

Paper No. 1

IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL
BOARD

KLX ENERGY SERVICES LLC

PETITIONER

V.

SAFOCO, INC.

PATENT OWNER

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 9,890,609
UNDER 35 U.S.C. §§311-319 AND 37 C.F.R. § 42

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Table of Contents

I. Petitioner’s Mandatory Notices.....	1
A. Real Party in Interest (§42.8(b)(1))	1
B. Related Matters (§42.8(b)(2))	1
1. Patents and Applications.....	1
2. Related Litigation	1
3. Patent Office Proceedings	2
C. Lead and Backup Lead Counsel (§42.8(b)(3))	2
D. Service Information (§42.8(b)(4)).....	2
II. INTRODUCTION	2
III. CERTIFICATIONS AND GROUNDS.....	3
A. KLX May Contest the ‘609 Patent (37 C.F.R. § 42.104(a))	3
B. Identification of Claims Being Challenged (37 C.F.R. § 42.104(b)).....	4
C. Fee for <i>Inter Partes</i> Review (37 C.F.R. § 42.15(a))	4
D. Service on Patent Owner (37 C.F.R. § 42.105).....	5
IV. BACKGROUND TECHNOLOGY	5
A. Systems for Pressure Relief.....	5
B. Actuators.....	6
C. Valves	7
D. Control Systems	8
V. THE ‘609 PATENT	10
A. The ‘609 Patent Is Subject to pre-AIA.....	10

B.	Person of Ordinary Skill in the Art.....	11
C.	File History	12
VI.	THE BOARD SHOULD NOT DENY INSTITUTION UNDER 35 U.S.C. § 325(D) OR § 314(A)	12
A.	Discretionary Denial Pursuant to § 325(d) is Not Warranted.....	12
	(1)(i). The Same or Substantially the Same Prior Art was Not Previously Presented to the Office	13
	(1)(ii). The Same or Substantially the Same Arguments were Not Previously Presented to the Office.	13
	(2). The Examiner Erred in a Manner Material to the Patentability of the Challenged Claims.....	15
B.	Discretionary Denial Under 35 U.S.C. § 314 is Not Warranted.....	17
VII.	CLAIM CONSTRUCTION	20
VIII.	DETAILED EXPLANATION OF WHY THE ‘609 PATENT CLAIMS ARE UNPATENTABLE	21
A.	Ground 1: Tettleton Anticipates Claims 1, 4, 5, 8, 10.....	21
	1. Overview of Tettleton	21
	2. Tettleton Renders the Challenged Claims Anticipated.....	22
a.	POSITA Would Have Understood Tettleton to Anticipate Claim 1 of the ‘609 Patent	22
	i. Preamble of Claim 1: “A control system for controlling fluid flow through a flow line at a wellsite, the control system, comprising:”	23
	ii. “a fluid supply;”.....	23
	iii. “a first fluid line in fluid communication with the fluid supply;” ..	23
	iv. “a pump in fluid communication with the first fluid line and configured to pump fluid from the fluid supply to one or more wellheads through the first fluid line.”	24

- v. “a second fluid line in fluid communication with the first fluid line at a location downstream of the pump and configured to return fluid from the first fluid line back to the fluid supply or direct fluid from the first fluid line to a different reservoir;” 24
- vi. “a safety valve in-line with the second fluid line and movable into a closed position to close fluid flow through the second fluid line;” 26
- vii. “a valve actuator configured to actuate the safety valve from the closed position to an open position to open fluid flow through the second fluid line;” 27
- viii. “an electronic controller assembly programmed with a predetermined condition and configured to receive a signal from a transducer connected to a first fluid line, wherein the signal corresponds to a measured physical property;” 27
- ix. “a valve assembly in communication with the controller assembly; and” 28
- x. “a fluid drive assembly in communication with the controller assembly, wherein the controller assembly is operable to actuate the fluid drive assembly to supply fluid to the valve actuator to move the safety valve into a closed position, and wherein the controller assembly is operable to actuate the valve assembly in response to a comparison of the measured physical property to the predetermined condition to release the fluid from the valve actuator to move the safety valve into the open position and thereby open fluid flow through the second fluid line to return fluid in the first fluid line back to the fluid supply or direct fluid in the first fluid line to the different reservoir.” 30
- b. POSITA Would Have Understood Tettleton to Anticipate Claim 4 of the ‘609 Patent: “The system of claim 1, wherein the fluid drive assembly is a compressor and the fluid supplied to the valve actuator by the fluid drive assembly is a pneumatic fluid.” 31
- c. POSITA Would Have Understood Tettleton to Anticipate Claim 5 of the ‘609 Patent: “The system of claim 1, wherein the fluid drive assembly is a pump and the fluid supplied to the valve actuator by the fluid drive assembly is hydraulic fluid.” 32
- d. POSITA Would Have Understood Tettleton to Anticipate Claim 8 of

	the ‘609 Patent: “The system of claim 1 wherein the fluid supplied to the valve actuator by the fluid drive assembly is ambient air.”	32
e.	POSITA Would Have Understood Tettleton to Anticipate Claim 10 of the ‘609 Patent: “The system of claim 1, wherein the controller assembly is a programmable logic controller.”	32
B.	Ground 2: Claims 2, 3, 6, 7, 11, 12, 13, 14, 15, and 16 are Obvious under Tettleton in view of Cotham	33
1.	Overview of Cotham.....	33
2.	Tettleton in view of Cotham Renders the Challenged Claims Obvious.	34
a.	POSITA Would Have Understood Claim 2 of the ‘609 Patent to be obvious under Tettleton in view of Cotham: “The system of claim 1, further comprising a housing for supporting the controller assembly, the valve assembly, and the fluid drive assembly.”	34
b.	POSITA Would Have Understood Claim 3 to be Obvious under Tettleton in View of Cotham: “The system of claim 2, wherein the fluid supplied to the valve actuator by the fluid drive assembly is supplied from a reservoir disposed outside of the housing.”	35
c.	POSITA Would Have Understood Claim 6 of the ‘609 Patent to be Obvious under Tettleton in view of Cotham: “The system of claim 1, further comprising a power source for supplying power to the controller assembly, the valve assembly, and the fluid drive assembly.”	37
d.	POSITA Would Have Understood Claim 7 of the ‘609 Patent to be Obvious under Tettleton in view of Cotham: “The system of claim 1, further comprising a housing for supporting the fluid drive assembly, and a filter attached to the housing for filtering fluid entering the housing by the fluid drive assembly.”	37
e.	POSITA Would Have Understood Claim 11 of the ‘609 Patent to be Obvious under Tettleton in view of Cotham.....	39
i.	Preamble: “The method for controlling fluid flow through a flow line at a wellsite, the method comprising:”	39

ii. “providing a control system, comprising:”	39
iii. “a fluid supply;”	39
iv. “a first fluid line in fluid communication with the fluid supply;” ..	40
v. “a pump in fluid communication with the first fluid line and configured to pump fluid from the fluid supply to one or more wellheads through the first fluid line;”	40
vi. “a second fluid line in fluid communication with the first fluid line at a location downstream of the pump and configured to return fluid from the first fluid line back to the fluid supply or direct fluid from the first fluid line to a different reservoir.”	40
vii. “a safety valve in-line with the second fluid line;”	43
viii. “a valve actuator configured to actuate the safety valve;”	43
ix. “a housing;”	44
x. “an electronic controller assembly;”	44
xi. “a fluid drive assembly and a valve assembly;”	45
xii. “supplying fluid to the valve actuator using the fluid drive assembly to actuate the valve actuator to move the safety valve into a closed position;”	45
xiii. “maintaining the safety valve in the closed position to close fluid flow through the second fluid line;”	45
xiv. “monitoring a physical property in the first fluid line using the controller assembly;”	45
xv. “actuating the valve assembly using the controller assembly to release the fluid from the valve actuator to move the safety valve into an open position and thereby open fluid flow through the second fluid line based upon a comparison of the monitored physical property to a predetermined condition to return fluid from the first fluid line back to the fluid supply or direct fluid from the first fluid line to the different reservoir.”	46

- f. POSITA Would Have Understood Claim 12 to be obvious under Tettleton in view of Cotham: “The method of claim 11, wherein the fluid supplied to the valve actuator by the fluid drive assembly is a pneumatic fluid disposed external to the housing, and further comprising filtering the pneumatic fluid as it enters the housing by the fluid drive assembly.” 46**
- g. POSITA Would Have Understood Claim 13 of the ‘609 Patent to be Obvious Under Tettleton in View of Cotham: “The method of claim 11, wherein the fluid supplied to the valve actuator by the fluid drive assembly is a hydraulic fluid disposed in a reservoir within the housing that is in fluid communication with the fluid drive assembly;” 47**
- h. POSITA Would Have Understood Claim 14 of the ‘609 Patent to be Obvious Under Tettleton in View of Cotham: “The method of claim 11, further comprising measuring the physical property using a transducer configured to communicate a signal corresponding to the measured physical property to the controller assembly.” 48**
- i. POSITA Would Have Understood Claim 15 of the ‘609 Patent to be Obvious Under Tettleton in View of Cotham: “The method of claim 11, wherein the fluid supplied to the valve actuator by the fluid drive assembly is a pneumatic fluid, and wherein the fluid drive assembly is a compressor.” 49**
- j. POSITA Would Have Understood that Claim 16 of the ‘609 Patent to be Obvious under Tettleton in view of Cotham: “The method of claim 11, where in the fluid supplied to the valve actuator by the fluid drive assembly is a hydraulic fluid, and wherein the fluid drive assembly is a pump.” 49**
- C. Ground 3: Claim 9 is Obvious under Tettleton in view of Tubel.....50**

 - 1. Overview of Tubel.....50**
 - 2. Tettleton in view of Tubel Renders the Challenged Claims Obvious..51**
- a. POSITA Would Have Understood claim 9 of the ‘609 Patent to be Obvious under Tettleton in view of Tubel: “The system of claim 1, wherein the controller assembly is operable to communicate a signal corresponding to the measured physical property to a remote**

	computer system.”	51
D.	Ground 4: Claims 17 and 18 are Obvious under Tettleton in view of Cotham and Tubel	52
1.	Tettleton in view of Cotham and Tubel Renders the Challenged Claims Obvious.	52
a.	POSITA in the Art Would Have Understood that Claim 17 of the ‘609 Patent to be Obvious under Tettleton in view of Cotham and Tubel: “The method of claim 11, further comprising communicating a signal from the controller assembly to a remote computer system, wherein the signal corresponds to an operational characteristic of the safety valve.....	52
b.	POSITA in the Art Would Have Understood that Claim 18 of the ‘609 Patent to be Obvious under Tettleton in view of Cotham and Tubel: “The method of claim 11, further comprising actuating the safety valve by communicating a signal from a remote computer system to the controller assembly.”	53
IX.	POSITA WOULD HAVE BEEN MOTIVATED TO COMBINE THE AFOREMENTIONED REFERENCES	54
X.	NO SECONDARY CONSIDERATIONS EXIST	58
XI.	CONCLUSION	59
XII.	CLAIM APPENDIX.....	60

TABLE OF AUTHORITIES

Cases	Page(s)
<i>Advanced Bionics, LLC v. Med-El Elektromedizinische Gerate GMBH</i> , IPR2019-01469, Paper 6 (PTAB Feb. 13, 2020).....	13, 15, 17
<i>Amazon.com v M2M Sols</i> , IPR2020-00921, Paper 9 (PTAB Nov. 16, 2020).....	14
<i>Apple Inc. v. Fintiv, Inc.</i> , IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020).....	17, 18, 19
<i>Apple v. Qualcomm Inc.</i> , IPR2018-01315, Paper 7 (PTAB Jan. 18, 2019)	14
<i>Application of Rice</i> , 341 F.2d 309 (C.C.P.A. 1965)	36, 37, 38, 39
<i>Cisco Sys., Inc. v. Ramot at Tel Aviv Univ. Ltd.</i> , IPR2020-00122, Paper 15, Inst. Dec. (PTAB, May 15, 2020).....	18, 19
<i>In re Cortright</i> , 165 F.3d 1353, 49 U.S.P.Q.2d 1464 (Fed. Cir. 1999).....	31, 49
<i>Dow Chemical Co. v. Haliburton Oil Well Cementing Co.</i> , 324 U.S. 320 (1945).....	58, 59
<i>DyStar Textilfarben GMBH & Co. v. C.H. Patrick Co.</i> , 464 F.3d 1356 (Fed. Cir. 2006)	57
<i>In re GPAC</i> , 57 F.3d 1573 (Fed. Cir. 1995)	11, 58
<i>Intel Corp. v. PACT XPP SCHWEIZ AG</i> , 61 F.4th 1373 (Fed. Cir. 2023)	54, 56, 57
<i>Intex Recreation Corp. v. Team Worldwide Corp.</i> , IPR2018-00871, Paper 14 (PTAB Sept. 14, 2018).....	14
<i>KSR Inter. Co. v. Teeflex Inc.</i> , 550 U.S. 398 (2007).....	34, 51, 52, 55

