank are disposed at a water receptacle; and**

Kahn discloses the second fluid-handling device, in a contiguous distribution

system of pipes and/or systems of reservoirs, channels, pipes and treatment plants.

Ex. 1006, 4:12-17.

A POSITA would readily understand from the distribution system disclosure in Kahn that the treatment plants have multiple tanks including a second fluid tank disposed at a water receptacle, i.e, pipes and/or systems of reservoir channels. Ex. 1002, ¶ 107. Thus, Kahn discloses this claim element.

**c. [18.3] each of the first fluid and the second fluid comprises water.**

Kahn discloses the first fluid and the second fluid comprises water through its disclosure of *container water, well water within a watershed or a water table, and even large bodies of water, oceans, rivers, streams and/or tributaries*. Ex. 1006, 4:18-20. A POSITA would readily understand from the above disclosure in Kahn that the first and second fluids comprise water. Ex. 1002, ¶ 108. Thus, Kahn discloses this claim element.

As such, Claim 18 is anticipated by Kahn or would be obvious to a POSITA in view of Kahn.

**4. Claim 19**

**a. [19.1] The system of claim 18, wherein: the plurality of fluids further comprising a third fluid;**

Kahn discloses the plurality of fluids further comprising a third fluid through its disclosure of *water or other fluids and fluids that tend to indicate the usefulness*

*of or danger posed by a fluid*, where either the other fluids or fluids that tend to indicate the usefulness of or danger posed by a fluid are the second fluid. Ex. 1006, 3:63-65, 5:1-3, 17:67-18:2 (“other fluids, such as natural gas”).

A POSITA would readily understand that Kahn discloses a plurality of fluids comprising a third fluid through its disclosure of measurements of water and other fluids. Ex. 1002, ¶ 109. Thus, Kahn discloses this claim element.

**b. [19.2] the plurality of computer systems further comprises a third computer system; and**

Kahn discloses the plurality of computer systems further comprises a third computer through its disclosure that the software components and/or functionality may be located on a single computer or *distributed across multiple computers* depending upon the situation. Ex. 1006, 33:40-42.

Kahn expressly discloses a second, and indeed larger numbers of fluid handling devices for detecting and locating physical events in the distribution system. Ex. 1006, 10:8-13 (“Physical events, such as a breakage of a pipe might be detected through a pattern of sensor units 110 reporting readings that deviate from historic norms, for example, reduced water pressure compared to historic norms, thereby identifying the exact location or proximate location of the breakage.”); 23:51-62. Kahn discloses that Sensor unit 110 is a computer because it includes a processor that connects via a network to centralized data collection points. *See, e.g.,*

Ex. 1006, 5:62-6:2, 9:37-43, 10:18-67, 13:46-52, 17:18-30, 18:40-19:2, 19:5-20:39, 22:12-20, 23:22-50, FIG. 1A, FIG. 3.

A POSITA would readily understand that Kahn discloses a plurality of computer systems comprising a third computer from its disclosure of multiple computers. Ex. 1002, ¶ 110. Thus, Kahn discloses this claim element.

- c. **[19.3] the plurality of fluid-handling devices further comprises a third fluid-handling device comprising a process filter, wherein the third fluid-handling device is disposed down-stream of a fourth fluid-handling device and upstream of a fifth fluid handling device, receives from the fourth fluid-handling device the third-fluid, and is configurable to provide a fourth fluid to the fifth fluid-handling device.**

Kahn discloses the plurality of fluid-handling devices further comprises a third fluid-handling device comprising a process filter through its disclosure that water treatment devices (e.g. filters) deployed among the system's valves and pump. Ex. 1006, 8:6-7, 8:19-30; 10:62-67, 11:2-5, 11:18-13:58, 13:34-36, 15:50-16:5, 16:56, 20:64-67, 21:1-2, FIG. 1C-FIG. 1D., FIG. 1F, FIG. 1G.

Kahn discloses that the third fluid-handling device is disposed down-stream of a fourth fluid-handling device and upstream of a fifth fluid handling device, Kahn discloses that the fourth fluid-handling device receives the third-fluid through its disclosure of a first, intake sensor 114C is configured to be exposed to fluid that enters the filter unit 114 (pre-filtering fluid, or more generally, pre-treating fluid) and the second, output sensor (post-filtering fluid) 114D configured to be exposed to

fluid filtered by the filter 114B (post-filtering fluid, or more generally, post-treating fluid). Ex. 1006, 11:22-27.

