

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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CRUSOE ENERGY SYSTEMS, LLC  
Petitioner

v.

UPSTREAM DATA INC.  
Patent Owner

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Case PGR2023-00039  
Patent No. 11,574,372

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**PATENT OWNER'S PRELIMINARY RESPONSE  
FOR POST GRANT REVIEW  
U.S. PATENT NO. 11,574,372**

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Patent Trial and Appeal Board  
United States Patent and Trademark Office  
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**PATENT OWNER'S EXHIBIT LIST**

| <b><u>Exhibit No.</u></b> | <b><u>Description</u></b>                                                                                            |
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| <b>Exhibit 2001</b>       | Declaration of Dr. Fengqi You and Curriculum Vitae                                                                   |
| <b>Exhibit 2002</b>       | U.S. Patent No. 10,862,307                                                                                           |
| <b>Exhibit 2003</b>       | Excerpt from the Prosecution History of U.S. Patent No. 10,862,307                                                   |
| <b>Exhibit 2004</b>       | U.S. Patent Application Publication 2014/0096837 A1, Publication Date: April 10, 2014                                |
| <b>Exhibit 2005</b>       | U.S. Patent Application Publication 2018/0109541 A1, Publication Date: April 19, 2018                                |
| <b>Exhibit 2006</b>       | Opto Video. "Why is Natural Gas Flared?" Temecula, CA: Opto Video, 2015.                                             |
| <b>Exhibit 2007</b>       | BitFury Group Limited. <i>BlockBox AC – Air Cooled Mobile Datacenter</i> . Amsterdam, The Netherlands: BitFury, 2017 |
| <b>Exhibit 2008</b>       | Declaration of Sylvia Hall-Ellis, Ph.D. and Curriculum Vitae                                                         |

Unless indicated otherwise, all emphasis and annotations herein are added by Patent Owner.

## **I. INTRODUCTION**

The Board should deny institution of the Post Grant Review trial sought by Crusoe Energy System, Inc (“Crusoe”) because the grounds rehash obviousness arguments that were addressed and resolved during examination of United States No. 11,574,372. Further, Crusoe and its experts demonstrably engage in hindsight to present tenuous obviousness grounds that thinly address any reason to make the combination of references sought by Crusoe. Finally, Crusoe’s final challenge to the claims under 35 U.S.C. § 101 is facially inadequate to support institution because it depends on misreading of the claims and does not apply the correct legal test. For the reasons provided herein, Patent Owner Upstream Data Inc. (“Upstream”) respectfully requests that Crusoe’s Petition be denied.

## **II. OVERVIEW OF ’372 PATENT**

The ’372 patent claims priority to provisional application 62/456,380, filed on February 8, 2017. EX1001. The patent “relates to blockchain mining at an oil or gas facility.” *Id.*, 1:6-7. The ’372 patent explains that “[i]n upstream production of oil and gas, natural gas may be produced ... as a by-product of oil production, for example from an oil well.” *Id.*, 6:51-54. This form of natural gas is referred to as undesirable casinghead gas, casing gas or simply raw gas. *Id.*, 4:62-63, 8:66-9:3.

The prior art knew some ways to utilize casinghead gas. For example, it was known to consume it as “on-site fuel for equipment or for instrumentation

pressure.” EX1001, 6:56-58. If there was a significant gas volume beyond what could be consumed onsite, gas could be sold to market through a connection to a pipeline network or liquified for transportation. *Id.*, 6:59-64. If a grid connection was available, casinghead gas could be used to generate electricity for sale to the power grid. *Id.*, 6:63-67.

However, gas “may be located at a remote oil and gas site” that lacks “accessible infrastructure such as an external pipeline network (sales line) or external power grid to sell into” and may be “hundreds of kilometers outside of the nearest town.” *Id.*, 7:46-49, 8:20-23. In such cases “it may not be economically feasible” to take the gas or electricity to market, “for example due to significant capital expense required or when the volume of gas is insufficient to pay out the investment.” *Id.*, 7:49-54, 8:11-23. As is known in the art, the gas is “stranded.” *Id.*, 7:54-56; EX2001, ¶31.

In such cases, a common solution is to vent or flare (burn) the stranded gas. EX1001, 1:11-13, 7:61-8:10. However, this solution creates greenhouse gas emissions, wastes the potential energy of the gas, requires capital expenditure, and may pose health risks. *Id.*

The novel solution taught by the '372 patent used stranded gas to power a portable blockchain mining device instead of flaring the gas. *Id.*, 2:18-24.

“A blockchain is a form of database, which may be saved as a distributed ledger in

a network of nodes that maintains a continuously-growing list of records called blocks.” *Id.*, 11:45-47. “The administration of BITCOIN currency is currently the primary use for blockchain technology.” *Id.*, 11:57-60. “Maintaining a blockchain database is referred to as mining, which refers to the distributed computational review process performed on each block of data in a block-chain.” *Id.*, 13:5-7. “Those involved in BITCOIN mining are rewarded for their effort with newly created BITCOINs and transaction fees.” *Id.*, 13:9-13.

Blockchain mining (also referred to as crypto mining) differs from many other types of computing as it is “intentionally designed to be resource-intensive and difficult so that the number of blocks found each day by miners remains steady.” *Id.*, 13:29-33, 13:44-48. This intentionally energy-intensive problem comprises “a cryptographic hashing algorithm.” *Id.*, 13:49-52. Since the energy cost of crypto mining is the primary operating cost, the prior art mines were located primarily in places with low-cost hydroelectric power such as China or the Pacific Northwest in the United States. *Id.*, 14:4-20; EX1009, 105; EX2001, ¶36.

Decentralizing crypto mining away from hydroelectric power to make use of stranded gas at remote oil and gas production facilities required innovative solutions disclosed in the ’372 patent. For example, unlike existing crypto mines which could depend on reliable power sources (e.g., a hydroelectric power plant), the ’372 patent’s bitcoin mine had to solve the problem of variable casehead gas

production. EX2001, ¶37. The '372 patent discloses solving this problem by, for example, the mining controller modulating the mining power load (also referred to as the hashrate) in real time to respond “to variations in a supply or production rate of natural gas.” EX1001, 17:61-18:15; EX2001, ¶37. In addition, crypto mining power levels may be adjusted to a daily minimum or maximum gas production rate as different strategies to mitigate the variable production. EX1001, 18:34-19:13; EX2001, ¶37.

### III. CLAIM CONSTRUCTION

#### A. Petitioner's Construction Of “Blockchain Mining Devices” And “Mining Processor” Is Not Supported By The Intrinsic Record

The intrinsic evidence of the '372 patent does not support Petitioner's constructions. First, Petitioner nearly equates the meaning of a “blockchain mining devices” with a “mining processor.” Pet. 4-6. But, the specification makes clear (including with reference to Figure 4) that the “mining device 12” is made of up of many components, such as a power meter 72, a step-down transformer 80, “a controller 86, network equipment 88 such as a modem and a network switch, ... ***and one or more mining processors 92*** such as processors 92A-E.” EX1001, 16:32-39 (emphasis added); *see also* 17:23-29; EX2001, ¶39. With respect to the mining processors 92, the '372 patent details that “[e]ach mining processor 92 may have a variety of configurations, but generally may include at least a power supply, a controller board and mining circuitry, such an ASIC circuit. Various mining

circuitry examples include CPU (central processing unit), GPU (graphics processing unit), FPGA (Field-Programmable Gate Array), and ASIC (application specific integrated circuit). The components of an ASIC mining processor include the hash boards (each board has numerous chips that is doing the hashing), a controller (to communicate with the network and optimize the mining processors chip frequency and fans for colling), and a power supply (typically converts AC input power to DC power for the ASIC).” EX1001, 17:9-21. A person of ordinary skill in the art, therefore, would understand that at a minimum a mining processor is “a processor with blockchain mining circuitry.” EX2001, ¶39.

Second, Petitioner primarily relies on disclosure pertaining to a “network of nodes” to reach its conclusion regarding the terms “blockchain mining devices” and “mining processor.” Petitioner, however, confuses the existence of nodes within a network of nodes that “maintain ... records” with mining processors that include “circuitry for mining blockchain blocks.” EX2001, ¶40. For example, while the nodes are described as “stor[ing] a copy of the global ledger” within the blockchain database (EX1001,14:22-43), the ’372 patent specification describes the mining processor as providing the “require[d] computational effort” measured by the “hashrate.” EX1001,13:49-58;EX2001, ¶40. As the specification makes plain, a simple node may be “desktop computers, laptop computers, tablet computers, cellular telephones, servers, or other suitable devices” used for storing

already computed blocks within a blockchain. EX1001,14:30-33. But, the “[m]ining circuitry 130, for example integrated circuit chip, may be used to perform data mining operations, for example verifying cryptocurrency transactions.” *Id.*, 14:57-63; *see also* 17:9-21.