<i>Mintz v. Dietz & Watson, Inc.</i> , 679 F.3d 1372 (Fed. Cir. 2012)	11
<i>Phillips v. AWH Corp.</i> , 415 F.3d 1303 (Fed. Cir. 2005)	20, 28, 35, 53
<i>Rambus Inc. v. Rea</i> , 731 F.3d 1248 (Fed. Cir. 2013)	58
<i>Safoco, Inc. v. KLX Energy Services, LLC</i> , Action No. 2:22-cv-00437-JRG-RSP (E.D. Tex.) (pending)	<i>passim</i>
<i>Thryv, Inc. v. Click-To-Call Techs., LP</i> , 140 S. Ct. 1367 (2020)	19
<i>Toro Co. v. Deere & Co.</i> , 355 F.3d 1313 (Fed. Cir. 2004)	26, 42
<i>Verdegall Bros. v. Union Oil Co. of California</i> , 814 F.2d 628 (Fed. Cir. 1987)	22
<i>VMware, Inc. v. Intell. Ventures I LLC</i> , IPR2020-00859, Paper 13, Inst. Dec. (PTAB Nov. 5, 2020)	18
<i>ZUP, LLC v. Nash Mfg., Inc.</i> , 896 F.3d 1365 (Fed. Cir. 2018)	54, 56

Statutes

35 U.S.C. § 102	22
35 U.S.C. § 103	15, 34, 51, 52
35 U.S.C. § 314	12, 17, 20
35 U.S.C. § 315	4
35 U.S.C. § 325	12, 17

Other Authorities

37 C.F.R. § 42.100(b)	20
37 C.F.R. § 42.104(a)	3

37 C.F.R. § 42.104(b)	4
37 C.F.R. § 42.105	5
37 C.F.R. § 42.15(a).....	4, 5
37 C.F.R. § 42.8(b)(1).....	1
37 C.F.R. § 42.8(b)(2).....	1
37 C.F.R. § 42.8(b)(3).....	2
37 C.F.R. § 42.8(b)(4).....	2
MPEP §§ 2159.01-.02	10-11
MPEP §§ 2141	11

Exhibit List

Exhibit#	Reference Name
1001	Complaint, <i>Safoco, Inc. v. KLX Energy Services, LLC.</i> , No. 2:22-cv-00437-JRG-RSP (E.D. Tex.)
1002	Affidavit of Process Server, <i>Safoco, Inc. v. KLX Energy Services, LLC.</i> , No. 2:22-cv-00437-JRG-RSP (E.D. Tex.)
1003	U.S. Patent No. 3,198,207
1004	U.S. Patent No. 1,151,661
1005	Russell W. Henke, Introduction to Fluid Power Circuits and Systems by R. Henke. Addison. (1970) (“Intro to Fluid Power Circuits and Systems”)
1006	U.S. Patent No. 4,920,811
1007	U.S. Patent No. 9,890,609 (“’609 Patent”)
1008	U.S. Patent No. 9,890,609 Continuity Data
1009	U.S. Patent Application No. 13/480,704 Continuity Data
1010	May 18, 2017 Non-Final Office Action
1011	U.S. Patent No. 9,890,609 Patent Prosecution History
1012	March 24, 2015 Final Office Action (‘453 Patent)
1013	June 18, 2015 Office Action Response
1014	Office Action Response Claim Amendments
1015	Parallel Proceeding Docket Control Order
1016	U.S. Patent Publication No. 2008/0078586 (“Tettleton”)
1017	Definition of the term “Valve”
1018	Definition of the term “Assembly”
1019	U.S. Patent No. 5,335,730 (“Cotham”)
1020	Definition of the term “External”

1021	Definition of term “Source”
1022	E.P. Patent No. 0183482A2
1023	U.S. Patent No. 5,597,042 (“Tubel”)
1024	Definition of the term “Operational”
1025	Definition of the term “Characteristic”
1026	Chevron Corporation, Instrumentation and Control Manual § 1700 (1999).
1027	Declaration of G. Stevick
1028	Safoco Interrog. Responses, <i>Safoco, Inc. v. KLX Energy Services, LLC</i> , Action No. 2:22-cv-00437-JRG-RSP, (E.D. Tex.)
1029	Hudson et al., A Brief History of Process System Management, Aecom. 1-8 (2021) (published by International Association of Hydrogen Safety at http://hysafe.info/uploads/papers/2021/146.pdf)
1030	OSHA Regulations: Part 1910
1031	Definition of “Or”

I. Petitioner's Mandatory Notices**A. Real Party in Interest (37 C.F.R. § 42.8(b)(1))**

The real party in interest of this petition pursuant to 37 C.F.R. § 42.8(b)(1) is KLX Energy Services LLC ("KLX" or "Petitioner") located at 3040 Post Oak Blvd., 15th Floor, Houston, Texas 77056.

B. Related Matters (37 C.F.R. § 42.8(b)(2))**1. Patents and Applications**

U.S. Patent No. 9,890,609 ("609 patent") is related to following issued patents or pending applications:

- CN 103097787A
- CN 104541019A
- CN 104541019B
- PCT Application No. PCT/US11/46137
- PCT Application No. PCT/US12/61313
- PCT Application No. PCT/US13/42095
- U.S. Patent No. 9,441,453 ("453 Patent")
- U.S. Patent No. 9,671,794 ("794 Patent")

2. Related Litigation

The '609 Patent and '794 Patent have been asserted in the following litigation:

- *Clayton Dale v. Safoco, Inc.*, Action No. 1:21-cv-0238 (W.D. Pa.)
- *Safoco, Inc. v. KLX Energy Services, LLC*, Action No. 2:22-cv-00437-JRG-RSP (E.D. Tex.) (pending) (“Parallel Proceeding”)

3. Patent Office Proceedings

The '609 Patent and related patents and patent applications are not subject to any other proceedings before the Office.

C. Lead and Backup Lead Counsel (37 C.F.R. § 42.8(b)(3))

Lead Counsel is: Michael J. LaBrie (Registration No. 39,507), mike.labrie@mcafeetaft.com, (405) 235-9621; Back-Up Counsel is: Genni D. Ellis (Registration No. 79,539), genni.ellis@mcafeetaft.com, (405) 235-9621.

D. Service Information (37 C.F.R. § 42.8(b)(4))

Service on Petitioner may be made by e-mail (mike.labrie@mcafeetaft.com; genni.ellis@mcafeetaft.com; and ipdocket@mcafeetaft.com); mail or hand delivery to: McAfee & Taft, Eighth Floor, Two Leadership Square, 211 North Robinson Ave., Oklahoma City, OK 73102. The fax number for Lead Counsel (405) 228-7305.

II. INTRODUCTION

Systems and methods for pressure control in the oil and gas industry, specifically, wellhead systems, have existed for decades. The claims of the '609 Patent contested in this petition define a device that represents, at its worst, nothing more than an entirely predictable combination of well-known components that have

been used together in analogous prior art devices for the same purpose. More directly, the claims define a conventional system comprising a safety valve device for relieving pressure within a system for fluid extraction. The system is generally comprised of conventional and common components including a safety valve, a fluid supply, a first fluid line, a second fluid line, a pump, a valve actuator, a controller assembly, a valve assembly, fluid drive assembly, and standard fluid pressure relief techniques. In the claimed devices, those components are used for their known and established purposes, and in a way that is precisely analogous to how they are used in prior art devices described in U.S. Patent Publication No. 2008/0078586A1, Exhibit 1016 (hereinafter “Tettleton”), U.S. Patent No. 5,335,730, Exhibit 1019 (hereinafter “Cotham”), and U.S. Patent No. 5,597,042, Exhibit 1023 (hereinafter “Tubel”).

As discussed below, the claimed devices would have been obvious under the prior art. Petitioner requests the Board institute trial and find all challenged claims unpatentable.

III. CERTIFICATIONS AND GROUNDS

A. KLX May Contest the ‘609 Patent (37 C.F.R. § 42.104(a))

According to 37 C.F.R. § 42.104(a), KLX certifies that the ‘609 Patent is available for *inter partes* review (IPR). KLX also certifies it is not barred or estopped from requesting IPR of the claims of the ‘609 Patent. Neither KLX, nor

any party in privity with KLX, has filed a civil action challenging the validity of any claim of the '609 Patent. The '609 Patent has not been the subject of a prior IPR by KLX or a privy of KLX.

KLX also certifies this IPR petition is timely filed as this petition was filed less than one year after November 18, 2022, the date KLX was first served with a complaint alleging infringement of a claim of the '609 Patent. *See* 35 U.S.C. § 315(b); Exs. 1001 and 1002.

B. Identification of Claims Being Challenged (37 C.F.R. § 42.104(b))

Under 37 C.F.R. § 42.104(b), Claims 1-18 are unpatentable based on the following prior art and grounds.

Challenged Claims	Basis	References
1, 4, 5, 8, 10	35 U.S.C. §102	Tettleton
2, 3, 6, 7, 11, 12, 13, 14, 15, 16	35 U.S.C. §103	Tettleton in view of Cotham
9	35 U.S.C. §103	Tettleton in view of Tubel
17 and 18	35 U.S.C. §103	Tettleton in view of Cotham and Tubel

KLX notes that in proceedings involving related patents, Patent Owner has not disputed that Tettleton and Tubel are prior art. Cotham and Tubel were published prior to the publication date of Tettleton.

C. Fee for *Inter Partes* Review (37 C.F.R. § 42.15(a))

The Director is authorized to charge the fee specified by 37 C.F.R. §

42.15(a) to Deposit Account No. 500449.

D. Service on Patent Owner (37 C.F.R. § 42.105)

Safoco, Inc. (“Patent Owner”) is identified as the patent owner of record in assignment records for the ‘609 Patent. As noted below, KLX has served this petition and all accompanying exhibits on Patent Owner at the correspondence address of record for the ‘609 Patent.

IV. BACKGROUND TECHNOLOGY

A. Systems for Pressure Relief

Systems and methods for monitoring and maintaining pressure and other operational characteristics of an oil and gas wellhead system, to include the combination of elements used for their intended purpose as disclosed in the ‘609 Patent, were well-known in the art prior to the filing of the ‘609 Patent. Ex. 1027, at ¶¶ 38, 45-46; *see also* Ex. 1029, at 1-3, 7.

Such systems and methods included various elements such as fail-safe open valves, fail-safe closed valves, pressure control valves, manual valves, sensors configured to monitor the properties of the oil and gas system, actuators, vent ducts, and alarms. Ex. 1027, at ¶ 45; Ex. 1029, at 6-7, Ex. 1030.

Systems and methods, including those that incorporate the claimed elements of the ‘609 Patent, have also been subject to government regulation since as early as 1992. Ex. 1030. These regulations cover written procedures, safety measures,

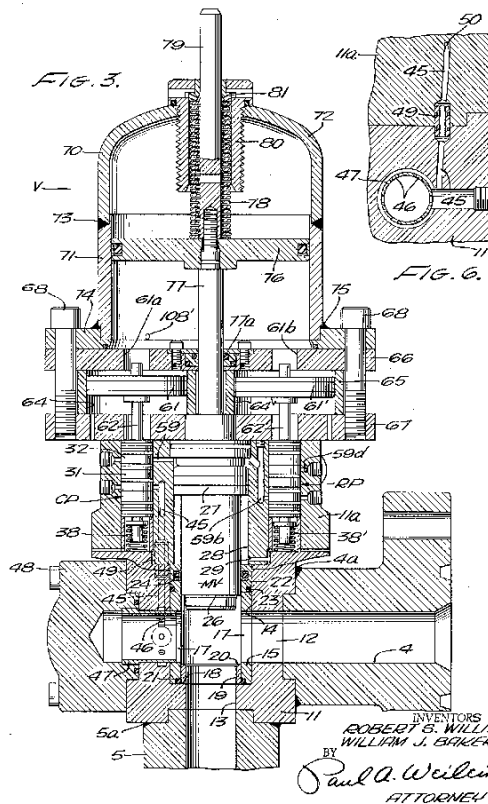
training, maintenance and inspections for pressure vessels, storage tanks, valve and piping systems, relief and vent systems and devices, emergency shut down systems, controls such as monitoring devices, sensors, alarms, interlocks, and pumps. Ex. 1027, at ¶ 46; Ex. 1030, at 1910.119(j)(1)(i)-1910.119(j)(1)(vi).

B. Actuators

Actuators have been used in combination with safety valves within the oil and gas industry for decades. Ex. 1027, at ¶ 39; *see also* Ex. 1003 at col. 1, ll. 43-58. An actuator may be configured to actuate a safety valve between an open and closed position by either inserting fluid into or exhausting fluid out of one or more chamber of the actuator. Ex. 1027, at ¶ 41-43.

An exemplary actuator is illustrated below in Fig. 3 of the U.S. Patent No. 3,198,207 (the “207 patent”). The exemplary actuator (71) may have one or more piston that may move under the influence of pressure acting on a control piston (76). Ex. 1003 at Fig. 3. In this example, the control piston is biased downwardly by spring (78). *Id.* Pressure, i.e., fluid, may be supplied to and exhausted out of the actuator responsive to the pressure in the flow line. For example, pressure may be supplied into the actuator such that pressure will be applied to the piston to overcome the force supplied by the spring and causing the piston to move and hold the valve in either an open or closed position. Ex. 1003, at col. 7, ll. 1-17.