Kahn discloses that the third fluid handling device is configurable to provide a fourth fluid to the fifth fluid-handling device through its disclosure that a third sensor unit 114F configured to be exposed to the fluid that enters the filter housing 114A can be employed, wherein the third sensor 114F is coupled to the processing unit 112A. Ex. 1006, 12:58-61.

Finally, Kahn discloses a fluid control device such as a valve 15A is located on the input side of a sensor unit 110. Ex. 1006, FIG. 1D, 8:19-21, 15:50-53.

A POSITA would understand that Kahn discloses a third fluid-handling device comprising a process filter, wherein the third fluid-handling device is disposed down-stream of a fourth fluid-handling device and upstream of a fifth fluid handling device, receives from the fourth fluid-handling device the third-fluid, and is configurable to provide a fourth fluid to the fifth fluid-handling device from its disclosure of multiple individual sensors and values in the disclosed system. Ex. 1002, ¶ 111. Thus, Kahn discloses this claim element.

As such, Claim 19 is anticipated by Kahn or would be obvious to a POSITA in view of Kahn.

## 5. Claim 20

Kahn discloses each and every limitation of claim 20, anticipating claim 20. Claim 20's preamble is non-limiting. Claim 20's limitation 20.2 is analogous to limitation 1.2, limitation 20.3 is analogous to limitation 1.2, limitation 20.4 is analogous to limitation 1.2, 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, limitation 20.8 is analogous to limitation 1.8, limitation 20.9 is analogous to limitation 1.9, and limitation 20.10 is analogous to limitation 1.10. Each of Claim 20's limitations are disclosed by Kahn for reasons provided above, and incorporated here. Claim 20 is anticipated by Kahn.

### C. Ground 3: Cardamone or Kahn In View of SCADA Renders Claims 2, 8, and 13 Obvious

A POSITA would be motivated to combine Cardamone or Kahn and SCADA. Ex. 1002, \_\_\_\_\_. *See Allergan, Inc. v. Sandoz, Inc.*, 726 F.3d 1286, 1292 (Fed. Cir. 2013); *Alza Corp. v. Mylan Labs., Inc.*, 464 F.3d 1286, 1294 (Fed. Cir. 2006) (motivation to combine may be implicitly stated in the prior art and supported by testimony of an expert witness regarding knowledge of a POSITA). As Dr. Wooley explains in his declaration, combining Cardamone or Kahn and SCADA would have been obvious to try because each reference describes similar systems for remote monitoring and control of fluid handling facilities. Ex. 1002, ¶ 113. A POSITA would have referred to Cardamone for its description of a general fluid extraction and

distribution system. Ex. 1002, \_\_\_\_\_. A POSITA would have referred to Kahn for its description of a general fluid distribution system with multiple users and facilities with designated levels of secure access. Ex. 1002, \_\_\_\_\_. A POSITA would have referred to SCADA for its description of a specific remote monitoring and control systems used in industry. Ex. 1002, \_\_\_\_\_.

Combining Cardamone or Kahn and SCADA would lead to predictable results of users of the systems and methods of Cardamone or Kahn, having predetermined levels of access to view data or control designated systems. Ex. 1002, \_\_\_\_\_. A POSITA would not have difficulty combining Cardamone or Kahn and SCADA, because Cardamone or Kahn and SCADA do not describe alternative systems or methods, but rather the disclosures of Kahn and SCADA merely provides additional detail about aspects of the described systems, rather than a different approach to solving problems in the underlying technology. Ex. 1002, \_\_\_\_\_. For the reasons stated below, claims 2, 8, 13, and 14 of the '504 Patent are rendered obvious under 35 U.S.C. § 103 by Cardamone or Kahn in view of SCADA.

### **1. Claim 2**

Cardamone and Kahn discloses Claim 2 for the reasons discussed above and incorporated herein.

- a. **The system of claim 2, wherein: the sequence of different target states that change over time are configured to ramp up or down a speed of the first fluid-handling device.**

Cardamone or Kahn in view of SCADA renders claim 2 obvious. Cardamone discloses Claim 2 for the reasons discussed above, and incorporated herein.

SCADA discloses that “the signal would be more likely to act as the remote set point of a PID (proportional/integral/derivative) controller, and the output from the controller would control a valve, a louver, a machine speed, or any number of parameters that could be described by an analog value between 0 and 100 percent...the pulse control method...allows a stepper motor to be incremented or decremented by a specified number of steps. . . . Many end devices, such as sensors and actuators, are equipped with serial output and input capability.” Ex. 1007, at 100-101.