Accordingly, a node that simply stores a copy or partial copy of the blockchain database may or ***may not*** have a mining processor. EX2001, ¶41. The specification’s teaching is consistent with the language of the independent claims of the ’372 patent that describe “blockchain mining devices” as “each hav[ing] a mining processor” and a “connection to a network interface.” EX1001, claims 1 and 24; EX2001, ¶41. Because the claim language itself informs a person of ordinary skill as to the meaning of the “blockchain mining devices,” no construction of that term is necessary. *Id.*

Finally, Petitioner offers no support whatsoever for its proposal to attach the negative limitation “without regard to processor speed or power” to either identified claim term. There is simply no claim language in the ’372 patent, no specification support within the ’372 patent, and no reason to be gleaned from the prosecution history to graft the notion of “any processor ... without regard to processor speed or power” into the claims. *Id.*, ¶42. To the contrary, the specification repeatedly teaches that the “computation effort” is important, so much so that the ’372 patent teaches optimizing the hashrate by, for example,

“changing ... the clock rate of the processor.” EX1001, 13:49-54; EX2001, ¶42. A person of ordinary skill in the art would find no support for a requirement that the “blockchain mining devices” or “mining processors” exist “without regard to processor speed or power.” *Id.*

**B. Petitioner's Construction Of A “A Continuous Flow Of Combustible Gas” Is Inconsistent With The Intrinsic Record**

Petitioner's construction of “continuous flow of combustible gas” similarly divorces the claim term from the surrounding claim language, the specification's description of the source of combustible gas, and ignores the prosecution history. Pet. at 6. Petitioner's proposal renders superfluous the word “continuous” in the claim because it suggests that any “time period” where “a flow” is present, no matter how small the time period may be, is “continuous.” EX2001, ¶43. Under a literal reading of Petitioner's proposal, a flow of combustible gas that occurred for a few minutes and then disappeared would meet the limits of “a flow of combustible gas that is continuous for at least a time period.” *Id.* Thus, Petitioner's proposal is inconsistent with the plain meaning of the claim language requiring a *continuous* flow. *Id.*

The '372 patent specification confirms that the “continuous” character of the natural gas in the '372 patent derives from the fact the natural gas is a by-product of hydrocarbon (oil) production, storage, or processing, and cannot be avoided during production. EX1001, 6:35-39 (“Natural gas may naturally separate from

the oil stream as it is produced up the well ...”); *id.*, 6:48-51 (“Natural gas may also be liberated out of solution from the oil as it is treated ...”); EX2001, ¶44. In remote areas, where an oil field operator is confronted with this continuous source of natural gas, “the operator is forced to do something with the excess or stranded gas and is left with few options” such as “venting ... flar[ing], ... or ceasing production....” EX1001, 7:54-60. The natural gas that is the focus of the ’372 patent is “[c]asing gas, also known as casinghead gas, [that] is gas produced as a byproduct from a producing oil well ....” *Id.*, 8:66-9:1; 9:63-66; EX2001, ¶44. The recitation of a “continuous flow of combustible gas” reflects that the combustible gas is continuous (albeit at varying production rates) as a byproduct of “hydrocarbon production, storage, or processing.” *Id.* This is consistent with the ordinary meaning of a “continuous flow of combustible gas” that would be applied by a person of ordinary skill in the field. *Id.*

Petitioner identifies a portion of the ’372 patent specification describing an aspect of the invention that uses a controller to modulate the blockchain mine load in relationship to a varying gas supply. EX1001, 17:47-60. The portion of the specification identified by Petitioner teaches the advantageous use of controller settings to deliver a stable and consistent load from the mining processors throughout the day, even during periods of time where the production rate of combustible gas exceeds the minimum production rate. EX1001, 18:16-27;

EX2001, ¶45. Contrary to Petitioner's proposed construction, the implementation of these controller settings does not disclose a supply of combustible gas present for merely "a time period," but instead describes a varying production rate between a minimum and maximum production rate. EX2001, ¶45.

Finally, Petitioner and its expert opine that "the gas supply from any given oil field is limited, and will eventually dry up" to support the proposal that requires a supply of combustible gas during "any time period." Pet. at 6. Petitioner's expert's opinion is not only disputable, it does not find support in the specification and is not pertinent to the problem of casinghead gas that is a byproduct of oil production described in the '372 patent. EX2001, ¶46. That a well may at some point stop producing hydrocarbons does not justify the "any time period" language because the '372 patent is directed to a problem that exists while casehead gas is produced. *Id.* Thus, a person of ordinary skill in the art would not accept Petitioner's proposed construction for the "continuous flow of combustible gas." *Id.*

### **C. Level of Ordinary Skill in the Art**

The Petition and related declarations propose two alternative levels of ordinary skill in the art, where the second alternative does not require any formal education or any experience in the field of oil or gas production. While Patent Owner disagrees with the Petition's treatment of the level of ordinary skill in the

art, the Patent Owner and Dr. You applied Petitioner's articulation and confirmed the prior art analysis detailed below would not change based on disagreements over the level of ordinary skill in the art. EX2001, ¶¶15-16. Similarly, Patent Owner applied Petitioner's proposed claim constructions when analyzing the prior art and confirmed that the analysis would not change whether or not Petitioner's proposed constructions are applied.

#### **IV. NON-OBVIOUSNESS GROUNDS**

##### **A. Ground 1.**

##### **1. No Motivation to Combine**

Petitioner fails to demonstrate that a POSITA would have been motivated to combine references for this Ground for at least the following reasons.

##### **a. Ground 1 is based on hindsight**

Petitioner asserts that the claimed invention had "been done before," (Petition, 1), but Ground 1 relies on *four* references even for the independent claims. Petitioner ignores the pioneering nature of the '372 invention which materially advanced the knowledge in the art (*see* EX2001, ¶48.), and engages in hindsight reconstruction of the claims using references that a POSITA would not have combined. Tellingly, the two primary references – Dickerson and the so-called "CryptoKube system" – are from what a POSITA would have considered as disparate and unrelated fields of art before the invention of the '372 patent (*id.*):

- Dickerson relates to a "mobile apparatus... for processing and using raw

natural gas that is normally flared at the site of oil and gas field operation facilities” comprising “a membrane separation unit for separating useful fuel gas from raw natural gas” and a “gas engine that uses the fuel gas to generate electricity that is returned to the facility.” EX1005, ¶¶2,6.

Petitioner does not dispute that Dickerson never mentions datacenters or cryptocurrency mining, let alone discloses any use of its apparatus to mine cryptocurrency.

- The CryptoKube system purportedly discloses “a commercialized industrial Bitcoin mining system.” EX1004, ¶63. The CryptoKube Brochure discloses that “CryptoKube can run inside a large warehouse, outside in a parking lot or in a server pod farm where the power is cheapest.” EX1006, 4. Yet there is no indication in the CryptoKube references of *any* actual or even hypothetical use of CryptoKube with a generator at an oil or gas production facility which “are typically located in remote areas where no utility power is available” as explained by Dickerson. EX1005, ¶24. Nor does Petitioner’s declarant Mr. Kasdorf – identified as “the owner and partner in KubeData Systems Inc.” – provide even a single instance of CryptoKube powered by flare gas at a remote oil or gas production facility.

Given this lack of any connection between Dickerson and CryptoKube,

Petitioner cannot rely on the primary references to supply the motivation to combine. Instead, Petitioner turns to a third reference – the Szmigielski book on cryptocurrency mining – for the purported motivation to combine. *See* EX1009; Petition, 19-20. This use of yet another reference to supply the missing motivation to combine underscores that before the '372 invention a POSITA would not have considered generators utilizing flared gas at remote oil and gas facilities as suitable to power a cryptocurrency miner like CryptoKube. EX2001, ¶49. *See In re Cyclobenzaprine Hydrochloride Extended-Release Capsule Patent Litig.*, 676 F.3d 1063, 1072 (Fed. Cir. 2012) (“This hindsight analysis is inappropriate because obviousness must be assessed at the time the invention was made.”). Rather, before the '372 invention, a POSITA considered crypto mining and power generation from flare gas at remote oil production facilities as two disparate and unrelated fields. EX2001, ¶49.

Petitioner relies on Szmigielski's statement that “[o]ne of the biggest costs for Bitcoin miners is the cost of electricity” as the motivation to combine Dickerson and CryptoKube. Petition, 20; EX1009, 105.<sup>1</sup> Szmigielski describes his

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<sup>1</sup> The Petition appears to cite to EX1009 using original pagination rather than exhibit page numbers. For consistency with other exhibits, this POPR cites to EX1009 exhibit page numbers.

book as “show[ing] you how to mine for yourself” and “explain[ing] step by step what is necessary and how to do it.” EX1009, 12. Yet this 2016 how-to cryptocurrency mining volume that post-dates both primary references never identifies remote oil and gas facilities as a suitable location or power source; rather, it identifies other electricity sources such as “inexpensive hydroelectric power.” EX2001, ¶50; EX1009, 105.