Aug. 3, 1965 R. S. WILLIS ET AL 3,198,207
 FLUID PRESSURE CONTROLLED SHUT-OFF VALVE RESPONSIVE TO
 PREDETERMINED LINE PRESSURES
 Filed Nov. 14, 1961 4 Sheets-Sheet 2



In other words, an exemplary actuator may cause the safety valve to open or close based on an influx or release of pressure from the actuator, thereby relieving and/or stabilizing the pressure of the wellhead system. Ex. 1027, at ¶ 41-43.

C. Valves

Safety valves, also known as pressure relief valves, have been used in the oil and gas industry for over a century to control wellhead system pressure. Ex. 1004, at col. 2, ll. 59-71. Safety valves work by relieving pressure from the fluid

lines of the wellsite when a predetermined pressure is reached or exceeded. Ex. 1005, at 55-56.

Pressure relief valves include two types: fail-safe open and fail-safe closed. A fail-safe open valve is normally open valve that senses pressure downstream from the valve inlet. Ex. 1005, at 57. A common fail-safe open valve has a spring tending to move the valve to a closed position when overpowered by an actuator acting against the spring force. Ex. 1027, at ¶ 41; Ex. 1006, at col. 1, ll. 23-28.

A fail-safe closed valve is normally closed, and remains closed until the pressure in the primary circuit reaches the set level for the system. When the pressure in the primary circuit is reached, the valve opens and permits flow in a secondary route. Ex. 1005, at 58. A fail-safe closed valve is held in a closed position by the actuator acting on the spring force and is capable of moving the valve to the initial operating position. Ex. 1006 at col. 2, line 62 – col. 3, line 4.

D. Control Systems

Control systems; i.e., controllers, have been used for monitoring and maintaining pressure in an oil and gas system for decades. Ex. 1027 at ¶¶ 44 and 58, *see also* Ex. 1005, at 237. Historically, controllers have been configured to communicate or alter the operational characteristics of one or more valve and/or other components of the system in order to maintain the system under standard operating conditions. *Id.* For example, the signal may communicate whether the

valve is in an open or closed position. Ex. 1026, at 1700-27. In another example, the controller may receive one or more signal from a remote sensing device, such as a sensor, indicative of a physical property of the system such as temperature, pressure, or the like. Ex. 1005, at 237, and Ex. 1026, at 1700-3, 1700-5-12. In response, the controller may send one or more signal to the system such that the system is configured to operate one or more component of the oil and gas system such that the standard operating conditions of the system are maintained. Ex. 1005, at 237-238. For example, the controller may send one or more signal to the system to cause the one or more valve to open or close in order to maintain pressure in the system. *Id.*, at 237-238 and Ex. 1026, at 1700-3, 1700-27.

In some embodiments, controllers may be or may communicate with electronic systems, such as a SCADA system, having programmable computer logic for remote monitoring and control of the oil and gas system. Ex. 1026, at 1700-3, 1700-22. In some embodiments, controllers may be connected to the oil and gas system and/or may be positioned remotely and may be configured to remotely monitor and maintain the system under standard operating conditions. Ex. 1027 at ¶¶ 44, 54, and 58.

V. THE '609 PATENT

A. The '609 Patent Is Subject to pre-AIA

The '609 Patent issued from U.S. Application No. 16/506,885 (filed September 12, 2016) and claims priority to several provisional and non-provisional applications.¹ *See* Exs. 1007, 1008, and 1009. Patent Owner has not disputed that these intervening family members are subject to the pre-AIA, including the '453 Patent. Because the '609 Patent claims, like those of these intervening family members, recite elements supported by the disclosures of the pre-AIA priority applications, they are entitled to an effective filing date of May 25, 2012 (filing date of the '453 Patent), and are subject to pre-AIA. MPEP §§

¹ The '609 Patent is a continuation of the 9,441,453 patent (“‘453 Patent”) filed on May 25, 2012. The '453 Patent issued from U.S. Application No. 13/480,704. U.S. Application No. 13/480,704 claims priority from Provisional Patent Application No. 61/551,319 filed on October 25, 2011, and is a Continuation in-part of U.S. Patent Application No. 13/195,662 filed on August 1, 2011. U.S. Patent Application No. 13/195,662 claims priority from Provisional Patent Application No. 61/370,721 filed on August 4, 2010, and Provisional Patent Application No. 61/415,238 filed on November 18, 2010.

2159.01-.02. Consistent with this, the Examiner found the ‘609 Patent to be subject to pre-AIA, Ex. 1010, at 3, and Patent Owner never argued otherwise. Ex. 1011².

B. Person of Ordinary Skill in the Art

A person of ordinary skill in the art (“POSITA”) would have a working knowledge of system(s) having one or more actuators, one or more safety valves for pressure relief in fluid lines, and control systems including methods and their applications. In addition, a POSITA would have a working knowledge of fluid system(s) in the oil and gas industry. The working knowledge would have been gained via an undergraduate education in engineering (electrical, mechanical, petroleum, or the like) or a related field of study, along with relevant experience studying or developing pressure relief safety valves in industry or academia. *See* MPEP § 2141 (citing *In re GPAC*, 57 F.3d 1573, 1579 (Fed. Cir. 1995); *Mintz v. Dietz & Watson, Inc.*, 679 F.3d 1372, 1376 (Fed. Cir. 2012)). This description is approximate; varying combinations of education and practical experience also would be sufficient. *Id.*; *See also*, Ex. 1027 at ¶ 33.

² In the Parallel Proceeding, Patent Owner asserts a priority date of October 25, 2011, however, as noted above, Patent Owner has not contested that the challenged claims are subject to pre-AIA standards nor has it contested that Tettleton is prior art. Ex. 1011.

KLX's positions regarding how a skilled person would have understood the '609 patent claims and the prior art are supported by the testimony of Glen Stevick, Ph.D., an expert in pressure relief safety-valves with over 40 years of experience. Ex. 1027, ¶¶ 1-18.

C. File History

The examination record of the '609 Patent shows that the Examiner allowed the claims after imposing a double patenting rejection against claims 1-18 of the pending application in view of the '453 Patent. Ex. 1011 at 64-68. Patent Owner filed a terminal disclaimer on August 18, 2017. *Id.* at 38-51. With the Notice of Allowance, the Examiner submitted an Examiner's Amendment wherein claims 12-18 were amended to depend directly from independent claim 11 instead of claim 12 based on an interview with the Examiner. *Id.* at 12-15. The '609 patent issued on February 13, 2018. *Id.* at 1.

VI. THE BOARD SHOULD NOT DENY INSTITUTION UNDER 35 U.S.C. § 325(D) OR § 314(A)

A. Discretionary Denial Pursuant to § 325(d) is Not Warranted

The Board considers discretionary denial under a two-part framework:

(1) whether the same or substantially the same prior art previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office; and (2) if either condition of first part of the framework is satisfied, whether the petitioner has demonstrated

that the Office erred in a manner material to the patentability of the challenged claims.

Advanced Bionics, LLC v. Med-El Elektromedizinische Gerate GMBH, IPR2019-01469, Paper 6 at 8 (PTAB Feb. 13, 2020) (precedential). Analysis under either prong demonstrates that discretionary denial is unwarranted.

(1)(i). The Same or Substantially the Same Prior Art was Not Previously Presented to the Office

First, the same or substantially the same prior art was not presented to the Office. Of the references relied on in the petition, the primary reference, Tettleton, and tertiary reference, Tubel, were not listed in an IDS, cited against the claims in rejection during prosecution, or mentioned in the Notice of Allowability by the Examiner, Ex. 1011; several additional references³ were not considered during the prosecution of the '609 Patent; and only two references⁴ were cited in an IDS. As such, the prior art noted herein is not substantially the same as that previously presented to the Office.

(1)(ii). The Same or Substantially the Same Arguments were Not Previously Presented to the Office.

³ U.S. Patent No. 4,706,399 ("Sukup"), U.S. Patent No. 3,936,231 ("Douglas"), U.S. Patent No. 8,570,833 ("Sugiura"), U.S. Patent No. 7,744,060 ("Sneh").

⁴ U.S. Patent Publication No. 2003/0051881 ("Vinegar") and U.S. Patent No. 5,335,730 ("Cotham").

Likewise, this petition does not present patentability arguments that are the same or substantially the same as those previously presented to the Office. Tettleton and several additional references relied on in this petition were not cited by the Examiner or the Patent Owner during prosecution of the '609 Patent. Ex. 1011. The Examiner was aware of the two references herein, Vinegar and Cotham, during prosecution; however, for the reasons set forth below, the references were given — at best — cursory consideration.

First, Vinegar and Cotham were only listed in an IDS and were not cited against the claims in a rejection during prosecution; i.e., no arguments were made during prosecution citing the Vinegar or Cotham References. *Id.* Second, the Examiner merely initialed the IDS forms having the Vinegar and Cotham references, which is not an indication the references were substantively considered by the Examiner. *See Amazon.com v M2M Sols*, IPR2020-00921, Paper 9 at 11 (PTAB Nov. 16, 2020). Finally, the Examiner did not mention Vinegar and Cotham in the Notice of Allowability or in the after-allowance amendments. Ex. 1011. In summary, nothing in the record indicates these prior art references were substantively considered and at best were given a mere cursory consideration. *Intex Recreation Corp. v. Team Worldwide Corp.*, IPR2018-00871, Paper 14 at 13 (PTAB Sept. 14, 2018) (internal citation omitted); *Apple v. Qualcomm Inc.*, IPR2018-01315, Paper 7, at 22-26 (PTAB Jan. 18, 2019). As a result, the record does not indicate that Vinegar

or Cotham were substantively argued during prosecution, causing the arguments previously made before the Office to be substantially different than those herein.⁵

Vinegar and Cotham were cited in the first Final Office action refusal of the ‘453 Patent, the same or substantially the same arguments were not presented because the primary reference relied upon in this petition was not cited as a prior art reference in the prosecution of the ‘453 Patent. Cotham is only cited herein in combination with Tettleton as a basis for rejection of the ‘609 Patent claims under 35 U.S.C. § 103. As such, the arguments presented in the related ‘453 Patent are not the same or substantially the same presented herein.

(2). The Examiner Erred in a Manner Material to the Patentability of the Challenged Claims.

The Examiner erred in a manner material to the patentability of the challenged claims by “overlook[ing] specific teachings of the relevant prior art where those teachings impact patentability of the challenged claims.” *Advanced*

⁵ This is buttressed by Patent Owner’s arguments during prosecution of the related ‘453 Patent, of which the ‘609 Patent is a continuation. There, the Examiner asserted Vinegar and Cotham against independent claims of the ‘453 Patent in a March 24, 2015, Final Office action. Ex. 1012. As it did during prosecution of the ‘609 Patent, Patent Owner amended the ‘453 Patent claims to avoid Vinegar and Cotham rather than arguing in response to the rejection. Exs. 1013 and 1014.

Bionics at 8-9. By failing to apply Tettleton against the independent claims of the ‘609 Patent, the Examiner overlooked Tettleton’s disclosure of more than one claim limitation.

The Tettleton reference discloses a pressure relief valve for use in a system for controlling fluid flow and pressure at a well site. Ex. 1016, at ¶¶ [0004]- [0009]. This is a particularly concerning error, since Tettleton also discloses the valve may be in a closed position or an open position, wherein the position may be determined by a valve actuator. Ex. 1016, at ¶¶ [0010]- [0011]. Additionally, the Examiner overlooked the pressure measuring device that monitors pressure within the system. For example, a “pressure sensor [that] senses a signal indicative of the pressure in the line via [another] line to a control system, which controls operation of the valve and controls an air supply which provides air under pressure to maintain the valve closed until a pre-selected mud pressure is exceeded. When the mud pressure exceeds the pre-selected pressure, the valve opens and the mud that was previously flowing to the drill stem flows through the inlet of the valve and exits through an outlet into an exit line. When pressure in the line again falls below the pre-selected pressure, the control system signals the air supply to close the valve.” Ex. 1016, at ¶ [0041].

The Examiner also failed to assert Tubel, which discloses a system for regulating flow of fluid from a well using actuation to drive a wellhead valve. Ex.

1023, at col. 2, ll. 29-32. The Examiner also overlooked the system having a pipe, a flow sensor for sensing flow of process fluid through the pipe, an electrical power source, and a well head valve for regulating the flow of process fluid through collection pipe. Ex. 1023, at col. 2, ll. 32-37.

The prosecution history is silent on these teachings and many others relied upon in this petition; i.e., there is no specific record addressing them. The Examiner's failure to examine these teachings in Tettleton and Tubel is an error that materially affects the patentability of the claims. *Advanced Bionics* at 10-11. Based on the foregoing, KLX respectfully submits that discretionary denial under 35 U.S.C. § 325(d) is unwarranted.

B. Discretionary Denial Under 35 U.S.C. § 314 is Not Warranted.

The Board should not deny institution under § 314(a) as the factors in *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 at 6 (PTAB Mar. 20, 2020) ("*Fintiv*") (precedential) favor institution. The Parallel Proceeding provides no reason to deny institution, and the *Fintiv* factors, as discussed below, demonstrate that the efficiency and integrity of the system would be best served by instituting this petition. *Id.* at Paper 11, 5-6.