A POSITA would readily recognize that the recited controlling of machine speed by the controller and the recited using the pulse control method to a stepper motor to be incremented or decremented by a specified number of steps from the disclosure of SCADA is the sequence of different target states that change over time configured to ramp up or down a speed of the first fluid-handling device. Ex. 1002, ¶ 116.

A POSITA would recognize that the incrementing or decrementing of the stepper motor is ramping up or down of speed, i.e. a target state, of the first fluid-handling device. Ex. 1002, ¶ 114.

As described above, and incorporated by reference herein, a POSITA would be motivated to combine the disclosures of Cardamone and Kahn and SCADA for Claim 2. A POSITA would recognize that SCADA provides specific details of fluid processing systems and remote control of fluid handing devices of Cardamone and Kahn to process instrumentation, various communication methods, and computer applications. Ex. 1002, ¶ 115.

Thus, SCADA in combination with Cardamone or Kahn renders obvious the sequence of different target states that change over time are configured to ramp up or down a speed of the first fluid-handling device recited in the '504 Patent. Ex. 1002, ¶¶ 114-15.

## **2. Claim 8**

Cardamone and Kahn disclose Claim 1, and Cardamone discloses Claim 7, for the reasons discussed above and incorporated herein.

- a. [8] The system of claim 7, wherein translating the plurality of commands comprises steps for translating commands.**

Cardamone or Kahn in view of SCADA renders claim 8 obvious. Cardamone discloses Claim 8 for the reasons discussed above, and incorporated herein.

SCADA also discloses “there are several languages that can be used between field instruments and RTUs.” Ex. 1007, at 71 (describing physical wire communication). SCADA further discloses translators “called transducers in the process control industry...[that] change the language from electrical current (I) to air pressure (P).” Ex. 1007, at 72-73.

A POSITA would understand that the use of different protocols by the protocol driver requires that the protocols be translated (i.e., from electrical signals to control signals) and that the translated instructions include the determined plurality of different target states as claimed in the ‘504 Patent. Ex. 1002, ¶ 117. Thus, SCADA discloses this claim limitation.

As described above, and incorporated by reference herein, a POSITA would be motivated to combine the disclosures of Cardamone and Kahn and SCADA for Claim 8. A POSITA would recognize that SCADA provides specific details of fluid processing systems and remote control of fluid handing devices of Cardamone and Kahn to process instrumentation, various communication methods, and computer applications. Ex. 1002, ¶ 118.

Thus, SCADA in combination with Cardamone or Kahn renders obvious the steps for translating commands recited in the ’504 Patent. *Id.*

### **3. Claim 13**

Cardamone and Kahn disclose Claim 1, and Cardamone discloses Claim 7, for the reasons discussed above and incorporated herein.

- a. **The system of claim 7, wherein the plurality of different formats and protocols comprise command code format, an on-off signal format, and an application-program interface format.**

SCADA discloses that applications programs, operating on other computers and connected to the MTU, provide a form of supervisory control over SCADA. SCADA, 4th ed., at 14. SCADA further discloses RS232 as well as analog and digital signals comprising command code and an on-off signal format. *Id.* at 91.

A POSITA would readily recognize that the recited the plurality of different formats and protocols comprise command code format, an on-off signal format, and an application-program interface format are disclosed by SCADA in its disclosure of the pulse control method...allows a stepper motor to be incremented or decremented by a specified number of steps which is an on-off signal format. Ex. 1002, ¶ 119.

As described above, and incorporated by reference herein, a POSITA would be motivated to combine the disclosures of Cardamone and Kahn and SCADA for Claim 13. A POSITA would recognize that SCADA provides specific details of fluid processing systems and remote control of fluid handing devices of Cardamone and

Kahn to process instrumentation, various communication methods, and computer applications. Ex. 1002, ¶ 119.

Thus, SCADA in combination with Cardamone or Kahn renders obvious the plurality of different formats and protocols comprise command code format, an on-off signal format, and an application-program interface format recited in the '504 Patent. Ex. 1002, ¶ 119.

#### **D. The Board Should Not Discretionarily Deny Institution**

##### **1. 35 U.S.C. §314(a) Analysis**

Petitioner hereby stipulates that, if IPR of the '504 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 MEMO. 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. 1004, ¶¶ 31-34 (summarizing prosecution history); Ex. 1001, Cover. The references are also not cumulative of the prosecution prior art, at least because they explicitly teach “translating the plurality of commands into a plurality of translated commands” which applicants argued was not present in the examined art, 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.