Petitioner asserts in a conclusory manner that, based on the statement in Szmigielski, a “POSITA would have been motivated to couple a device capable of digital currency mining to Dickerson’s system to utilize the free excess electricity.” Petition, 20. This is insufficient as a matter of law given the disparate fields of the primary references and the lack of any teaching regarding the suitability of generators at remote oil and gas production sites (Dickerson) to power cryptocurrency miners like CryptoKube. EX2001, ¶51; *InTouch Technologies, Inc. v. VGO Commc’ns, Inc.*, 751 F.3d 1327, 1351 (Fed. Cir. 2014) (“A reason for combining disparate prior art references is a critical component of an obviousness analysis; ‘this analysis should be made explicit,’” *citing KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398, 418 (2007)); *see also e.g., In re Kahn*, 441 F.3d 977, 988 (Fed.Cir.2006) (“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements.”).

Hindsight bias permeates the entirety of Petitioner’s alleged motivation to

combine. Thus, Petitioner asserts that, because “the Dickerson system and CryptoKube are containerized,” “it is easy to combine the two.” Petition, 20. This conclusory statement is without support in the actual references (which do not disclose any such combination) and untethered from the knowledge of a POSITA at the time of the invention. EX2001, ¶52; *see ActiveVideo Networks, Inc. v. Verizon Commc’ns, Inc.*, 694 F.3d 1312, 1327 (Fed. Cir. 2012) (“[T]he expert’s testimony on obviousness was essentially a conclusory statement that a person of ordinary skill in the art would have known, based on the ‘modular’ nature of the claimed components, how to combine any of a number of references to achieve the claimed inventions. This is not sufficient and is fraught with hindsight bias.”); *see also* 37 C.F.R. § 42.65(a) (“Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.”); *Rohm & Haas Co. v. Brotech Corp.*, 127 F.3d 1089, 1092 (Fed. Cir. 1997) (nothing in the Federal Rules of Evidence or Federal Circuit jurisprudence requires the fact finder to credit unsupported assertions of an expert witness).

Attempting to support its assertions, Petitioner mischaracterizes the prior art. Petitioner asserts that “CryptoKube discloses a mobile Bitcoin miner that can be easily transported to a remote oil and gas production facility.” Petition, 20. However, as already established, the CryptoKube documents never mention oil and gas facilities. Moreover, as discussed in greater detail below, Petitioner has not

shown that a POSITA would have considered CryptoKube suitable for the harsh environment of a remote oil and gas production facility. EX2001, ¶53.

Likewise, Petitioner asserts that Dickerson's generator provides "free excess electricity" to power CryptoKube. Petition, 20. However, Petitioner fails to address Dickerson's teachings that any such "excess power" may be highly variable leading a POSITA to not consider Dickerson's system as a suitable power source for CryptoKube. EX2001, ¶53.

In this regard, Szmigielski teaches that, in addition to being inexpensive, electrical power for crypto mining must be "*reliable*" to power "the hardware and the associated cooling systems." EX1009, 105; EX2001, ¶55. Dickerson, on the other hand, teaches that its electrical power is *unreliable* because the system is located "in remote areas" where "no utility power is available." EX1005, ¶24; EX2001, ¶55. The main purpose of the Dickerson generator is "to generate electricity that is returned to the facility" rather than powering a power-hungry external load like a crypto miner. EX1005, ¶6; EX2001, ¶55. Moreover, the amount of gas available to power Dickerson's generator varies such that only "in some cases the amount of electrical power required... may be small compared to the amount of power that can be produced with the gas available." EX1005, 39. Even in these cases, Dickerson teaches sending any excess power to the grid if it is connected. *Id.*; EX2001, ¶55. In fact, Dickerson teaches that "raw natural gas flow

will be interrupted” and “there will likely be periods when the production facility will require electricity but will be generating no or low levels of raw natural gas” to run its generator, underscoring the *unreliability* of its power to run the production facility, let alone to supply “excess power” to CryptoKube. EX1005, ¶21.

Dickerson further teaches using a diesel generator as a backup source to mitigate unreliability. EX1005, ¶21. However, even if a diesel generator or a grid connection was available for backup, this would not comprise free or cheap “excess” electric power derived from waste gas that could motivate a POSITA to combine a crypto miner with Dickerson. EX2001, ¶56. To the contrary, the need for Dickerson to rely on expensive diesel or grid power for backup further demonstrated to a POSITA that Dickerson could not *reliably* supply free or cheap power for crypto mining. *Id.*

Before the '372 invention, a POSITA would have considered the variable and occasional excess power generation in Dickerson to be *unreliable* and therefore unsuitable for a bitcoin miner such as CryptoKube under the guidelines established by publications such as Szmigielski. EX2001, ¶57; EX1009, 105. The '372 patent teaches addressing the variability of available gas by, for example, a controller regulating the crypto mining power load relative to wellhead gas production. *See e.g.*, EX1001, 17:61-64, 18:16-19:13. On the other hand, neither

Dickerson nor CryptoKube indicate that the known unreliability of power supply at a remote well could be resolved by a POSITA in the proposed combination without undue experimentation. EX2001, ¶57. Therefore, contrary to Petitioner's conclusory allegations, a POSITA would not have considered it "easy" to combine Dickerson and CryptoKube even assuming, *arguendo*, that a POSITA considered the combination of these disparate references at all. *Id.*

The unreliability of Dickerson's power was especially important to a POSITA because crypto mining operations are highly computationally and energy-intensive by design, as explained in the '372 patent and known in the art. EX1001, 13:29-36, 13:49-58. This is unlike typical data center computing which is often optimized to consume the least possible computational resources. EX2001, ¶58. In this regard, to the extent Petitioner equates data centers and crypto miners based on Szmigielski, it is error because it ignores Szmigielski's express inclusion of power *reliability* as necessary for successful crypto mining. *See e.g.*, Petition, 123. The energy-intensive nature of crypto mining imposes additional demands on the reliability of electrical power and requires special adaptations to computing architecture (e.g., regulating the crypto mining power load relative to wellhead gas production as taught by the '372 patent) that are unique to crypto miners. EX2001, ¶58.

**b. Prior art teaches away from proposed combination**

As established above, Szmigielski *teaches away* from any attempt to combine Dickerson and CryptoKube, which a POSITA would not do, because Szmigielski sets forth the requirement that electrical power for crypto mining must be *reliable*, unlike Dickerson's variable and even occasional output. EX2001, ¶59. Accordingly, Petitioner's sole reliance on Szmigielski for the motivation to combine is not only misplaced but fatal to this Ground. *See Rembrandt Wireless Technologies, LP v. Samsung Electronics Co., Ltd.*, 853 F.3d 1370, 1379 (Fed. Cir. 2017) ("Surely a showing that a prior art reference teaches away from a given combination is evidence that one of skill in the art would not have been motivated to make that combination to arrive at the claimed invention.")

**c. Petition does not address reasonable expectation of success**

Aside from the unsupported, conclusory allegation that it was "easy" to combine Dickerson and CryptoKube (Petition, 20), the Petition does not address the reasonable expectation of success prong of obviousness analysis. *See InTouch Tech.*, 751 F.3d at 1347 ("A party seeking to invalidate a patent on obviousness grounds must demonstrate... that the skilled artisan would have had a reasonable expectation of success" in combining references.) As already established, a POSITA understood that the highly variable nature of electric power delivered by Dickerson's generator was unsuitable for crypto mining equipment such as CryptoKube. EX2001, ¶60. Given the lack of any provision in CryptoKube to

adjust for the variability of available wellhead gas and power output (e.g., as taught by the '372 patent and discussed above), a POSITA did not have a reasonable expectation of success in combining it with Dickerson's system above and beyond the fact that the disparate fields of these references would not lead a POSITA to combine them. *Id.*

In addition, it was known that remote oil and gas production facilities such as the North Dakota Bakken formation cited in Dickerson were often subject to extreme heat, dust, humidity and cold. EX1005, ¶3; EX2001, ¶61. The '372 patent teaches mitigating these harsh operating conditions with chillers, backup heaters, filters and/or dehumidifiers that can be installed in its crypto mining enclosure as needed. EX1001, 2:35-43, 15:66-16:3. There is no evidence that CryptoKube was or could be equipped with any such additional equipment. *See* EX1006, 1-4; EX2001, ¶61.

To the contrary, while CryptoKube is alleged to be operable in the -10C to 30C temperature range, the recitation of large warehouses, parking lots and server farms as possible locations suggests it was designed for a much less challenging operating environment than a remote oil facility. EX1006, 2, 4; EX2001, ¶62. In fact, CryptoKube touted its sole reliance on air cooling, but this eliminated equipment such as chillers and cooling systems that may be necessary for operation in the harsh environment of Dickerson's generator: "The selection of

fresh air cooling means that there are no condensers, chillers or power hungry cooling systems.” EX1006, 4; EX2001, ¶62. These disclosures in CryptoKube are additional indications that it was not intended for remote oil and gas production fields. *Id.* This was yet another reason for a POSITA to reject the proposed combination with Dickerson as lacking a reasonable expectation of success. *Id.*

Finally, Petitioner's conclusory assertion that it was “easy” to combine Dickerson and CryptoKube by connecting them or placing them in a single container (Petition, 20) at best amounts to an argument that a POSITA *could have* made the combination. However, this is insufficient: “Obviousness concerns whether a skilled artisan not only could have made but would have been motivated to make the combinations or modifications of prior art to arrive at the claimed invention.” *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1073 (Fed. Cir. 2015). Here, as discussed above, a POSITA was not motivated to transport CryptoKube to a remote oil facility where it could be connected to Dickerson's generator at least because the generator's excess electrical output was unreliable or unavailable. A POSITA was not motivated to combine Dickerson's generator and CryptoKube in the same enclosure for the same reason. Moreover, each of Dickerson's generator and CryptoKube is itself a container, and combining the two would require a large enclosure that would not be easily transportable. EX1005, ¶11; EX1006, 1, 4; EX2001, ¶63. This would defeat the desired ease of deployment for both

CryptoKube (EX1006, 1-2) and Dickerson, both of which are containerized for transportation. EX1005, ¶14; EX2001, ¶63; *see* MPEP § 2143.01 (V) (The Proposed Modification Cannot Render the Prior Art Unsatisfactory for its Intended Purpose); *In re Gordon*, 733 F.2d 900, 902 (Fed. Cir. 1984) (finding no suggestion to modify a prior art device where the modification would render the device inoperable for its intended purpose).