With regard to the first *Fintiv* factor—whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted—neither party in the District Court has requested a stay, and the Board does not speculate on how

the district court will treat a motion to stay. *VMware, Inc. v. Intell. Ventures I LLC*, IPR2020-00859, Paper 13, Institution Decision, at 12 (PTAB Nov. 5, 2020) (informative). As such, the first factor weighs against discretionary denial or is, at worst, neutral.

The second *Fintiv* factor —proximity of the court’s trial date to the Board’s projected statutory deadline for a final written decision— weighs heavily in favor of institution as the trial date in the Parallel Proceeding is August 19, 2024. Ex. 1015, at 1.

The third *Fintiv* factor —investment in the Parallel Proceeding by the court and parties— weighs heavily in favor of institution as there has been minimal investment in the Parallel Proceeding by the court and the parties. The Parallel Proceeding is still in the early stages of discovery: no depositions have been taken, claim construction has not taken place, expert reports have not been exchanged, summary judgment motions have not been filed and the trial is nearly a year away.

The fourth *Fintiv* factor —overlap between issues raised in the petition and in the Parallel Proceeding— also weighs in favor of institution as Tettleton has not been raised in the Parallel Proceeding as a basis of invalidity.

Although the parties to this proceeding and the Parallel Proceeding are the same, the fifth *Fintiv* factor should not be considered as a basis for discretionary denial given that the other factors weigh in favor of institution. *Cisco Sys., Inc. v.*

Ramot at Tel Aviv Univ. Ltd., IPR2020-00122, Paper 15, Inst. Dec., at 10 (PTAB, May 15, 2020) (APJ Crumbly, dissenting). Notably, Judge Crumbly asserted that “[i]n defining the [fifth] factor, the order says *nothing* about situations in which the petitioner is the same as, or is related to, the district court defendant” and that in cases where the parties are the same, the factor is neutral and to hold otherwise “would, in effect, tip the scales against the petitioner merely for being a defendant in the district court.” *See Cisco Sys., Inc.*, *supra* at 10-11 (emphasis added). Additionally, Judge Crumbly noted that there is no basis in statute or the intent of Congress for a presumption of discretionary denial and that to weigh the fifth factor against parties to the Parallel Proceeding is actually “contrary to the goal of providing district court litigants an alternative venue to resolve questions of patentability.” *Id.*

The sixth *Fintiv* factor—other circumstances and merits—weighs in favor of institution. As the Board knows, there is significant public interest against “leaving bad patents enforceable.” *Thryv, Inc. v. Click-To-Call Techs., LP*, 140 S. Ct. 1367, 1374 (2020). As described herein, the claims of the ‘609 Patent are unpatentable over prior art not considered during prosecution and it would be against public interest to allow the ‘609 Patent to remain enforceable without instituting the *inter partes* review to consider the references relied upon in this petition.

Furthermore, KLX submits that discretionary denial under 35 U.S.C. § 314(a) is improper in light of the USPTO's Memorandum dated June 21, 2022 providing guidance as to discretionary denial (the "Memorandum"). Specifically, KLX submits that this petition provides compelling evidence of unpatentability. Furthermore, if this proceeding is instituted, KLX hereby stipulates and shall file a stipulation in the Parallel Proceeding stating that it will not pursue in the Parallel Proceeding the same grounds of unpatentability as those raised herein or any other ground that could have reasonably been raised in this proceeding. As a result of the foregoing, the Board should not deny institution under 35 U.S.C. § 314(a).

VII. CLAIM CONSTRUCTION

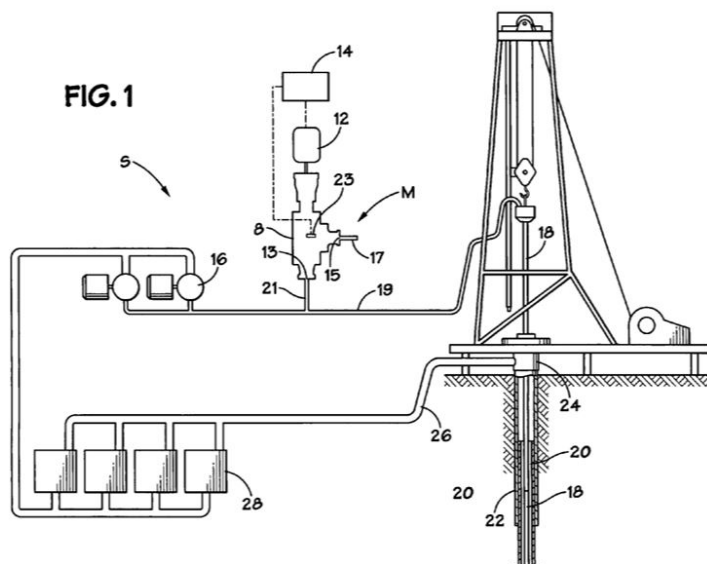
In an IPR, claim terms are given "their ordinary and customary meaning," which is "the meaning that the term would have to a [POSITA] in question at the time of the invention." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-13 (Fed. Cir. 2005); 37 C.F.R. § 42.100(b). KLX contends that, unless otherwise specifically noted herein, the claim terms of the '609 Patent should be afforded their plain and ordinary meaning as understood by a POSITA consistent with *Phillips*.

VIII. DETAILED EXPLANATION OF WHY THE ‘609 PATENT CLAIMS ARE UNPATENTABLE

A. Ground 1: Tettleton Anticipates Claims 1, 4, 5, 8, 10

1. Overview of Tettleton

Tettleton discloses a system having a pressure relief valve assembly for relieving fluid pressure. Ex. 1016 at FIG. 1 (below), ¶¶ [0009] and [0040]. The system includes, but is not limited to, a mud pit (28) for containing and storing drilling fluid, one or more pump (16) for pumping the drilling fluid, and a pressure relief valve (8). *Id.* at ¶ [0040]. The system further comprises a line (19), a pressure sensor (23) that communicates a signal indicative of the pressure in the line (19) of the system, a control system (14) which controls operation of the pressure relief valve (8) in response to the pressure in the line of the system, and an air supply (12) which provides or releases fluid, such as air, under pressure to maintain or alter the valve (8) in an open or closed position. *Id.* at ¶ [0041].



Tettleton also discloses a method by which the system regulates pressure within the system by releasing fluid into a different reservoir when the pressure exceeds a predetermined threshold. *Id.*

2. Tettleton Renders the Challenged Claims Anticipated.

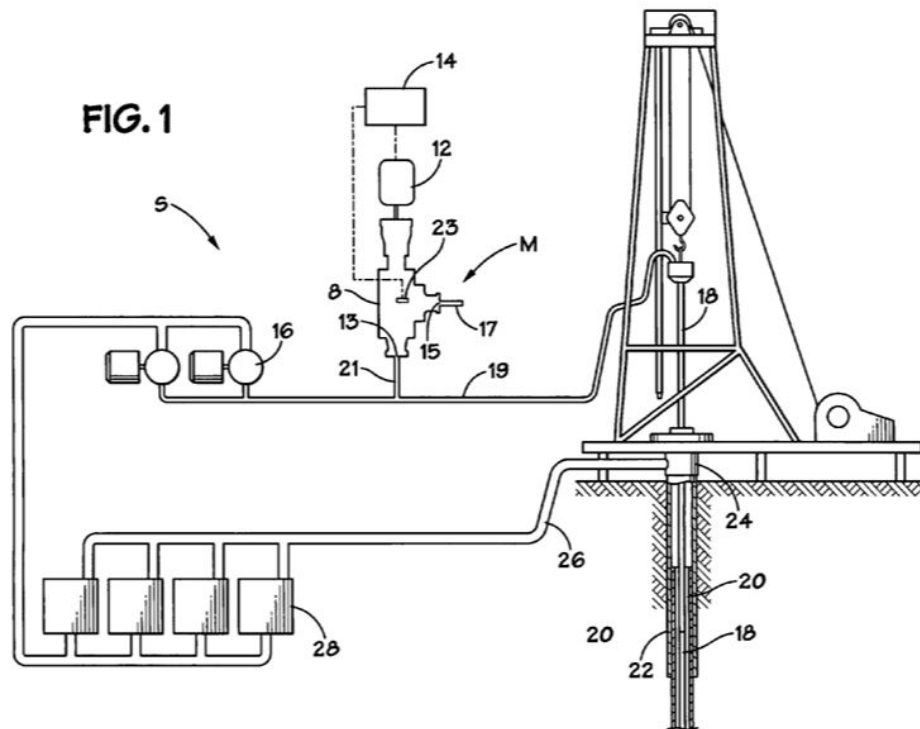
As stated herein, a POSITA would have considered claims 1, 4, 5, 8, and 10 as anticipated by Tettleton under 35 U.S.C. § 102. “A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegall Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631 (Fed. Cir. 1987). KLX submits that such is the case with each element of claims 1, 4, 5, 8, and 10 of the ‘609 Patent in view of Tettleton.

a. POSITA Would Have Understood Tettleton to

Anticipate Claim 1 of the '609 Patent

i. Preamble of Claim 1: “A control system for controlling fluid flow through a flow line at a wellsite, the control system, comprising:”

Tettleton discloses a system (S) and method for controlling fluid flow through a fluid line at a wellsite. Ex. 1016, at ¶¶ [0040]-[0041] and [0057]-[0058], and FIG. 1.



ii. “a fluid supply;”

Tettleton discloses a fluid supply, namely, as a mud pit for storing drilling fluid. *Id.*, at ¶ [0040]. Thus, this claim element is disclosed.

iii. “a first fluid line in fluid communication with the

fluid supply;”

Tettleton teaches that a first fluid line is in fluid communication with the fluid supply. *Id.*, at FIG. 1. As such, this claim element is disclosed.

iv. “a pump in fluid communication with the first fluid line and configured to pump fluid from the fluid supply to one or more wellheads through the first fluid line.”

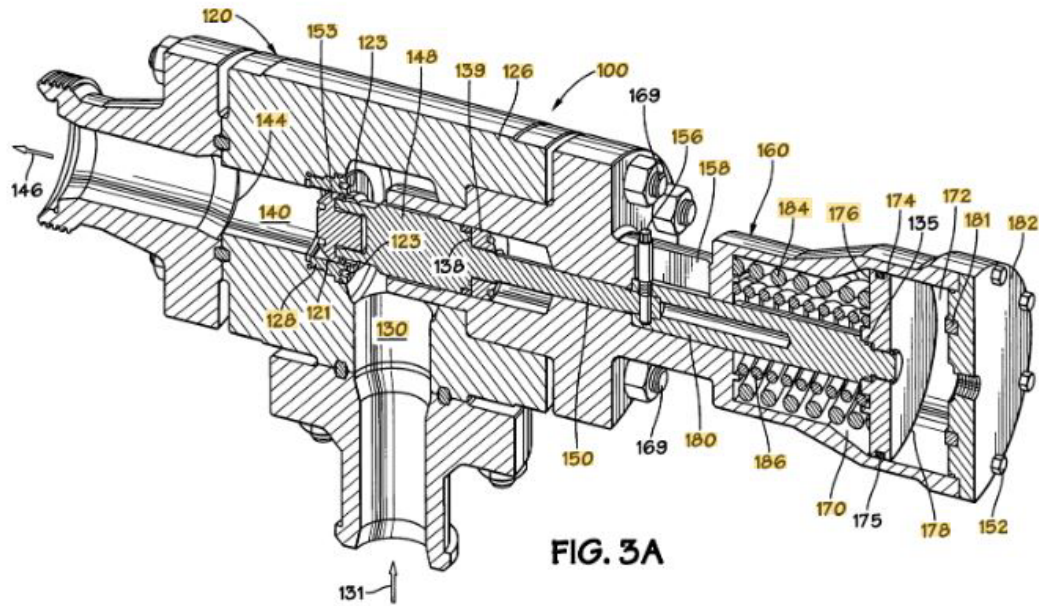
As seen in FIG. 1 above, Tettleton discloses a pump (16) in fluid communication with the first fluid line (19) and configured to pump fluid from the fluid supply (28) to the drill string (18) of the wellhead via the first fluid line (19). *Id.* As a result, each of these claim elements is disclosed.

v. “a second fluid line in fluid communication with the first fluid line at a location downstream of the pump and configured to return fluid from the first fluid line back to the fluid supply or direct fluid from the first fluid line to a different reservoir;”

Tettleton expressly and inherently discloses a second fluid line (17) in fluid communication with the first fluid line (19) downstream on the pump (16) configured to return fluid from the first fluid line (19) to a different reservoir. *Id.* at ¶¶ [0040]- [0041] and FIG. 1 and 3.

Specifically, Tettleton expressly discloses the valve (8) that may either be in an “open” or “closed” position based on the position of a valve piston (148) relative to the first passageway (130). When the valve is in an open position, the first passageway and the second passageway are in fluid communication such that

the fluid flows from the first passageway to the second passageway and out an exit port (144) and into and out of the second line (17). *Id.*, at ¶¶ [0043]-[0045] and FIG. 3A (below).