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**U.S. PATENT NO. 11,726,504 – LISTING OF CHALLENGED CLAIMS**

| <b><u>CLAIM NO.</u></b> | <b><u>CLAIM ELEMENTS</u></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Claim 1                 | <p>[1.1] A fluid processing system, comprising: a first computer system disposed at a first fluid handling site,</p> <p>[1.2] wherein the first computer system is configured to: receive information comprising one or more properties of a first fluid from one or more sensors disposed at a first fluid tank itself disposed at the first fluid-handling site,</p> <p>[1.3] the fluid-handling site comprising one or more fluid-handling devices, the one or more fluid-handling devices comprising one or more of a first pump, a first filter, and a first valve; and</p> <p>[1.4] provide remote control of a first fluid-handling device of the one or more fluid-handling devices; and</p> <p>[1.5] a server system wherein the server system has memory storing instructions that, when executed, effectuate operations comprising:</p> <p>[1.6] receiving, with the server system, from the first computer system, via a network, a first fluid property of the one or more properties associated with the first fluid sensed by a first sensor of the one or more sensors;</p> <p>[1.7] obtaining, with the server system, credentials from a first client computing device;</p> <p>[1.8] determining, with the server system, based on the credentials, that a user of the first client computing device is authorized to interact with the first fluid handling site, wherein the server system hosts data about other fluid handling sites the user is not authorized to interact;</p> |

| <b><u>CLAIM NO.</u></b> | <b><u>CLAIM ELEMENTS</u></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                         | <p>[1.9] after the determination, providing, with the server system, via the network, information by which a first client computing device presents a user interface indicating the first fluid property, the first client computing device being remote from the server system and the first computer system;</p> <p>[1.10] receiving, with the server system, from the first client computing device, a first command to change a state of the first fluid-handling device; and</p> <p>[1.11] causing, with the server system, the first computer system disposed at the first fluid handling site to effectuate the command by changing the state of the first fluid-handling device to a sequence of different target states that change over time.</p> |
| Claim 2                 | [2] The system of claim 1, wherein: the sequence of different target states that change over time are configured to ramp up or down a speed of the first fluid-handling device.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Claim 3                 | [3] The system of claim 1, wherein: the sequence of different target states that change over time are determined with steps for mitigating shocks to upstream or down-stream fluid-handling devices relative to the first fluid-handling device.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Claim 4                 | [4] The system of claim 1, wherein: at least some of the sequence of different target states that change over time are determined by the first computer system in response to a rate of change in the first fluid property, wherein the first fluid property corresponds to a level of the first fluid in the first tank.                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Claim 5                 | [5] The system of claim 1, wherein: the server system is configured to interface with both a web browser on the client computing device and a special-purpose application executing on the client computing device to present the user interface indicating the first fluid property, wherein the first fluid property corresponds to a first fluid level.                                                                                                                                                                                                                                                                                                                                                                                                  |
| Claim 6                 | [6] The system of claim 1, wherein: the first computer system is configured to communicate with the server system via a cellular wireless connection.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

| <b><u>CLAIM NO.</u></b> | <b><u>CLAIM ELEMENTS</u></b>                                                                                                                                                                                                                                                                                                                                          |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Claim 7                 | [7] The system of claim 1, wherein the first computer system is configured to translate a plurality of commands from the server system, including the command, from an input format to a plurality of different formats and protocols configured to effectuate changes in states of a plurality of different fluid-handling devices at the first fluid handling site. |
| Claim 8                 | [8] The system of claim 7, wherein translating the plurality of commands comprises steps for translating commands.                                                                                                                                                                                                                                                    |
| Claim 9                 | [9] The system of claim 7, wherein the plurality of different formats and protocols comprise: modbus remote terminal unit protocol; and analog electrical signals.                                                                                                                                                                                                    |
| Claim 10                | [10] The system of claim 7, wherein at least some of the plurality of different fluid-handling devices comprise proportional-integral-derivative controllers configured to drive respective fluid-handling devices to different target setpoints determined by the first computer system responsive to corresponding commands from the server system.                 |
| Claim 11                | [11.1] The system of claim 7, wherein: the first computer system is coupled to at least some of the plurality of different fluid-handling devices via a bus; and<br><br>[11.2] the first computer system comprises means for controlling which fluid handling devices are permitted to transmit signals on the bus at a given point in time.                          |
| Claim 12                | [12] The system of claim 7, wherein the plurality of different formats and protocols comprise three different protocols communicated over three different types of control busses to corresponding fluid handling devices among the plurality of different fluid-handling devices.                                                                                    |
| Claim 13                | [13] The system of claim 7, wherein the plurality of different formats and protocols comprise command code format, an on-off signal format, and an application-program interface format.                                                                                                                                                                              |
| Claim 14                | [14] The system of claim 7, wherein the first computer system is configurable to operate in an automatic mode, a mixed automatic mode, and a manual mode.                                                                                                                                                                                                             |