For these reasons, the Petition's failure to address expectation of success should lead the Board to deny institution.

**d. Petitioner's own patents illustrate nonobviousness**

The hindsight bias in the Petition is further established by Petitioner's statements in its own patents that post-date the '372 patent but are directed to substantially the same subject matter. EX2001, ¶64. In August, 2018, approximately a year and a half after the priority date of the '372 patent, Petitioner filed provisional U.S. patent application No. 62/713,368 which is related to U.S. Pat. No. 10,862,307, assigned to Petitioner. EX2002. Like the challenged '372 patent, Petitioner's '307 patent was directed to a "natural gas processing system [which] may process raw natural gas into a fuel gas stream that may be used to power any number of on-site power generation modules" including "mobile data centers... adapted to mine cryptocurrency." EX2002, Abstract. During prosecution Petitioner's patent claims were rejected over U.S. Pat. Pub. 2020/0051184 to

Barbour which corresponds to the '372 patent. EX2003, 05-07-

2020\_Office\_Action, p.18-24.

In the '307 specification's Background section Petitioner described the state of the art and asserted that "there remains a need for systems and methods for generating electricity from natural gas produced from oil wells," and that "[i]t would be beneficial if such electricity could be produced and consumed on-site, for example by using it to operate power-intensive, modular processing units... employed to mine cryptocurrency." EX2002, 2:35-42. The '307 summary section described as allegedly novel "convert[ing] raw natural gas into a fuel gas stream to power any number of on-site power generation modules" which in turn power "distributed computing units" that "may be adapted to mine cryptocurrency." *Id.*, 2:45-55.

Thus, a year and a half after the priority date of the '372 patent Petitioner in its own patent application asserted that there was still no solution for combining remote well site gas generators with crypto mining equipment. This is in direct contradiction to the Petition's proposed grounds which rely on this exact combination.

The fact that Petitioner itself as late as mid-2018 considered powering a data center with electricity generated from oil well gas to be novel demonstrates that this was not obvious to a POSITA in early 2017. EX2001, ¶¶65-67. More

generally, the '372 patent further illustrates that a POSITA did not consider remote oil well facilities to be in the same field of art as crypto mining or data centers more generally. EX2001, ¶67.

Put another way, oil wells and crypto currency mining did not (yet) mix; rather, they were disparate and non-analogous arts. *Id.*, ¶68. The Federal Circuit requires explicit analysis of reasons to combine disparate references. *InTouch Tech.*, 751 F.3d at 1351. Petitioner's conclusory treatment of motivation to combine, contradicted by its own patents, does not meet that standard.

**e. Petitioner's experts demonstrate hindsight of alleged motivation to combine**

Petitioner submitted declarations from two purported subject matter experts: Dr. Michael Nikolaou and Mr. Vernon Kasdorf. EX1003, EX1004. Dr. Nikolaou professes relevant experience in "oil & gas industry and oil refining & petrochemicals," among others. EX1003, ¶8. However, Dr. Nikolaou does not identify any experience with crypto currency mining. In fact, he states that "Crusoe has specifically asked for my analysis from the perspective of a POSITA in the gas and oil industry. To the extent this declaration provides opinions on subject matter related to bitcoin mining, I am relying on the opinions of Mr. Vernon Kasdorf." EX1003, ¶2.

Conversely, Mr. Kasdorf states that "Crusoe has specifically asked for my analysis from the perspective of a POSITA in the bitcoin mining industry. To the

extent this declaration provides opinions on subject matter related to the gas and oil industry, I am relying on the opinions of Dr. Michael Nikolaou.” EX1004, ¶2.

This division of labor and opinions between two experts further shows that, even today, oil and gas and crypto currency mining are largely distinct arts, with subject matter experts in both disciplines few and far between. EX2001, ¶¶69-71. As explained above, this was even more true at the time of the '372 invention. EX2001, ¶71.

Thus, Petitioner's experts provide opinions from the “perspective” of two *different* POSITAs – one in the oil and gas industry and the other in the bitcoin mining industry. Yet, the experts “rely” on each other to pronounce in virtually identical opinions that some presumably hybrid POSITA would have found the proposed combinations obvious. EX1003, ¶¶91-99; EX1004, ¶¶89-97. However, there is no evidence that such a POSITA existed even under Petitioner's overbroad definition, let alone that this hybrid POSITA would have been motivated to combine the references at issue before the invention of the '372 patent. EX2001, ¶72. The conclusory statements of its two experts, each opining from the perspective of a POSITA in a disparate field of art, cannot create a motivation to combine where there is none.

## **2. Board Should Exercise Discretion Under 325(d) to Deny Institution**

To institute a post-grant review, a petitioner must “demonstrate that it is

more likely than not that at least 1 of the claims challenged in the petition is unpatentable.” 35 U.S.C. § 324(a). In particular, Congress gave the Board broad discretion to “reject the petition or request because, the same or substantially the same prior art or arguments previously were presented to the Office.” 35 U.S.C. § 325(d). When applying section 325(d), the Board utilizes a two-part framework: (1) first, the Board determines “whether the same or substantially the same art previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office.” *See Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH*, IPR2019-01469, Paper 6 at 8 (PTAB Feb.13, 2020) (precedential); and (2) “if either condition of [the] first part of the framework is satisfied,” the Board considers “whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of challenged claims.” *Id.*

In evaluating Section 325(d), the Board weighs the following non-exclusive factors:

a) the similarities and material differences between the asserted art and the prior art involved during examination; (b) the cumulative nature of the asserted art and the prior art evaluated during examination; (c) the extent to which the asserted art was evaluated during examination, including whether the prior art was the basis for rejection; (d) the extent of the overlap between the arguments made during examination and the manner in which Petitioner relies on the prior art or Patent Owner distinguishes the prior art; (e) whether Petitioner has pointed out sufficiently how the Examiner erred in its evaluation of the asserted prior art; and (f) the extent to

which additional evidence and facts presented in the Petition warrant reconsideration of prior art or arguments.

*Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8, at 17–18 (PTAB Dec. 15, 2017) (precedential).

Applying these factors here demonstrates that Ground 1 is based on the same or substantially the same prior art and arguments previously presented to, and considered by, the Patent Office during examination of the '372 patent. Moreover, as addressed in detail below, Petitioner has not demonstrated any error by the Examiner.

**a. *Becton-Dickinson* Factor One: the similarities and material differences between the asserted art and the prior art involved during examination**