Tettleton inherently discloses the second fluid line is configured to direct fluid from the first fluid line to a different reservoir. Tettleton discloses that when one or more pressure sensor (23) determines the pressure in the first line (19) has exceeded the pre-determined threshold, the valve opens and fluid flows into the valve and exits through an outlet (15) and second line (17) instead of the drill stem (18), thereby lowering the pressure within the first fluid line. *Id.* at ¶ [0041]. Once the pressure in the first fluid line lowers, the valve will close and the fluid will be redirected to the drill stem. *Id.*

Although Tettleton does not explicitly disclose that fluid is transferred to a reservoir, this is inherent to the reduction of pressure within the otherwise closed system that is explicitly disclosed. Said another way, to lower pressure caused by increased amounts of fluid in a closed system, the fluid must necessarily be redirected to a different location, i.e., the fluid supply or another reservoir. Ex. 1027, at ¶¶ 41, 47. As a result, this claim element is inherently disclosed. *See, e.g., Toro Co. v. Deere & Co.*, 355 F.3d 1313, 1320 (Fed. Cir. 2004) (“[T]he fact that a characteristic is a necessary feature or result of a prior-art embodiment (that is itself sufficiently described and enabled) is enough for inherent anticipation, even if that fact was unknown at the time of the prior invention.”)⁶

vi. “a safety valve in-line with the second fluid line and movable

⁶ For the element of independent claim 1 to be disclosed it is not necessary for Tettleton to disclose the second fluid line in fluid communication with the first fluid line at a location downstream of the pump and *configured to return fluid from the first fluid line back to the fluid supply or another reservoir*. The claim element has the term “or,” which is defined as “used as a function word to indicate an alternative.” Ex. 1031. As such, only one of the alternatives, either “*configured to return fluid from the first fluid line back to the fluid supply or another reservoir*,” must be disclosed by Tettleton. As discussed above, Tettleton expressly and inherently discloses either.

into a closed position to close fluid flow through the second fluid line;”

Tettleton discloses a valve having a valve piston; i.e., a gate, disposed therein that is movable between an open position and closed position. Such that the valve piston, and thereby the valve, is movable into a closed position to close fluid flow through the second fluid line. Ex. 1016, at ¶¶ [0041] and [0045]. *See also* Ex. 1027 at ¶ 48 (noting the valve piston would be understood to be a “gate.”) As such, the claim element is anticipated by Tettleton.

vii. “a valve actuator configured to actuate the safety valve from the closed position to an open position to open fluid flow through the second fluid line;”

Tettleton discloses a valve actuator configured to actuate the safety valve from the closed position to an open position to open fluid flow through the second fluid line. Specifically, Tettleton discloses the actuator having an actuator piston that connects to the valve piston and moves the valve piston between an open and closed position. Ex. 1016, at ¶ [0051]-[0054]. The valve piston in the open position opens the fluid flow through the second line. *Id.* at ¶¶ [0041] and [0045]. As such, the claim element is disclosed.

viii. “an electronic controller assembly programmed with a predetermined condition and configured to receive a signal from a transducer connected to a first fluid line, wherein the signal

corresponds to a measured physical property;”

This claim element is anticipated by Tettleton. Tettleton discloses a programmed control system (14) (“controller”) that is configured to receive relevant pressure readings from one or more electronic pressure measuring devices, like a transducer, that accurately measures a measured physical property, i.e., fluid pressure, in the first fluid line. *Id.*, at ¶¶ [0041] and [0060]. The controller receives a signal indicating relevant pressure from the transducer and compares the received fluid pressure value(s) with one or more pre-programmed set point values or ranges. *Id.* at ¶ [0061]. Based on the foregoing, the claim element is disclosed.

ix. “a valve assembly in communication with the controller assembly; and”

Tettleton discloses “a valve assembly in communication with the controller assembly” as disclosed in claim 1. The term “valve assembly” is not defined in the ‘609 Patent, therefore, the ordinary and customary meaning of the term applies.

The ordinary and customary meaning of the claim term is the “meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application. *Phillips*, 415 F.3d 1303, 1313 (Fed. Cir. 2005). A POSITA would “read the claim term not only in the context of the particular claim in which the term appears, but also the context of the entire patent, including the specification.” *Id.* Since the “valve assembly” term is not defined within the four corners of the ‘609 Patent, a POSITA

would have understood the “valve assembly” term to have the widely accepted meaning of the commonly used “valve” and “assembly” terms. *Id.* at 1314 citing *Brown v. 3M*, 265 F.3d 1349, 1352 (Fed. Cir. 2001); Ex. 1027, at ¶ 49. In such cases, the Federal Circuit has stated a general-purpose dictionary may be helpful in discerning the widely accepted meaning and common use of the terms. *Id.* at 1314.

According to the *Webster’s New Collegiate Dictionary*, the ordinary and customary meaning of “valve” is “any of numerous mechanical devices by which flow of liquid, gas, or loose material in bulk may be started stopped, or regulated by a movable part that opens, shuts, or partially obstructs one or more ports or passageways.” Ex. 1017. *Webster’s* further defines “assembly” as follows “the fitting together of manufactured parts into a complete machine, structure, or unit of a machine.” Ex. 1018. Based on the definitions, a POSITA would discern the ordinary and customary meaning of the “valve assembly” term to be a mechanical device that opens, shuts, or partially obstructs material in a port or passageway that is a part of a machine or structure. Ex. 1027, at ¶ 49.

Tettleton discloses a controller assembly in communication with the valve assembly (100) such that when the controller assembly receives relevant pressure readings from one or more pressure measuring device that indicate the pressure has met or exceeded the predetermined pressure threshold, the controller causes the valve piston of the valve (8) of the valve assembly (100) to open thereby

relieving pressure within the system. Ex. 1016, at ¶¶ [0060]- [0062]. Therefore, the valve assembly (“the mechanical device that opens, shuts, or partially obstructs material in a port or passageway”) is in communication with the controller assembly. The claim element is disclosed.

- x. **“a fluid drive assembly in communication with the controller assembly, wherein the controller assembly is operable to actuate the fluid drive assembly to supply fluid to the valve actuator to move the safety valve into a closed position, and wherein the controller assembly is operable to actuate the valve assembly in response to a comparison of the measured physical property to the predetermined condition to release the fluid from the valve actuator to move the safety valve into the open position and thereby open fluid flow through the second fluid line to return fluid in the first fluid line back to the fluid supply or direct fluid in the first fluid line to the different reservoir.”**

The ‘609 Patent discloses that a “fluid drive assembly” is a pump. Ex. 1007 at col. 23, ll. 10-11. Similarly, Tettleton discloses the control system that controls an air supply that provides air under pressure; i.e., a pump, to maintain the valve closed until the preselected pressure is exceeded. Ex. 1016, at ¶ [0041]. The air supply of Tettleton may provide air or pneumatic pressure into an outer portion of the actuator to move the actuator piston in an extended position and move the valve piston to a closed position. Ex. 1016, at ¶ [0053]. The controller assembly actuates the valve assembly in response to a comparison of the measured physical property

compared to the predetermined condition, in this case pressure, to release fluid from the actuator to move the valve piston to an open position, thereby directing the fluid flow into the valve and out of the second line into a reservoir as discussed above. *Id.*, at ¶¶ [0057]- [0059]. As a result, the claim element is disclosed by Tettleton.

b. POSITA Would Have Understood Tettleton to Anticipate Claim 4 of the ‘609 Patent: “The system of claim 1, wherein the fluid drive assembly is a compressor and the fluid supplied to the valve actuator by the fluid drive assembly is a pneumatic fluid.”

The comments of claim 1 are incorporated herein by reference. Additionally, Tettleton discloses the fluid drive assembly may be a pump wherein the fluid supplied is air supplied from a rig air source. Ex. 1016, at ¶ [0053]. Although the term “rig air source” is not defined in the specification or the prosecution history, “prior art references may be ‘indicative of what those skilled in the art generally believe a certain term means ... [and] can often help to demonstrate how a disputed term is used by those skilled in the art.’” *In re Cortright*, 165 F.3d 1353, 1358, 49 U.S.P.Q.2d 1464 (Fed. Cir. 1999).

Based on prior art references in existence at the time of filing the patent application, a POSITA would determine the “rig air source” term to mean a compressor. Ex. 1027, at ¶ 50. *See also* Ex. 1022, at 37. Thus, Tettleton reference discloses claim 4.

c. POSITA Would Have Understood Tettleton to Anticipate Claim 5 of the ‘609 Patent: “The system of claim 1, wherein the fluid drive assembly is a pump and the fluid supplied to the valve actuator by the fluid drive assembly is hydraulic fluid.”

The comments of claim 1 are incorporated herein by reference. The ‘609 Patent discloses that the “fluid drive assembly” term is a pump. Ex. 1007, at col. 23, ll. 10-11. Tettleton discloses the actuator may be actuated in one direction by a pump providing pneumatic or hydraulic pressure. Ex. 1016, at ¶ [0053]. Thus, the claim is anticipated by Tettleton.

d. POSITA Would Have Understood Tettleton to Anticipate Claim 8 of the ‘609 Patent: “The system of claim 1 wherein the fluid supplied to the valve actuator by the fluid drive assembly is ambient air.”

The comments regarding claims 1 and 4 are incorporated herein by reference. As discussed above, Tettleton discloses the valve actuator is fluid-powered, which may be either pneumatic or hydraulic fluid. Ex. 1016, at ¶ [0053]. Although the Tettleton does not explicitly disclose the pneumatic fluid to be ambient, the ‘609 Patent discloses an example of pneumatic to be ambient air. Ex. 1007, at col. 22, ll. 29-30. As such, claim 8 is anticipated by Tettleton.

e. POSITA Would Have Understood Tettleton to Anticipate Claim 10 of the ‘609 Patent: “The system of claim 1, wherein the controller assembly is a programmable logic controller.”

The comments regarding claim 1 are herein incorporated by reference. Tettleton discloses the controller may be a programmable logic controller. Ex.

1016, at ¶ [0060]. As such, the Tettleton reference anticipates claim 10 of the ‘609 Patent.

B. Ground 2: Claims 2, 3, 6, 7, 11, 12, 13, 14, 15, and 16 are Obvious under Tettleton in view of Cotham

1. Overview of Cotham

Cotham discloses a system and method for controlling a wellhead. The system and method include a valve that controls flow of the well fluid from the well to the surface such that the fluid in one or more flowlines flows from the well to a separate location, usually a separate location from the wellhead. Ex. 1019, at col. 2, ll. 33-47. The method includes, but is not limited to, a power apparatus delivering power to a control unit and a pumping device. The control unit may be configured to control the pumping device and valves either in response to pre-set instructions within the control unit. The pumping device may be configured to pump operating fluid into the valves in order to operate the valves such that when the pressure level in a flowline is not within a pre-set range, the one or more valve may close off a respective flowline to fluid flow. Ex. 1019 at col. 2, ll. 48-62, claims 1 and 2.⁷

⁷ Cotham is in the field of wellheads, moreover, the control of wellheads at a wellsite. Ex. 1019, at col. 1, ll. 10-20, and claim 1. The ‘609 Patent also pertains to the field of wellhead control systems for oil and gas well sites. *See, e.g.*, Ex.

2. Tettleton in view of Cotham Renders the Challenged Claims Obvious.

As stated herein, a POSITA would have considered claims 2, 3, 6, 7, 11, 12, 13, 14, 15, and 16 as obvious under Tettleton in view of Cotham under 35 U.S.C. § 103. A patent is obvious when its alleged invention is merely “the predictable use of prior art elements according to their establishes functions.” *KSR Inter. Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007). KLX submits that claims 2, 3, 6, 7, 11, 12, 13, 14, 15, and 16 of the ‘609 Patent are a predictable use of prior art elements according to their established functions under Tettleton in view of Cotham.

a. POSITA Would Have Understood Claim 2 of the ‘609 Patent to be obvious under Tettleton in view of Cotham: “The system of claim 1, further comprising a housing for supporting the controller assembly, the valve assembly, and the fluid drive assembly.”

The comments of claim 1 are incorporated herein by reference. As referenced above, Tettleton discloses the controller assembly, valve assembly, and fluid drive assembly as referenced above. Ex. 1016, at ¶¶ [0040]- [0041], [0053], [0057], and [0060]- [0061]. Additionally, Cotham discloses a system (10) for controlling a wellhead having a housing in which a microprocessor control (controller) (14), a

1007, at claim 1. Thus, the claimed invention of Cotham is in the same field of endeavor as the claimed invention of the ‘609 Patent.

motor (16), a pump (18) (fluid drive assembly), and a fluid supply tank (20) are mounted. Ex. 1019, at col. 6, ll. 62-65. Although Cotham does not explicitly disclose the housing supporting a valve assembly, Cotham does disclose a system for controlling a wellhead having a housing that may enclose any or all of the apparatuses and/or devices used in any of the methods according to the invention. Ex. 1019, at col. 3, ll. 36-39. As such, it would have been a design choice of a POSITA to enclose the valve assembly within the housing because the valve assembly is an apparatus used in the method of controlling the wellhead according to the invention. Ex. 1027, at ¶ 51.

b. POSITA Would Have Understood Claim 3 to be Obvious under Tettleton in View of Cotham: “The system of claim 2, wherein the fluid supplied to the valve actuator by the fluid drive assembly is supplied from a reservoir disposed outside of the housing.”