| <b><u>CLAIM NO.</u></b> | <b><u>CLAIM ELEMENTS</u></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Claim 15                | [15] The system of claim 7, wherein translating the plurality of commands comprises steps for identifying protocols and control busses.                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Claim 16                | [16] The system of claim 1 wherein the first computing system is configured to receive and transmit data and commands via a remote terminal unit protocol wherein the data and commands comprise redundant bits.                                                                                                                                                                                                                                                                                                                                                              |
| Claim 17                | <p>[17.1] The system of claim 1, wherein the system further comprises: a plurality of fluids, the plurality of fluids comprising a second fluid;</p> <p>[17.2] a plurality of computer systems disposed at a plurality of fluid-handling sites, the plurality of computer systems comprising a second computer system;</p> <p>[17.3] a plurality of fluid tanks, the plurality of fluid tanks comprising a second fluid tank; and</p> <p>[17.4] a plurality of fluid-handling devices, the plurality of fluid-handling devices comprising a second fluid-handling device.</p> |
| Claim 18                | <p>[18.1] The system of claim 17, wherein: the first computer system, the first fluid-handling device and the first fluid tank are disposed at a water source;</p> <p>[18.2] the second computer system, the second fluid-handling device, and the second fluid tank are disposed at a water receptacle; and</p> <p>[18.3] each of the first fluid and the second fluid comprises water.</p>                                                                                                                                                                                  |
| Claim 19                | <p>[19.1] The system of claim 18, wherein: the plurality of fluids further comprising a third fluid;</p> <p>[19.2] the plurality of computer systems further comprises a third computer system; and</p>                                                                                                                                                                                                                                                                                                                                                                       |

| <u><b>CLAIM NO.</b></u> | <u><b>CLAIM ELEMENTS</b></u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                         | [19.3] the plurality of fluid-handling devices further comprises a third fluid-handling device comprising a process filter, wherein the third fluid-handling device is disposed downstream of a fourth fluid-handling device and upstream of a fifth fluid handling device, receives from the fourth fluid-handling device the third-fluid, and is configurable to provide a fourth fluid to the fifth fluid-handling device.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Claim 20                | <p>[20.1] A tangible, non-transitory, machine-readable medium storing instructions that, when executed by a computer processor, effectuate operations comprising:</p> <p>[20.2] measuring, with one or more sensors at a first fluid tank located at a first-fluid handling site, one or more properties associated with a first fluid;</p> <p>[20.3] receiving, with a first computer system disposed at a first fluid handling site, information associated with the one or more properties associated with the first fluid;</p> <p>[20.4] providing, with the first computer system, remote control of a first fluid-handling device of a plurality of fluid-handling devices, the first fluid-handling device comprising at least one of a first pump, a first filter, and a first valve;</p> <p>[20.5] receiving, with a server system, from the first computer system, via a network, a first fluid property of the one or more properties associated with the first fluid sensed by a first sensor of the one or more sensors;</p> <p>[20.6] obtaining, with the server system, credentials from a first client computing device;</p> <p>[20.7] determining, with the server system, based on the credentials, that a user of the first client computing device is authorized to interact with the first fluid handling site, wherein the server system hosts data about other fluid handling sites the user is not authorized to interact;</p> |

| <u><b>CLAIM NO.</b></u> | <u><b>CLAIM ELEMENTS</b></u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                         | <p>[20.8] after the determination, providing, with the server system, via the network, information by which a first client computing device presents a user interface indicating the first fluid property, the first client computing device being remote from the server system and the first computer system;</p> <p>[20.9] receiving, with the server system, from the first client computing device, a first command to change a state of the first fluid-handling device; and</p> <p>[20.10] causing, with the server system, the first computer system disposed at the first fluid handling site to effectuate the command by changing the state of the first fluid-handling device to a sequence of different target states that change over time.</p> |

**CERTIFICATION OF COMPLIANCE WITH TYPE-VOLUME LIMITS**

This Petition includes 12,991 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 /

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

**CERTIFICATE OF SERVICE**

Pursuant to 37 C.F.R. §§ 42.6(4) and 42.105, lead counsel for Petitioners hereby certifies that on April 15, 2024, copies of this Petition, Power of Attorney, and all supporting exhibits were sent via Federal Express to the correspondence address of record for the '504 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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