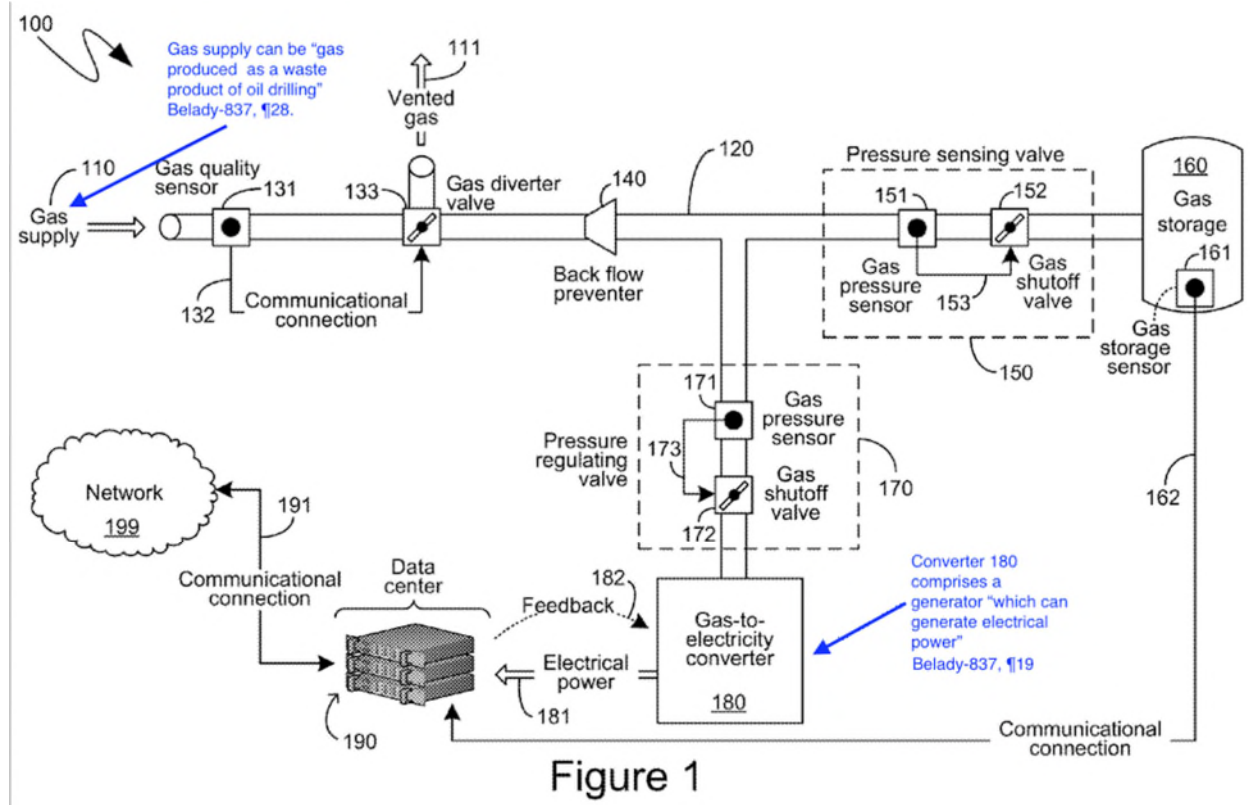
**i. *Dickerson***

The Petition relies on *Dickerson* for its disclosure of a “mobile power generation system.” Petition, 20. While *Dickerson* was not cited during examination, the Examiner considered and rejected the as-filed claims over a substantially similar reference, U.S. Pat. Pub. 2014/0096837A1 to Belady (hereinafter *Belady-837*). EX1002, 336-345. The Petition acknowledges that “[t]he Office took the position that *Belady-837* disclosed using a gas generator to power a data center.” Petition, 10. (Moreover, Ground 2 relies on *Belady '989* which, as discussed below, is substantially identical to *Belady-837*. Petition 48-51.) In fact, the Examiner took the position that *Belady-837* disclosed the same subject matter

that Petitioner relies on in Dickerson, including:

- “a source of combustible gas produced from an oil production, storage, or processing facility; (see at least Figure 1 as well as associated and related text; paragraphs 004, 0028” EX1002, 336.
- “a generator connected to the source of combustible gas; (see at least Figure 1 as well as associated and related text; paragraphs 004, 0028)” EX1002, 336
- “Belady discloses a server but does not specifically disclose a blockchain mining device.” EX1002, 336.

An annotated Belady-837 Fig. 1 is provided below:



EX2004, Fig. 1.

Belady-837's system 100 can be "located in an area where the gas supply 110 can be plentiful or otherwise available at a minimal cost." EX2004, ¶19. The feed gas for system 100 can come from an oil production facility where system 100 is located: "[N]atural gas is a byproduct of oil drilling operations and is often considered a waste product since it cannot be economically captured and brought to market." *Id.*, ¶4. "[T]he gas supply 110 can be... gas produced as a waste product of oil drilling." *Id.*, ¶28. The system 100 includes a data center 190 to which the generator 180 supplies electric power 181, as shown in Belady-837 Fig. 1. Generator 180 generates electrical power 181 by consuming gas 110. EX2004, ¶19.

These disclosures are substantially similar to Dickerson's teachings cited by Petitioner. To illustrate the lack of any material differences between Dickerson and the relevant portions of Belady-837 the following table compares Petitioner's citations to Dickerson for claim 1 and the disclosures in Belady-837 considered by the Examiner:

| <b>Claim element</b> | <b>Dickerson (as alleged by Petitioner)</b>                                                                                                              | <b>Belady-837 (as considered by Examiner)</b>                                                                                                                           |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Preamble             | "Dickerson describes a mobile power generation system that can generate electricity using flare gas (raw natural gas that is to be flared) at an oil and | Belady-837 discloses a mobile power generation system comprising generator 180 connected to gas supply 110 and can be located at an oil production facility. Gas supply |

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                            |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                    | gas production facility.”<br>Petition, 21.                                                                                                                                                                                                                                                                                                                                                                                                                                                | can be waste gas from oil production. EX2004, ¶¶4, 19, 28, Fig. 1]; EX1002, 336-337, 344.                                                                                                  |
| Limitation<br>[1a] | “Dickerson discloses a mobile system ‘for processing and using raw natural gas that is normally flared at the site of oil and gas field operation facilities.’ [EX1005, [0002].] Specifically, Dickerson discloses a membrane separation unit for separating useful fuel gas from raw natural gas produced at an oil or gas production facility (i.e., the claimed “hydrocarbon production” facility), and a gas engine that uses the fuel gas to generate electricity.”<br>Petition, 21. | Belady-837 discloses a power generation system 100 with a source of combustible gas 110 that can be an oil production facility (“oil drilling operations”). EX2004, ¶¶4, 19, 28, Fig. 1]   |
| Limitation<br>1[b] | “Dickerson discloses that the “gas genset 102 includes a gas engine 110 and a generator 112 that is driven by the engine 110.” [EX1005, [0026]]. As shown in FIG. 1, the generator 112 is connected (via the gas conditioning system 100) to the source of combustible gas to receive a continuous flow of combustible gas to power the generator.”<br>Petition, 21-22.                                                                                                                   | Belady-837 discloses a generator 180 connected to gas supply 110 and gas storage 160 to receive a continuous flow of combustible gas to power generator 180. EX2004, ¶¶19, 25, 28, Fig. 1] |
| Limitation<br>1[c] | “[I]n the Dickerson-CryptoKube combination, the combined                                                                                                                                                                                                                                                                                                                                                                                                                                  | Belady-837 discloses a mobile power generation system comprising generator 180                                                                                                             |

|  |                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                     |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | device would have (1) Dickerson's mobile power generation system; and (2) CryptoKube's mobile Bitcoin miner, wherein the Bitcoin mining devices (spondooliestech SP35 servers) are connected to and powered by Dickerson's generator." Petition, 23. | connected to gas supply 110 and can be located at an oil production facility. Gas supply can be waste gas from oil production. Generator 180 provides power to data center 190. EX2004, ¶¶4, 19, 28, Fig. 1]; EX1002, 336-337, 344. |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Thus, with regard to every claim element in exemplary claim 1 for which Petitioner relied on Dickerson, Belady-837's disclosure is not materially different. Petitioner generally cites the same disclosures in Dickerson for other challenged claims such that claim 1 is illustrative of Petitioner's reliance on Dickerson. See Petition, 21-48. Accordingly, the Examiner considered art that was not materially different from the Dickerson reference.

## ii. CryptoKube

The Examiner combined Belady-837 with Gleifchauf (U.S. Pat. Pub. 2018/0109541). EX1002, 336. Gleifchauf is directed to blockchain mining. See EX2005, Abstract. By way of illustration, Gleifchauf's embodiments include devices 504-506 illustrated in Fig. 5 which comprise processors 520 and communication interfaces 530. *Id.*, Fig. 5. Devices 504-506 may be computer servers used for blockchain mining. *Id.*, ¶¶18, 51, 91-94. Communication interfaces 530 may be network connections. *Id.*, ¶91.

The Examiner took the position that Gleifchauf disclosed the same subject

matter that Petitioner alleges to be taught by CryptoKube:

- “the blockchain mining device has a network interface and a mining processor” EX1002, 338-339.
- “the network interface is connected to receive and transmit data through the internet to a network that stores or has access to a blockchain database” EX1002, 338-339.
- “the mining processor is connected to the network interface and adapted to mine transactions associated with the blockchain database and to communicate with the blockchain database” EX1002, 338-339.
- “the network is a peer-to-peer network” EX1002, 338-339.
- “the blockchain database stores transactional information for a digital currency” EX1002, 338-339.
- “the mining processor comprises a plurality of mining processors” EX1002, 339.

These disclosures attributed by the Examiner to Gleifchauf generally comprise claim elements 1c, 1c[i]-[vi] for which Petitioner relies on CryptoKube. Petition, 23-25. Thus, with regard to every claim element in exemplary claim 1 for which Petitioner relied on CryptoKube, Gleifchauf's disclosure is not materially different. Petitioner generally cites the same disclosures in CryptoKube for other challenged claims such that claim 1 is illustrative of Petitioner's reliance on

CryptoKube. *See* Petition, 21-48. Accordingly, the Examiner considered art that was not materially different from CryptoKube.