KLX incorporates the comments of claim 2 herein by reference. Tettleton discloses that actuator may be actuated by the fluid, which may be either pneumatic or hydraulic, from an external source. Ex. 1016, at ¶ [0053]. The “external source” term is not defined by the ‘609 Patent. As such, the ordinary and customary meaning may apply. *Phillips*, 415 F.3d at 1313. In such cases, a general-purpose dictionary may be helpful. *Id.* at 1314. According to *Webster’s New Collegiate Dictionary*, the phrase “external source,” is defined as follows:

- “external”: “situated outside, apart, or beyond.” Ex. 1020.

- “source”: “a point of origin.” Ex. 1021.

A POSITA would have known the “external source” term is a point of origin outside of a point of origin such as the housing, like the housing disclosed by Cotham. Ex. 1027, at ¶ 52; Ex. 1019, at col. 6, ll. 62-65. Cotham’s disclosure of a system for controlling a wellhead having a housing when viewed in combination with Tettleton, yields the predictable result of the “fluid supplied to the valve actuator by the fluid drive assembly is supplied from a reservoir disposed outside of the housing.”

Additionally, the positioning of the reservoir outside of the housing was a mere design choice because the ‘609 Patent failed to disclose that the position of the reservoir relative to the housing caused a difference in function or an unexpected result. *Application of Rice*, 341 F.2d 309, 314 (C.C.P.A. 1965), Ex. 1027, ¶ 52. Specifically, the ‘609 Patent disclosed the reservoir to be an “optional reservoir” located internal or external to the housing, wherein the reservoir is configured to supply fluid. Ex. 1007, at col. 21, ll. 65-66 and col. 23, ll. 29-32. The reservoir disclosed in the ‘609 patent performs the same function and causes the same results as fluid supply disclosed in Tettleton and the fluid tank disclosed in Cotham. *See* Ex. 1016, at ¶ [0040] and Ex. 1019, at col. 7, ll. 67- col. 8, ll. 5 and col. 9, ll. 5-7. Thus, the position of the reservoir relative to the housing is no more than an obvious variation consistent with principles known in the art. i.e., the

location of the reservoir is not critical to the claimed invention and is no more than an obvious variation and design choice. *Application of Rice*, 341 F.2d 309, 314 (C.C.P.A. 1965). Based on the foregoing, claim 3 is obvious under Tettleton in view of Cotham.

c. POSITA Would Have Understood Claim 6 of the ‘609 Patent to be Obvious under Tettleton in view of Cotham: “The system of claim 1, further comprising a power source for supplying power to the controller assembly, the valve assembly, and the fluid drive assembly.”

The arguments of claim 1 are incorporated herein by reference. As discussed above, Tettleton discloses a power source for supplying power to the controller assembly. Ex. 1016 at ¶¶ [0012], [0061]- [0062]. Additionally, Cotham discloses a power source for supplying power to the controller assembly, the valve assembly, and the fluid drive assembly. Ex. 1019 at Claim 1. As such, claim 6 is obvious under Tettleton in view of Cotham.

d. POSITA Would Have Understood Claim 7 of the ‘609 Patent to be Obvious under Tettleton in view of Cotham: “The system of claim 1, further comprising a housing for supporting the fluid drive assembly, and a filter attached to the housing for filtering fluid entering the housing by the fluid drive assembly.”

The arguments of claim 1 are incorporated herein by reference. As discussed above, Cotham discloses a system (10) for controlling a wellhead having a housing in which a pump (18) (fluid drive assembly) is mounted. Ex. 1019, at col. 6, ll. 62-

65. Cotham also discloses a filter for filtering fluid supplied from a pump. Ex. 1019 at col. 8, ll. 61-63. Although Cotham does not explicitly disclose the filter attached to the housing, Cotham does disclose a system for controlling a wellhead having a housing that may enclose any or all of the apparatuses and/or devices used in any of the methods according to the invention. Ex. 1019, at col. 3, ll. 36-39. As such, by Cotham's own disclosure, it is inherent that the filter may be mounted to the housing as well. Ex. 1027, at ¶¶ 52-53.

In addition, or in the alternative, the placement of the filter relative to the housing would have been a known design choice to POSITA. Ex. 1027, at ¶¶ 52-53. and *Application of Rice*, 341 F.2d at 314. Specifically, the '609 Patent did not disclose the positioning of the filter relative to the housing except for dependent claim 8 and FIG. 13. See Ex. 1007. The '609 Patent merely disclosed the filter *may* be connected to the reservoir, which *may* be located internal or external to the housing. Ex. 1007, at col. 21, ll. 65-col. 22, ll. 2 and col. 23, ll. 29-32 (emphasis added). Additionally, the filter of the '609 Patent performs the same function and causes the same result as the filter disclosed in Cotham; i.e., the filter filters fluid. See Ex. 1007, at claim 8, Ex. 1016, at ¶ [0040], and Ex. 1019, at col. 8, ll. 61-63. Thus, the position of the filter relative to the housing is no more than an obvious variation consistent with principles known in the art. i.e., the location of the filter is not critical to the claimed invention and is no more than an obvious variation

and design choice. *Application of Rice*, 341 F.2d at 314. As such, a POSITA would have understood claim 7 to be obvious under Tettleton in view of Cotham. Ex. 1027, at ¶¶ 52-53.

e. POSITA Would Have Understood Claim 11 of the ‘609 Patent to be Obvious under Tettleton in view of Cotham.

i. Preamble: “The method for controlling fluid flow through a flow line at a wellsite, the method comprising:”

Tettleton discloses a method for controlling fluid flow through a flow line at a wellsite. Tettleton discloses having a pressure relief valve to control and stabilize the pressure downstream of mud pump systems thus controlling the fluid flow line at a wellsite. Ex. 1016, at ¶ [0041]. The claim element is disclosed.

ii. “providing a control system, comprising:”

Tettleton discloses a control system for controlling fluid flow. Ex. 1016, at FIG. 1 and ¶ [0040]. The claim element is disclosed

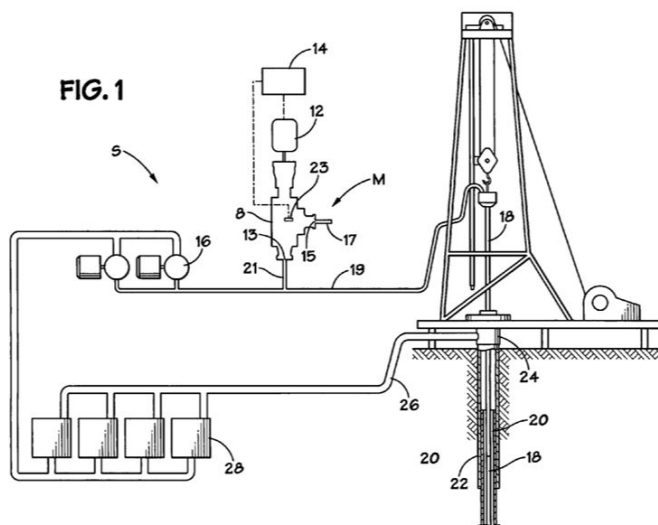
iii. “a fluid supply;”

Tettleton discloses a system for controlling fluid flow in wellsite operations comprising a fluid supply. Ex. 1016, at ¶ [0040]. The claim element is disclosed.

iv. **“a first fluid line in fluid communication with the fluid supply;”**

Tettleton discloses a first fluid line in communication with the fluid supply.

Ex. 1016, at ¶ [0041] and FIG. 1. As seen in FIG. 1 below, a first fluid line (19) is in communication with the mud pits (28); i.e., the fluid supply, of the system.



v. “a pump in fluid communication with the first fluid line and configured to pump fluid from the fluid supply to one or more wellheads through the first fluid line;”

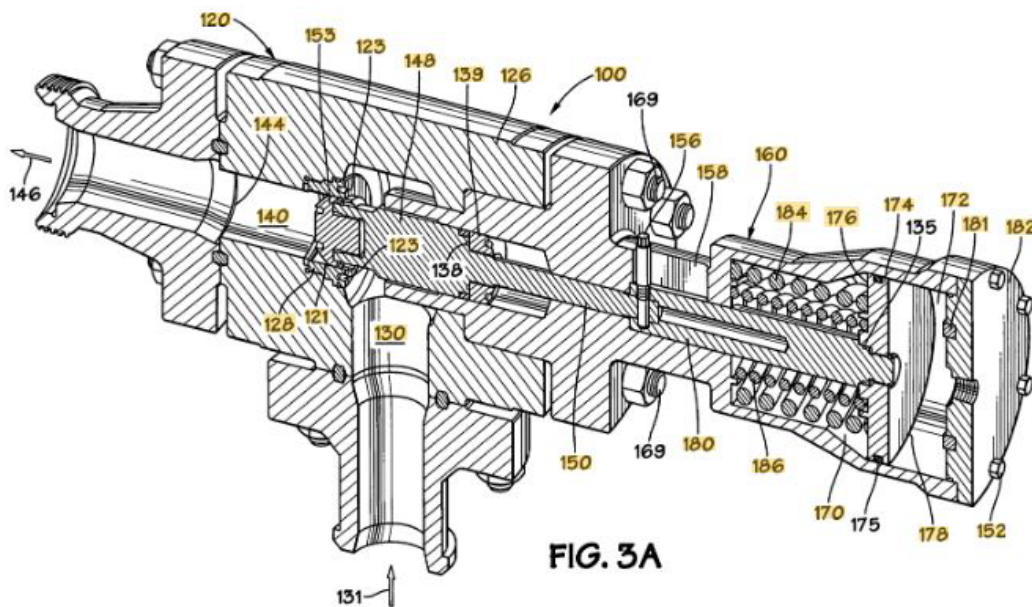
Tettleton discloses a pump (16) in fluid communication with the first fluid line (19) and configured to pump fluid from the fluid supply to the drill string (18) of the wellhead via the first fluid line (19). *Id.*

vi. “a second fluid line in fluid communication with the first fluid line at a location downstream of the pump and configured to return fluid from the first

fluid line back to the fluid supply or direct fluid from the first fluid line to a different reservoir.”

Tettleton expressly and inherently discloses a second fluid line (17) in fluid communication with the first fluid line (19) downstream on the pump (16) configured to return fluid from the first fluid line (19) to a different reservoir. Ex. 1016, at ¶¶ [0040]- [0041] and FIG. 1 and 3.

Specifically, Tettleton expressly discloses the valve (8) that may either be in an “open” or “closed” position based on the position of a valve piston (148) relative to the first passageway (130). When the valve is in an open position, the first passageway and the second passageway are in fluid communication such that the fluid flows from the first passageway to the second passageway and out an exit port (144) and into and out of the second line (17). *Id.*, at ¶¶ [0043]- [0045] and FIG. 3A (below).



Tettleton inherently discloses the second fluid line is configured to direct fluid from the first fluid line to a different reservoir. Tettleton discloses that when one or more pressure sensor (23) determines the pressure in the first line (19) has exceeded the pre-determined threshold, the valve opens and fluid flows into the valve and exits through an outlet (15) and second line (17) instead of the drill stem (18), thereby lowering the pressure within the first fluid line. *Id.* at ¶ [0041]. Once the pressure in the first fluid line lowers, the valve will close and the fluid will be redirected to the drill stem. *Id.*

Although Tettleton does not explicitly disclose that fluid is transferred to a reservoir, this is inherent to the reduction of pressure within the otherwise closed system that is explicitly disclosed. Said another way, to lower pressure caused by increased amounts of fluid in a closed system, the fluid must necessarily be redirected to a different location, i.e., the fluid supply or another reservoir. Ex. 1027, at ¶¶ 41, 47. As a result, this claim element is inherently disclosed. *See, e.g., Toro Co. v. Deere & Co.*, 355 F.3d 1313, 1320 (Fed. Cir. 2004) (“[T]he fact that a characteristic is a necessary feature or result of a prior-art embodiment (that is itself sufficiently described and enabled) is enough for inherent anticipation, even if that

fact was unknown at the time of the prior invention.”)⁸.

vii. “a safety valve in-line with the second fluid line;”

Tettleton discloses a safety valve (8) in-line with the second fluid line (17). Ex. 1016, at ¶¶ [0041], [0045], and FIG. 1. The claim element is disclosed.

viii. “a valve actuator configured to actuate the safety valve;”

Tettleton discloses the actuator having an actuator piston that connects to the valve piston and moves the valve piston between an open and closed position. *Id.* at ¶ [0051]-[0054]. The claim element is disclosed.

⁸ For the element of independent claim 11 to be disclosed it is not necessary for Tettleton to disclose the second fluid line in fluid communication with the first fluid line at a location downstream of the pump and *configured to return fluid from the first fluid line back to the fluid supply or another reservoir*. The claim element has the term “or,” which is defined as “used as a function word to indicate an alternative.” Ex. 1031. As such, only one of the alternatives, either “*configured to return fluid from the first fluid line back to the fluid supply or another reservoir*,” must be disclosed by Tettleton. As discussed above, Tettleton expressly and inherently discloses either.

ix. “a housing;”

Tettleton discloses the controller assembly, valve assembly, and fluid drive assembly as referenced above. Ex. 1016, at ¶¶ [0040]- [0041], [0053], [0057], and [0060]- [0061]. Additionally, Cotham discloses a system (10) for controlling a wellhead having a housing in which a microprocessor control (controller) (14), a motor (16), a pump (18) (fluid drive assembly), and a fluid supply tank (20) are mounted. Ex. 1019, at col. 6, ll. 62-65. Although Cotham does not explicitly disclose the housing supporting a valve assembly, Cotham does disclose a system for controlling a wellhead having a housing that may enclose any or all of the apparatuses and/or devices used in any of the methods according to the invention. Ex. 1019, at col. 3, ll. 36-39. As such, it would have been a design choice of a POSITA to enclose the valve assembly within the housing because the valve assembly is an apparatus used in the method of controlling the wellhead according to the invention. Ex. 1027, at ¶ 51.

x. “an electronic controller assembly;”

Tettleton discloses the electronic controller assembly programmed with a predetermined condition and configured to receive a signal from a transducer connected to a first fluid line, wherein the signal corresponds to a measured physical property. Ex. 1016, at ¶¶ [0041] and [0060]. The claim element is disclosed.

xi. “a fluid drive assembly and a valve assembly;”

Tettleton discloses a fluid drive assembly and a valve assembly. Ex. 1016, at ¶¶ [0041], [0058]-[0059], [0061]-[0062]. The claim element is disclosed.

xii. “supplying fluid to the valve actuator using the fluid drive assembly to actuate the valve actuator to move the safety valve into a closed position;”

Tettleton discloses a valve actuator configured to move the gate into the closed position by fluid supplied into the valve actuator and configured to move the gate into an open position by a biasing member disposed in the valve actuator. Ex. 1016, at FIGS. 3A-C and ¶¶ [0010]- [0011], [0051]- [0054], [0059], [0060]-[0062]. The claim element is disclosed.

xiii. “maintaining the safety valve in the closed position to close fluid flow through the second fluid line;”

Tettleton discloses a valve actuator configured to move the gate into the closed position by fluid supplied into the valve actuator and configured to move the gate into an open position by a biasing member disposed in the valve actuator. Ex. 1016, at ¶¶ [0010]- [0011] and [0051]- [0054]. The claim element is disclosed.

xiv. “monitoring a physical property in the first fluid line using the controller assembly;”

Tettleton discloses the electronic controller assembly programmed with a predetermined condition and configured to receive a signal from a transducer connected to a first fluid line, wherein the signal corresponds to a measured

physical property. Ex. 1016 at ¶¶ [0041] and [0060]. The claimed element is disclosed.

xv. “actuating the valve assembly using the controller assembly to release the fluid from the valve actuator to move the safety valve into an open position and thereby open fluid flow through the second fluid line based upon a comparison of the monitored physical property to a predetermined condition to return fluid from the first fluid line back to the fluid supply or direct fluid from the first fluid line to the different reservoir.”

Tettleton discloses that if the pressure, i.e., the monitored physical property, reaches or exceeds a predetermined value, the controller assembly actuates the valve assembly to release fluid from the actuator such that the valve is moved into an open position, thereby causing fluid to flow through the second fluid line (17) to a different reservoir. Ex. 1016 at ¶¶ [0059]-[0062]. As discussed above, the second fluid line directs fluid from the first fluid line to a different reservoir. *See* VIII(A)(2)(a)(v). As such, the claim element is disclosed.

f. POSITA Would Have Understood Claim 12 to be obvious under Tettleton in view of Cotham: “The method of claim 11, wherein the fluid supplied to the valve actuator by the fluid drive assembly is a pneumatic fluid disposed external to the housing, and further comprising filtering the pneumatic fluid as it enters the housing by the fluid drive assembly.”

The comments for claim 11 incorporated herein by reference. Tettleton discloses that actuator may be actuated by the fluid, which may be either

pneumatic or hydraulic, from an external source. Ex. 1016, at ¶ [0053]. Tettleton also discloses that the actuator may be actuated by the fluid from an external source. *Id.* As discussed above, a POSITA would have known the “external source” term to a point of origin outside of a point of origin such as the housing disclosed by Cotham. Ex. 1027, at ¶ 52; Ex. 1019, at col. 6, ll. 62-65. Cotham also discloses a filter for filtering fluid transferred by a pump; i.e., a fluid drive assembly. Ex. 1019, at col. 8, ll. 61-63. To the extent the aforementioned references do not disclose each and every claim limitation of claim 12, i.e., “the filter filtering the fluid as it enters the housing,” the claim limitation would have been a known design choice to a POSITA at the time of filing the ‘609 Patent thereby rendering the claim obvious. Ex. 1027 at ¶ 52-53.

g. POSITA Would Have Understood Claim 13 of the ‘609 Patent to be Obvious Under Tettleton in View of Cotham: “The method of claim 11, wherein the fluid supplied to the valve actuator by the fluid drive assembly is a hydraulic fluid disposed in a reservoir within the housing that is in fluid communication with the fluid drive assembly;”

KLX incorporates by reference the comments made with respect to claim 11. As disclosed above, Tettleton discloses a pump supplying hydraulic fluid to the valve actuator. Ex. 1016, at ¶ [0053].

In addition, Cotham discloses a system for controlling a wellhead having a housing in enclosing a microprocessor control (controller) 14, a motor 16, a pump

18 (fluid drive assembly), and a fluid supply tank (reservoir) 20. Ex. 1019, at col. 6, ll. 62-65. The pump is disclosed to pump fluid, preferably hydraulic fluid, from the fluid supply tank (reservoir) to operate the valves. *Id.*, at col. 6, ll. 65 and col. 9, ll. 5-7. Based on Cotham's own disclosure, the fluid supply tank, i.e., a reservoir, is enclosed within the housing and is fluid communication with the fluid drive assembly. As such, claim 13 is obvious under Tettleton in view of Cotham such that a valve may be actuated via hydraulic fluid supplied to the valve actuator by a fluid drive assembly from a reservoir disposed within a housing.

h. POSITA Would Have Understood Claim 14 of the '609 Patent to be Obvious Under Tettleton in View of Cotham: "The method of claim 11, further comprising measuring the physical property using a transducer configured to communicate a signal corresponding to the measured physical property to the controller assembly."

KLX incorporates by reference the comments made with respect to claim 11. Tettleton discloses the electronic controller assembly programmed with a predetermined condition and configured to receive a signal from a transducer connected to a first fluid line, wherein the signal corresponds to a measured physical property. Ex. 1016, at ¶¶ [0041], [0060]. The controller receives a signal indicating relevant pressure from the transducer and compares the received fluid pressure value(s) with one or more pre-programmed set point values or ranges. *Id.*, at ¶ [0061]. As such the claim is disclosed.

i. POSITA Would Have Understood Claim 15 of the ‘609 Patent to be Obvious Under Tettleton in View of Cotham: “The method of claim 11, wherein the fluid supplied to the valve actuator by the fluid drive assembly is a pneumatic fluid, and wherein the fluid drive assembly is a compressor.”

KLX incorporates by reference the comments made in respect to claims 11. Tettleton also discloses the fluid supplied to the valve actuator by the fluid drive assembly is a pneumatic fluid from a rig air source. Ex. 1016, at ¶¶ [0053] and [0061].

Although the term “rig air source” is not defined in the specification or the prosecution history, “prior art references may be ‘indicative of what those skilled in the art generally believe a certain term means ... [and] can often help to demonstrate how a disputed term is used by those skilled in the art.’” *In re Cortright*, 165 F.3d, 1353, 1358, 49 U.S.P.Q.2d 1464 (Fed. Cir. 1999).

Based on prior art references in existence at the time of filing the ‘609 Patent application, a POSITA would determine the “rig air source” term to mean a compressor. Ex. 1027, at ¶ 50. *See also* Ex. 1022, at 37. Thus, Tettleton discloses the fluid drive assembly is a compressor and the fluid is pneumatic fluid.

j. POSITA Would Have Understood that Claim 16 of the ‘609 Patent to be Obvious under Tettleton in view of Cotham: “The method of claim 11, where in the fluid supplied to the valve actuator by the fluid drive

assembly is a hydraulic fluid, and wherein the fluid drive assembly is a pump.”

Petitioner incorporates by reference the comments made with respect to claim 11. The ‘609 Patent discloses that the “fluid drive assembly” is a pump. Ex. 1007 at col. 23, ll. 10-11. In addition, Tettleton discloses a pump supplying hydraulic fluid to the valve actuator. Ex. 1016 at ¶ [0053]. As such, the claim is obvious under Tettleton in view of Cotham.

C. Ground 3: Claim 9 is Obvious under Tettleton in view of Tubel

1. Overview of Tubel

Generally, Tubel discloses a system and method for regulating oil and gas production wells. Ex. 1023 at Abstract. The system has sensors that evaluate parameters regarding the production tubing. Based on the evaluation of the parameters, corrective actions may be initiated by a remote system. Ex. 1023 at Abstract and col. 12, ll. 42-67.⁹

⁹ Tubel is in the field of regulating wellheads including but not limited to, sensors, valves, controller assemblies, and remote computer systems. Ex. 1023, at Abstract, col. 8, ll. 5-33, col. 15, ll. 54- col. 16, ll. 36, col. 16, ll. 42-58, col. 16, ll. 42-48. As such, Tubel should be considered analogous art because Tubel is in the same field of endeavor as the claimed invention of the ‘609 Patent.

2. Tettleton in view of Tubel Renders the Challenged Claims Obvious.

As stated herein, a POSITA would have considered claim 9 as obvious under Tettleton in view of Tubel under 35 U.S.C. § 103. A patent is obvious when its alleged invention is merely “the predictable use of prior art elements according to their established functions.” *KSR Inter. Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007). KLX submits that claim 9 of the ‘609 Patent is a predictable use of prior art elements according to their established functions under Tettleton in view of Tubel.

a. POSITA Would Have Understood claim 9 of the ‘609 Patent to be Obvious under Tettleton in view of Tubel: “The system of claim 1, wherein the controller assembly is operable to communicate a signal corresponding to the measured physical property to a remote computer system.”

The comments of claim 1 are incorporated herein by reference. Tettleton discloses the electronic controller assembly programmed with a predetermined condition and configured to receive a signal from a transducer connected to a first fluid line, wherein the signal corresponds to a measured physical property. Ex. 1016, at ¶¶ [0041] and [0060]. In addition, Tubel discloses transmitting a signal corresponding to the measured physical property to a remote computer system Ex. 1023, at col. 12, ll. 42-67. Thus, in view of Tubel, claim 9 would be obvious under Tettleton.

D. Ground 4: Claims 17 and 18 are Obvious under Tettleton in view of Cotham and Tubel

1. Tettleton in view of Cotham and Tubel Renders the Challenged Claims Obvious.

As stated herein, a POSITA would have considered claims 17 and 18 as obvious under Tettleton in view of Cotham and Tubel under 35 U.S.C. § 103. A patent is obvious when its alleged invention is merely “the predictable use of prior art elements according to their establishes functions.” *KSR Inter. Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007). KLX submits that claims 17 and 18 of the ‘609 Patent are a predictable use of prior art elements according to their established functions under Tettleton in view of Cotham and Tubel.

a. POSITA in the Art Would Have Understood that Claim 17 of the ‘609 Patent to be Obvious under Tettleton in view of Cotham and Tubel: “The method of claim 11, further comprising communicating a signal from the controller assembly to a remote computer system, wherein the signal corresponds to an operational characteristic of the safety valve.

KLX incorporates the comments of claim 11 herein by reference. Tettleton discloses the electronic controller assembly programmed with a predetermined condition and configured to receive a signal from a transducer connected to a first fluid line, wherein the signal corresponds to a measured physical property. *See, e.g.*, Ex. 1016, at ¶¶ [0041] and [0060]. In addition, Tubel discloses the signal that may be transmitted to a remote location that relates to the position of the valve,

i.e., the “operational characteristic” is the position of the valve. Ex. 1023, at col. 23, ll. 18- col. 24, ll. 6.

The “operational characteristic” term is not defined within the four corners of the ‘609 Patent. A POSITA would have understood the “operational characteristic” term to have the widely accepted meaning of the commonly used “operational” and “characteristic” terms. *Phillips*, 415 F.3d at 1314 citing *Brown*, 265 F.3d at 1352. In such cases, the Federal Circuit has stated a general-purpose dictionary may be helpful in discerning the widely accepted meaning and common use of the terms. *Id.* at 1314.