### **iii. Szmigielski**

As noted above, Petitioner does not use Szmigielski for any claim limitations. Rather, this reference is alleged to supply the motivation to combine. Petition, 19-20. The alleged motivation is that “access to cheap power is desired because one of the biggest costs for digital currency miners is the cost of electricity.” Petition, 20. The examiner cited Belady-837 for the proposition that “it would have been obvious to one of ordinary skill in the art at the time of the invention to combine/modify the method of Belady with the technique of Gleifchauf because, ‘...data centers often consume large quantities of electrical power,’” and that consequently “data centers are being located in areas where the data centers can obtain electrical power in a cost-effective manner.” EX1002, 336-37, citing EX2004, ¶4. Therefore, the Examiner considered that Belady-837 disclosed access to inexpensive power as a rationale for obviousness over Belady-837 and Gleifchauf. EX1002, 336. Accordingly, the Examiner considered art that was not materially different from the Szmigielski reference.

### **iv. Kheterpal**

The Petition appears to cite Kheterpal (U.S Pat. Pub. 2016/0125040, EX1010) as “disclos[ing] the design and operation of a digital currency miner

chip” and illustrating a peer-to-peer network where mining nodes operate according to the Bitcoin protocol. Petition, 17-18. Ground 1 cites Kheterpal only twice. The first time is in connection with limitation 1[c\_ii] and the second time in connection with limitation [34.0] Petition, 25, 48. As discussed above, the Examiner took the position that the subject matter in these claim elements was found in Gleifchauf. EX1002, 338-339. Moreover, Kheterpal was disclosed in an IDS and acknowledged on April 16, 2022 as having been considered by the Examiner. EX1002, 357, 361, 459. Accordingly, the Examiner considered art that was not materially different from Kheterpal and, in fact, considered Kheterpal itself. (In this regard, Petitioner's statement in its conclusory analysis of section 325(d) that Kheterpal was “not considered during examination” is in error. Petition, 121.)

For these reasons this factor favors denial of institution

**b. *Becton-Dickinson* Factor Two: the cumulative nature of the asserted art and the prior art evaluated during examination**

A cumulative reference is one that “teaches no more than what a reasonable examiner would consider to be taught by the prior art already before the PTO.” *Regents of the University of California v. Eli Lilly & Co.*, 119 F.3d 1559, 1574-75 (Fed. Cir. 1997). As demonstrated above, the Examiner took the position that Belady-837 disclosed the same subject matter that Petitioner attributes to

Dickerson. Likewise, the Examiner considered Gleifchauf to disclose all of the elements that Petitioner claims to find in CryptoKube. The Examiner attributed to Belady-837 a substantially similar rationale for combining the art that Petitioner locates in Szmigielski. Finally, the Examiner considered Kheterpal. Accordingly, the references in Ground 1 are cumulative to the prior art considered during examination. For these reasons this factor favors denial of institution.

**c. *Becton-Dickinson* Factor Three: the extent to which the asserted art was evaluated during examination, including whether the prior art was the basis for rejection**

As discussed above, the examiner issued a rejection over Belady-837 and Gleifchauf, which are substantially similar to the prior art in Ground 1. The Examiner considered but did not issue a rejection over Kheterpal. However, as established above, the Examiner located the subject matter of Kheterpal in Gleifchauf. For these reasons this factor favors denial of institution.

**d. *Becton-Dickinson* Factor Four: the extent of the overlap between the arguments made during examination and the manner in which Petitioner relies on the prior art or Patent Owner distinguishes the prior art**

As established above in the discussion of the first *Becton-Dickinson* factor, there is substantial overlap between the Examiner's arguments in rejecting the then-pending claims over the Belady-837 and Gleifchauf combination and Ground 1. The Examiner relied on Belady-837 for the same elements that Petitioner alleges

to be in Dickerson. The same correlation exists between Gleifchauf and CryptoKube. Moreover, the Examiner used a similar motivation to combine argument, based on Belady-837's teaching regarding desirability of low-cost electricity located at a source of available gas, that Petitioner attributes to Szmigielski.

The manner in which Applicant distinguished the prior art during prosecution is also substantially similar to Patent Owner's criticism of Petitioner's suggested motivation to combine in this Petition. For example, Applicant argued to the Examiner that "[b]lockchain mining is not synonymous with regular data center processing and cannot be compared as such. By contrast, blockchain mining is known to be energy-intensive (Applicant's paragraph 55 and Gleifchauf paragraphs 4 and 60) – more so than traditional data processing." EX1002, 222. The same reasoning was presented with regard to the lack of motivation to combine herein: as discussed above, the energy intensive nature of crypto mining makes it especially sensitive to energy reliability which was known to be lacking in prior art remote oil field waste gas generation facilities such as Dickerson or Belady-837. EX2001, ¶68. Accordingly, a POSITA was not motivated to combine existing crypto miners such as Gleifchauf (prosecution) or CryptoKube (Petition) with remote oil field gas generators such as Belady-837 (prosecution) or Dickerson (Petition).

For these reasons this factor favors denial of institution

**e. *Becton-Dickinson* Factor Five: whether Petitioner has pointed out sufficiently how the Examiner erred in its evaluation of the asserted prior art**

Petitioner has not adequately identified any error by the Examiner. Petition, 123. Petitioner makes two arguments. The first is that “as explained by Szmigielski, there is no fundamental difference between a traditional data center and a digital currency miner.” Petition, 123. However, as is clear from the Szmigielski quote cited by Petitioner, Szmigielski stated that “[i]ndustrial miners face *almost* the same issues as data centers,” including “access to relatively cheap power.” EX1009, 103 (emphasis added); Petition, 123. The word “almost” is important because one of the differences is the highly energy-intensive nature of crypto mining operations – the very difference cited by Applicant and presumably accepted by examiner. Petition, 123; EX1002, 222. In this regard, Szmigielski emphasizes that power must be both “inexpensive and reliable” to run the mining “hardware and the associated cooling systems.” EX1009, 105. As established above, the known unreliability of electric output from waste gas-powered generators at remote oil wells (e.g., variable output due to sporadic waste gas availability) motivated a POSITA away from combining such generators with crypto miners. Accordingly, Szmigielski does not contradict Applicant’s arguments and does not show any error by the Examiner.

Petitioner's second argument is that "unbeknownst to the Office, using flare gas to generate power to reduce greenhouse gas emission was known to the public." Petition, 123. This is incorrect. For example, Belady-837 expressly taught using gas produced as "waste product of oil drilling" to power its generator. EX2004, ¶28. Moreover, the Examiner found and considered a video titled "Why is natural gas flared? What is the solution?" EX1002, 346. Starting at approximately the 45 second mark, the video discloses the MAGS system comprising equipment to separate and consume unusable wellhead gas to generate electrical power, and thereby reduce greenhouse emissions by displacing diesel consumption. EX2006; EX2001, ¶106; EX2008, ¶¶27-28. This is the same MAGS system that Petitioner incorrectly alleges was not before the examiner. Petition, 121.

Accordingly, Petitioner has not established that the Examiner committed any error or that the prior art he considered was materially different from the art in this Petition. For these reasons this factor favors denial of institution.

**f. *Becton-Dickinson* Factor Six: the extent to which additional evidence and facts presented in the Petition warrant reconsideration of prior art or arguments**

As established above, the Petition relies on cumulative art which it combines in the same manner as considered by the Examiner. Petitioner's proposed motivation to combine these references was also considered by the Examiner.

Petitioner's allegations of error during examination are without merit. For these reasons this factor favors denial of institution.

**g. Petitioner has not demonstrated material error by examiner**

As demonstrated above, the first prong of the two-factor section 325(d) analysis ("whether the same or substantially the same art previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office," *Advanced Bionics*, IPR2019-01469, Paper 6 at 8) is satisfied because Petitioner's art and arguments are substantially the same as those considered by the Examiner. If the first prong is satisfied as it is here, the Board considers "whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of challenged claims." *Id.*

Petitioner has not demonstrated any material error by the Examiner for the reasons discussed above for *Becton-Dickinson* factors three, five and six.

In addition, as established above, Petitioner's grounds are often without basis in the prior art and are supported only by conclusory statements of its declarants. Such conclusory allegations do not warrant reconsideration of the prior art. See *CSL Behring GMBH v. Shire Viropharma Inc.*, IPR2019-00459, Paper 8, at 19 (PTAB Jul. 2, 2019) ("But the mere fact that Petitioner has presented expert declaration evidence in support of its unpatentability challenge is not in itself a basis to proceed with institution."). The declarations mirror the conclusory

arguments presented in the Petition and rely on the same or similar structures in the prior art as considered and applied by Examiner, as explained above. Such conclusory and redundant evidence does not warrant reconsideration of the prior art. *See Edge Endo, LLC v. Maillefer Instruments Holding, S.A.R.L.*, IPR2018-01349, Paper 15, at 19 (PTAB Jan. 14, 2019) (expert declaration that “largely mirror[ed] the arguments presented in the Petition” did not “warrant reconsideration of the prior art or arguments.”).

For these reasons the Board should exercise its discretion to deny institution pursuant to Section 325(d).

**B. Ground 2**

**1. No Motivation to Combine or Reasonable Expectation of Success**

Ground 2 combines the primary references of Ground 1 (Dickerson and CryptoKube) with Belady-989. Petition, 99-100. Petitioner does not offer any additional rationales for combining Dickerson and CryptoKube beyond those discussed above for Ground 1. Accordingly, as already explained for that ground, Petitioner has not established a sufficient motivation to combine Dickerson and CryptoKube because its analysis is conclusory and contradicted by the references. *See In re Kahn*, 441 F.3d at 988 (“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements.”).

In Ground 2, Petitioner alleges that it was obvious to combine Belady-989’s

so-called gas shock absorber with the “Dickerson’s mobile power generation system” and the “CryptoKube’s mobile Bitcoin miner.” Petition, 50. The purported motivation for this further combination is to “improve the energy usage efficiency.” Petition, 51.

Petitioner does not explain how a POSITA was supposed to combine the Belady-989 gas shock absorber with Dickerson, nor does Petitioner address the reasonable expectation of success in even a cursory fashion. This alone should lead the Board to deny institution. The Petition must identify “with particularity ... the evidence that supports the grounds for the challenge to each claim.” 35 U.S.C. § 312(a)(3). The burden of proving a reasonable expectation of success is on Petitioner. *Eli Lilly & Co. v. Teva Pharms. Int’l GmbH*, 8 F.4th 1331, 1348–49 (Fed. Cir. 2021) (“[I]t was, at all times, [petitioner's] burden to show that the claims would have been obvious, including that a skilled artisan would have had a reasonable expectation of success in achieving the claimed invention.”).

Petitioner’s failure to present evidence specifically directed to reasonable expectation of success of the proposed combination in Ground 2 weighs heavily against institution. *See Juniper Networks, Inc., v. Correct Transmission, LLC*, IPR2021-000682, Paper 26 at 23 (PTAB Oct. 3, 2022) (Board found challenged claims non-obvious in view of Petitioner’s failure to address reasonable expectation of success and criticized Petitioner for “leap[ing] silently over the

requirement to evidence a reasonable expectation of success.”)

Contrary to Petitioner's conclusory statements, there are several reasons why a POSITA would not be motivated to combine Belady-989 shock absorber with Dickerson or with CryptoKube.

As an initial matter, Petitioner concedes that Dickerson already teaches addressing “no or low levels of raw natural gas” with “an auxiliary means for providing electricity” comprising a “stand-by diesel generator” or a CCHP (combined cooling, heating, and power) unit. EX1005, ¶21. Petitioner has not presented any evidence beyond its conclusory assertion of “improv[ing] the energy usage efficiency” that a POSITA would consider layering the complex gas shock absorber in Belady-989 on top of the proven solutions already provided by Dickerson. EX2001, ¶77.

Furthermore, as discussed for Ground 1, the main purpose of the Dickerson generator is “to generate electricity that is returned to the facility” rather than powering another load. EX1005, ¶6; EX2001, ¶78. Moreover, the amount of gas available to power Dickerson's generator varies such that only “in some cases the amount of electrical power required... may be small compared to the amount of power that can be produced with the gas available.” EX1005, 39. Even in these cases, Dickerson taught sending any excess power to the grid if it was connected. *Id.* A POSITA would understand that at times when auxiliary power is required

due to lack of feed gas, Dickerson's generator could not supply "excess" power to an external load such as CryptoKube because no "excess" power is available.

EX2001, ¶78.

Likewise, if Belady-989's shock absorber was hypothetically substituted for Dickerson's auxiliary power, a POSITA would understand that gas from the shock absorber tank would be drawn at times when not enough feed gas was available from the well. In this regard, Belady-989 taught that gas is provided by the shock absorber at times of a "negative pressure spike" when feed gas pressure is low.

EX1011, ¶25. A POSITA would understand that during such a "negative pressure spike" Dickerson's generator would then use the provided gas for its primary purpose of powering the oil production facility rather than an external load.

EX2001, ¶79.

Accordingly, a POSITA would not be motivated to add Belady-989's gas shock absorber because doing so would not solve the unreliability of Dickerson's "excess" electrical output for powering a power-hungry external load like CryptoKube. EX2001, ¶80.

Belady-989's gas shock absorber was incompatible with crypto mining's need for reliable power as articulated by Szmigielski. EX1009, 105; EX2001, ¶81. Gas shutoff during positive pressure spikes interrupted gas flow to the Belady-989 generator which would prevent CryptoKube miner from operating. EX1011, ¶23;

EX2001, ¶81. The incompatibility of Belady-989's operation during positive pressure spikes with CryptoKube's requirement of reliable power indicates that a POSITA would not have considered the combination and would not have had a reasonable expectation of success. *Id.*

Gas shutoff would also disable Dickerson's generator, preventing it from powering oil field equipment or CryptoKube. *Id.*, ¶82. The incompatibility of Belady-989's gas shock absorber with Dickerson's requirement to power mining equipment indicates that a POSITA would not have considered the combination and would not have had a reasonable expectation of success. *Id.*

**2. Board Should Exercise Discretion Under Section 325(d) to Deny Institution**

The two primary references in Ground 2 (Dickerson and CryptoKube) are the same as Ground 1. As established for Ground 1, Section 325(d) favors denial of institution because (1) Dickerson and CryptoKube are substantially similar to the art considered by the Examiner and (2) Petitioner has not identified any error by the Examiner.

The same conclusion applies to Belady-989. Petitioner acknowledges that the Examiner considered Belady-837, a "reference similar to Belady-989." Petition, 121-22. In fact, the disclosure in these two references is virtually identical.

As discussed above for Ground 1, the Examiner issued an office action

rejecting then-pending claims over Belady-837 and Gleifchauf. EX1002, 335-345.

Petitioner attempts to distinguish its reliance on Belady-989 from the rejection over Belady-837 by stating that it “primarily relies on Belady-989 for its teachings regarding power load control (adjusting the power load level of the data center based on availability of flare gas)” rather than “using a gas generator to power a data center.” Petition, 122.

Petitioner is incorrect. The Examiner found limitations directed to power load level modulation “in response to variations in a production rate of combustible gas from the remote oil well” were disclosed by Belady-837 (referred to simply as Belady in the office action). EX1002, 340, *citing* EX2004, ¶15. Therefore, contrary to Petitioner’s assertion that “this reference was used in a very different manner” during prosecution (Petition, 121-22), the Examiner used Belady-837 in the same manner as Petitioner.

Accordingly, the first prong of the two-factor section 325(d) analysis is satisfied because Belady-989 and Petitioner’s arguments are substantially the same as those considered by the Examiner regarding Belady-837.

Petitioner does not identify any error in the Examiner’s analysis of Belady-837. Petition, 123. Petitioner’s arguments are (1) not directed to this reference; (2) conclusory and (3) unpersuasive for reasons discussed for Ground 1. Therefore, Petitioner has not “demonstrated that the Office erred in a manner material to the

patentability of challenged claims.” *Advanced Bionics*, IPR2019-01469, Paper 6 at 8.

For these reasons the Board should exercise its discretion to deny institution pursuant to Section 325(d).

**C. Ground 3**

**1. No Motivation to Combine or Reasonable Expectation of Success**

Ground 3 combines the primary references of Ground 1 (Dickerson and CryptoKube) and Ground 2 (Belady-989) with Boot. Petition, 67-68. Petitioner does not offer any additional rationales for combining Dickerson, CryptoKube and Belady-989 beyond those discussed above for Grounds 1 and 2. Accordingly, as already explained for those grounds, Petitioner has not established a sufficient motivation to combine Dickerson and CryptoKube because its analysis is conclusory and contradicted by the references. *See In re Kahn*, 441 F.3d at 988 (“[R]jections on obviousness grounds cannot be sustained by mere conclusory statements.”)

As with Grounds 1 and 2, Petitioner does not address reasonable expectation of success in combining Boot with any of the other three references. Petitioner’s failure to present evidence specifically directed to reasonable expectation of success of the proposed combination in Ground 3 weighs heavily against institution for the reasons discussed for Grounds 1 and 2.

Moreover, Ground 3 fails to identify “with particularity ... the evidence that supports the grounds for the challenge to each claim,” 35 U.S.C. § 312(a)(3), because Petitioner does not explain which parts of the references it is combining and how the combination is accomplished. For example, Petitioner’s analysis of limitation 1[b] implies that it is relying on Boot for the “generator” limitation. Petition, 69-70. If that is the case, the Petition is silent on what role, if any, Dickerson’s generator or other components play in the proposed combination. In this regard, for limitation 1[c], which recites “blockchain mining devices connected to the generator,” the Petition cites to Ground 2 without any further explanation. Petition, 70. However, Ground 2 does not include Boot so it is unclear whether Petitioner is relying on Boot’s, Dickerson’s or Belady-989’s generator for element 1[c]. EX2001, ¶ 84. The failure to identify which specific components of the references are being combined therefore leads to confusion that Section 312(a)(3) is meant to prevent.

Petitioner asserts that a POSITA was motivated “to include Boot’s load bank because Boot teaches that the load bank can keep the engine within its preferred operating parameters.” Petition, 67. However, aside from this conclusory assertion, the Petition is silent as to why this may be so for any of the other three references in Ground 3.