According to the *Webster’s New Collegiate Dictionary*, “operational” means “of or relating to the operation,” Ex. 1024, and “characteristic” is defined as “a distinguishing trait, quality, or property.” Ex. 1025. Based on these definitions, a POSITA would discern the ordinary and customary meaning of the “operational characteristic” term to be a trait, quality, or property relating to the operation of the safety valve. Ex. 1027, at ¶ 55. Tubel’s disclosure of the signal that corresponds to the position of the valve is the disclosure of a signal that relates to a trait, quality, or property relating to the operation of the safety valve. As such, the claim is disclosed.

b. POSITA in the Art Would Have Understood that Claim 18 of the ‘609 Patent to be Obvious under Tettleton in view of Cotham and Tubel: “The method of claim 11, further comprising actuating the safety

valve by communicating a signal from a remote computer system to the controller assembly.”

KLX incorporates the comments made in reference to claim 11 herein by reference. Tettleton discloses the electronic controller assembly programmed with a predetermined condition and configured to receive a signal from a transducer connected to a first fluid line, wherein the signal corresponds to a measured physical property. *See, e.g.*, Ex. 1016, at ¶¶ [0041] and [0060]. In addition, Tubel discloses that a downhole controller (controller assembly) receives a signal from the remote computer system such that the safety valve may be actuated. Ex. 1023, at col. 8, ll. 5-33, col. 15, ll. 54- col. 16, ll. 36, col. 16, ll. 42-58, col. 16, ll. 42-48. As such, the claim is disclosed.

IX. POSITA WOULD HAVE BEEN MOTIVATED TO COMBINE THE AFOREMENTIONED REFERENCES

POSITA would have been motivated to combine the teachings of Tettleton with Cotham and Tubel to render the challenged claims obvious. A “‘motivation to combine may be found explicitly or implicitly in market forces; design incentives; the ‘interrelated teachings of multiple patents’; ‘any need or problem known in the field of endeavor at the time of invention and addressed by the patent’; and the background knowledge, creativity, and common sense of the person of ordinary skill.’” *ZUP, LLC v. Nash Mfg., Inc.*, 896 F.3d 1365, 1371 (Fed. Cir. 2018) (citation omitted). This analysis is a “flexible one.” *Intel Corp. v. PACT XPP SCHWEIZ AG*,

61 F.4th 1373, 1379 (Fed. Cir. 2023). Furthermore, “[a] person of ordinary skill is also a person of ordinary creativity, not an automaton.” *Id.* (quoting *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 420 (2007)). Thus, “the motivation-to-combine analysis ‘need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.’” *Id.* (quoting *KSR*, at 418).

Real-time, remote monitoring of a housed pressure relief system was a need known to POSITA at the earliest priority date of the challenged claims. This is expressly referenced in the ‘609 Patent itself: “there is a need for a new and improved safety control valve system that is self-reliant [and] can be remotely operated and monitored real-time...” Ex. 1007 at col. 2, ll-10-19. Prior art publications, and government regulation, at the time reiterate this need and reflect that POSITA knew of and used electric control systems for remote monitoring and control of wellhead operations. Ex. 1027, at 58; Ex. 1005, at 201; Ex. 1026, at 1700-11; Exs. 1029-1030.

Tubel itself buttresses this conclusion, as it discloses a need for a production control system that gives “real time information” and “automatically [controls] downhole tools in response to sensed selected downhole parameters.” Ex. 1023, at col. 4, ll. 36-47. Tettleton also discloses POSITA’s knowledge of a “flow-to-close” and “fail-to-open” valve systems that are actuated based upon measured pressure of fluid in a pressurized apparatus or system. Ex. 1016, at ¶ [0008]. Likewise, Cotham

discloses a need for housing wellhead control systems to provide safety and protection. Ex. 1019, at col. 3, ll. 35-50.

The government regulations known at filing also support the motivation to combine the aforementioned references because the regulations illustrate the “background knowledge, creativity, and common sense of the person of ordinary skill [in the art.]” *ZUP, LLC*, 896 F.3d at 1371. Specifically, the regulation supports that the POSITA knew of and used the elements of the electronic control systems disclosed in the ‘609 Patent at the time of filing.¹⁰ Ex. 1030. As such, POSITA would have understood to combine the disclosed elements for their known purpose to construct the overall system disclosed in the ‘609 Patent. Ex. 1027, at ¶ 57.

Thus, motivation to combine is found here, as the needs and problems purportedly addressed by the challenged claims were “known in the field of endeavor at the time of invention” and reiterated in the “interrelated teachings of multiple patents” and prior art publications. *ZUP*, at 1371. These teachings come from the prior art cited herein, which POSITA would have been motivated to combine with success given the simplicity of the technology at issue. *See Intel*, at 1379-1380 (“In many cases [,] a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle.”) (citation omitted).

The fact that real-time, remote monitoring of pressure relief systems to allow

¹⁰ Ex. 1030 at 1910.119(j)(1)(i)- 1910.119(j)(1)(vi).

for quick relief of pressure are reflected in the prior art show these to be “‘universal’ motivations known in a particular field to improve technology [that] provide ‘a motivation to combine prior art references even absent any hint of suggestion in the references themselves.’” *Intel*, at 1380 (citation omitted). Ex. 1027, at ¶¶ 56, 61; Ex. 1005, at 201; Ex. 1026 at 1700-11.

Indeed, using computer technology to improve the efficiency and reactivity of an apparatus or system is use of a known technology that POSITA would recognize could and would improve pressure relief systems. Thus, motivation to combine exists by virtue of known-techniques and using prior art systems according to their established functions. *Intel*, at 1380. To be sure, such an “‘improvement’ is technology-independent,” thus, there is implicit motivation to combine the prior art because the “combination of references results in a product or process that is more desirable, for example because it is stronger...faster...more durable, or more efficient.” *DyStar Textilfarben GMBH & Co. v. C.H. Patrick Co.*, 464 F.3d 1356, 1368 (Fed. Cir. 2006). POSITA would have been more than capable of combining the teachings of the prior art to result in the obvious combination embodied by the challenged claims. Ex. 1027, at ¶¶ 56, 61. Thus, those claims should be found to be unpatentable.

X. NO SECONDARY CONSIDERATIONS EXIST

As described above, the combination of Tettleton, Cotham, and Tubel render the challenged claims of the '609 Patent anticipated and/or obvious. No secondary or objective indicia of non-obviousness exist that would show otherwise. During the Parallel Proceeding, Patent Owner was asked in an interrogatory to identify any such secondary considerations, and its response failed to provide any having a nexus to the putative “invention” of the challenged claims. *See* Ex. 1028, at 8. As a result, without a nexus between the alleged secondary considerations and the claimed “invention,” Patent Owner’s non-obvious arguments lack weight. *See In re GPAC Inc.*, 57 F.3d 1573, 1580 (Fed. Cir. 1995) (“For objective evidence to be accorded substantial weight, its proponent must establish a nexus between the evidence and the merits of the claimed invention.”).

Indeed, Patent Owner claims KLX has copied its invention, but the elements of the claimed invention were and are present in the prior art. *See, e.g., Rambus Inc. v. Rea*, 731 F.3d 1248, 1257 (Fed. Cir. 2013) (holding that “objective evidence of non-obviousness lacks a nexus if it exclusively relates to a feature that was known in the prior art.”) (citation omitted). Regardless, more than an allegation of “the mere fact of copying” is needed for non-obviousness, *In re GPAC*, at 1580, and “[secondary] considerations are relevant **only** in a case where all other proof leaves the question of invention in doubt,” which is not the case here. *Dow*

Chemical Co. v. Haliburton Oil Well Cementing Co., 324 U.S. 320, 330 (1945)

(emphasis added). No such close call is present here, and KLX submits that all of the challenged claims are invalid. KLX reserves its right, however, to respond to any assertion of secondary indicia of non-obviousness advanced by Patent Owner.

XI. CONCLUSION

KLX respectfully submits that there is a reasonable likelihood that KLX will prevail in establishing the challenged claims are unpatentable and requests that trial be instituted.

Dated: November 17, 2023

Respectfully submitted,

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XII. CLAIM APPENDIX

The challenged claims are shown below:

1. A control system for controlling fluid flow through a flow line at a wellsite, the control system comprising:

a fluid supply;

a first fluid line in fluid communication with the fluid supply;

a pump in fluid communication with the first fluid line and configured to pump fluid from the fluid supply to one or more wellheads through the first fluid line;

a second fluid line in fluid communication with the first fluid line at a location downstream of the pump and configured to return fluid from the first fluid line back to the fluid supply or direct fluid from the first fluid line to a different reservoir;

a safety valve in-line with the second fluid line and movable into a closed position to close fluid flow through the second fluid line;

a valve actuator configured to actuate the safety valve from the closed position to an open position to open fluid flow through the second fluid line;

an electronic controller assembly programmed with a predetermined condition and configured to receive a signal from a transducer connected

to the first fluid line, wherein the signal corresponds to a measured physical property;

a valve assembly in communication with the controller assembly; and

a fluid drive assembly in communication with the controller assembly, wherein the controller assembly is operable to actuate the fluid drive assembly to supply fluid to the valve actuator to move the safety valve into the closed position, and wherein the controller assembly is operable to actuate the valve assembly in response to a comparison of the measured physical property to the predetermined condition to release the fluid from the valve actuator to move the safety valve into the open position and thereby open fluid flow through the second fluid line to return fluid in the first fluid line back to the fluid supply or direct fluid in the first fluid line to the different reservoir.

2. The system of claim 1, further comprising a housing for supporting the controller assembly, the valve assembly, and the fluid drive assembly.

3. The system of claim 2, wherein the fluid supplied to the valve actuator by the fluid drive assembly is supplied from a reservoir disposed outside of the housing.

4. The system of claim 1, wherein the fluid drive assembly is a compressor and the fluid supplied to the valve actuator by the fluid drive assembly is a pneumatic fluid.

5. The system of claim 1, wherein the fluid drive assembly is a pump and the fluid supplied to the valve actuator by the fluid drive assembly is a hydraulic fluid.

6. The system of claim 1, further comprising a power source for supplying power to the controller assembly, the valve assembly, and the fluid drive assembly.

7. The system of claim 1, further comprising a housing for supporting the fluid drive assembly, and a filter attached to the housing for filtering fluid entering the housing by the fluid drive assembly.

8. The system of claim 1, wherein the fluid supplied to the valve actuator by the fluid drive assembly is ambient air.

9. The system of claim 1, wherein the controller assembly is operable to communicate a signal corresponding to the measured physical property to a remote computer system.

10. The system of claim 1, wherein the controller assembly is a programmable logic controller.

11. A method for controlling fluid flow through a flow line at a wellsite, the method comprising:

providing a control system comprising:

a fluid supply;

a first fluid line in fluid communication with the fluid supply;

a pump in fluid communication with the first fluid line and configured to pump fluid from the fluid supply to one or more wellheads through the first fluid line;

a second fluid line in fluid communication with the first fluid line at a location downstream of the pump and configured to return fluid from the first fluid line back to the fluid supply or direct fluid from the first fluid line to a different reservoir;

a safety valve in-line with the second fluid line;

a valve actuator configured to actuate the safety valve;

a housing;

an electronic controller assembly;

a fluid drive assembly; and

a valve assembly;

supplying fluid to the valve actuator using the fluid drive assembly to actuate the valve actuator to move the safety valve into a closed position; maintaining the safety valve in the closed position to close fluid flow through the second fluid line;

monitoring a physical property in the first fluid line using the controller assembly; and

actuating the valve assembly using the controller assembly to release the fluid from the valve actuator to move the safety valve into an open position and thereby open fluid flow through the second fluid line based upon a comparison of the monitored physical property to a predetermined condition to return fluid from the first fluid line back to the fluid supply or direct fluid from the first fluid line to the different reservoir.

12. The method of claim 11, wherein the fluid supplied to the valve actuator by the fluid drive assembly is a pneumatic fluid disposed external to the housing, and further comprising filtering the pneumatic fluid as it enters the housing by the fluid drive assembly.

13. The method of claim 11, wherein the fluid supplied to the valve actuator by the fluid drive assembly is a hydraulic fluid disposed in a reservoir within the housing that is in fluid communication with the fluid drive assembly.

14. The method of claim 11, further comprising measuring the physical property using a transducer configured to communicate a signal corresponding to the measured physical property to the controller assembly.

15. The method of claim 11, wherein the fluid supplied to the valve actuator by the fluid drive assembly is a pneumatic fluid, and wherein the fluid drive assembly is a compressor.

16. The method of claim 11, wherein the fluid supplied to the valve actuator by the fluid drive assembly is a hydraulic fluid, and wherein the fluid drive assembly is a pump.

17. The method of claim 11, further comprising communicating a signal from the controller assembly to a remote computer system, wherein the signal corresponds to an operational characteristic of the safety valve.

18. The method of claim 11, further comprising actuating the safety valve by communicating a signal from a remote computer system to the controller assembly.

CERTIFICATE OF COMPLIANCE

I hereby certify that this brief complies with the type-volume limitations of 37 C.F.R. §42.24(a)(1)(i), because it contains 13,031 words (as determined by the Microsoft Word word-processing system used to prepare the brief), excluding the parts of the brief exempted by 37 C.F.R. §42.24.

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CERTIFICATE OF SERVICE

I hereby certify that on this 17th day of November, 2023, copies of this Petition for *Inter Partes* Review, Attachments and Exhibits have been served in its entirety in person on Patent Owner:

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