Boot teaches a specialized system “to provide electrical power to an electric

submersible pumping system positioned in a well that produces petroleum products.” EX1012, 1:50-53. The system comprised a genset 102 connected to loads 108 which may “include surface pumps, water processing equipment, battery pumps, waste treatment equipment, lighting and transfer pumps” as well as components that “consume electrical power during a selected operation, such as, for example, electric motors, computers, motor controllers, lighting, heating and other electrical equipment.” EX1012, 2:29-41.

Boot's specialized system is unlike Dickerson's generator that supplied power for the entire oil or gas production facility. EX1005, ¶11; EX2001, ¶87. The small number and power requirements of the pump-related loads supplied by Boot “cause the power demand to be relatively volatile.” EX1012, 2:55-58. To keep the genset engine from over-revving when a load goes offline, Boot proposed a load bank 110 “activated to take-up the excess power and stop the engine 112 from racing.” EX1012, 3:8-10; EX2001, ¶87. Boot described the load bank as optional even in its specialized system. EX1012, 2:27-28.

Boot is not directed to full-facility generators like Dickerson. A POSITA would understand that a load bank was unnecessary in Dickerson's system because it powered a larger number of loads and included other mechanisms for soaking up excess power. EX2001, ¶88. For example, Dickerson teaches adding a gas chiller where “only a small portion of the raw natural gas generated by the facility is

needed to power the facility.” EX1005, ¶22. Unlike a load bank that dissipates energy unproductively, “the chiller is powered by electricity from the generator, and the chiller’s consumption of electricity furthers the goal of reducing flaring, since the added electricity demand enables the generator to unitize more methane.” *Id.* Thus, instead of dissipating energy in a load bank, the chiller soaked up electricity, reduced flaring by keeping up methane consumption, and produced NGLs (natural gas liquids) that could be sold offsite. EX1005, ¶22; EX2001, ¶88. Therefore, a POSITA would not seek to combine Boot’s load bank with Dickerson.

Likewise, a POSITA would not seek to combine Boot with the CryptoKube miner. EX2001, ¶89. As noted above, Boot emphasized the volatile nature of its system’s power demand. EX1012, 2:55-58. As discussed for Grounds 1 and 2, a POSITA understood that crypto miners were energy-intensive and required a reliable power source that could deliver a lot of power in a stable fashion. EX2001, ¶89. Boot does not disclose powering any external loads, let alone a power-hungry crypto miner like CryptoKube. Given the specialized nature and volatility of Boot’s system, a POSITA would not expect Boot to provide reliable power for CryptoKube and would not combine the two for this reason. *Id.*

A POSITA would not combine Boot with Belady-989 for substantially the same reasons as Dickerson and CryptoKube. There is no evidence that Belady-989’s datacenter would suddenly reduce its load so as to require Boot’s wasteful

load bank. EX2001, ¶90. To the contrary, Belady-989 taught stabilizing the datacenter's load by requesting more work from other datacenters or reducing processing cost to entice more work whenever its compute load drops. EX1011, ¶35. Accordingly, there was no reason for a POSITA to add Boot's load bank to Belady-989.

Petitioner also asserts that a "POSITA would have been motivated to gather oil and gas from multiple wells on a multi-well pad because doing so can increase supply and increase the amount of electricity generated." Petition, 67-68. It is unclear how this alleged motivation is related to Boot. Petitioner cites to Boot 3:42-46 for the proposition that "Boot further discloses in FIG. 2 that the flare gas can be derived from more than one oil pumps or more than one well heads." Petition, 67. However, Fig. 2 and the cited disclosure do not teach that Boot's genset is powered by gas from more than one well head. Rather, it teaches that surface facilities 120 comprise "gathering lines used to separate, store and transfer the pumped petroleum products from the well 118" and that "fewer or greater" numbers of pumps may be powered by Boot's system. EX1012, 3:42-46. Accordingly, this disclosure is directed to a single well 118 and not to "more than one oil pumps or more than one well heads" feeding Boot's genset as Petitioner appears to allege. EX2001, ¶91. Therefore, this additional motivation to combine is not supported by Boot and would not motivate a POSITA.

**2. Board Should Exercise Discretion Under Section 325(d) to Deny Institution**

The two primary references in Ground 3 (Dickerson, CryptoKube) are the same as Ground 1 while Belady-989 was addressed in Ground 2. As established for Grounds 1 and 2, Section 325(d) favors denial of institution because (1) Dickerson and CryptoKube are substantially similar to the art considered by the Examiner; (2) Belady-989 is substantially the same as Belady-837 considered by Examiner; and (3) Petitioner has not identified any error by the Examiner.

The same conclusion applies to Boot. To the extent Ground 3 relies on Boot for generator-related elements, the Examiner considered Belady-837 to disclose these elements for the reasons discussed for Ground 1. *See* EX1002, 335-338. The Examiner believed the subject matter of dependent claim 7 to be obvious in view of Belady-837 and Gleifchauf. EX1002, 342-43. Likewise, the Examiner believed that production site-related limitations such as a plurality of oil wells recited in dependent claim 9 were obvious in view of Belady-837 and Gleifchauf. EX1002, 342-43. The Examiner also considered the turbine engine limitation in dependent claim 19 to be obvious in view of Belady-837 and Gleifchauf. EX1002, 343-44.

Accordingly, the first prong of the two-factor section 325(d) analysis is satisfied because Boot is cumulative to the art examined during prosecution and Petitioner's arguments are substantially the same as those considered by the Examiner regarding the combination of Belady-837 and Gleifchauf.

Petitioner does not identify any error in the Examiner's analysis of Belady-837 and Gleifchauf with regard to claim elements attributed to Boot in this ground. Petition, 123. Petitioner's arguments are (1) not directed to this reference; (2) conclusory and (3) unpersuasive for reasons discussed for Ground 1. Therefore, Petitioner has not "demonstrated that the Office erred in a manner material to the patentability of challenged claims." *Advanced Bionics*, IPR2019-01469, Paper 6 at 8.

For these reasons the Board should exercise its discretion to deny institution pursuant to Section 325(d).

**D. Ground 4**

**1. No Motivation to Combine or Reasonable Expectation of Success**

Petitioner failed to demonstrate that a POSITA would have been motivated to combine references for this Ground for at least the following reasons.

**a. Motivation to combine is based on hindsight and is contradicted by references**

Like the Dickerson-based grounds considered above, Ground 4 relies on a hindsight-driven combination of remote wellsite gas processing equipment (MAGS) and a crypto miner (Polivka). The relevant aspects of these references as presented by Petitioner are similar to Dickerson and CryptoKube such that many of the same reasons would lead a POSITA to *not* combine these references. EX2001, ¶93. In fact, a comparison of the Petition's motivation to combine sections for

Grounds 1 and 4 reveals that Petitioner has merely substituted MAGS for Dickerson and Polivka for CryptoKube while repeating verbatim the same flawed rationale based on Szmigielski. Petition 19-20, 81-83.

As with Dickerson and CryptoKube, MAGS and Polivka are from what a POSITA would have considered as disparate and unrelated fields of art before the invention of the '372 patent. EX2001, ¶94. In fact, a POSITA would consider MAGS to be even less suitable for the proposed combination than Dickerson. This is because, unlike Dickerson, there is no teaching that MAGS could produce excess electrical output even occasionally. Instead, as described by Petitioner, MAGS separated input gases into three streams: “one can be captured in tanks and shipped off for sale, another powers generators that run the drilling operation, and a third powers MAGS itself.” Petition, 81-82. Thus, all the energy produced by MAGS – whether in the form of gas or electric power – was already spoken for. Some of the output was liquefied or compressed and shipped for sale, some energy went to power the operation that produced the input gas and the rest went to power MAGS itself. EX1013, 2; EX2001, ¶94.

Therefore, Petitioner is incorrect in stating that “a POSITA would have understood that MAGS can produce cheap or free electricity using flare gases” because the electrical output supplied either MAGS itself or the oil or gas production equipment. Petition, 82; EX2001, ¶95. Accordingly, aside from

Petitioner's conclusory statement, there is no evidence that MAGS was suitable to power a notoriously power-hungry external load such as Polivka's bitcoin miner.

*Id.*

With regard to Polivka, the references cited by Petitioner do not support its assertions. Petitioner implies that the references disclose that Polivka's miner "can be easily transported to a remote oil and gas production facility." Petition, 82, *citing* EX1015, 1-10. This is not the case – EX1015 (a printout of an online forum with multiple participants including one with the handle "Polivka") does not mention oil and gas production facilities or wellhead gas as a suitable power source for Polivka's miner. Likewise, Petitioner states that "Polivka can be powered by gas using a combustion engine" and cites to EX1015. Petition, 82, *citing* EX1015, 18. However, there is no teaching on that page or elsewhere to support Petitioner's statement. The discussion on page 18 is Polivka responding to a post by Bicknellski regarding the need for additional heat input in biogas production. EX1015, 17-18. Polivka responded, in part, by stating that "I guess this is for gas production only - as soon as you use the gas in a combustion engine to produce electricity you should have heat in abundance." EX1015, 18. This statement is not directed to the Polivka miner but is a comment distinguishing burning gas in an engine where heat is produced from biogas production where heat is consumed. EX2001, ¶96.

As with the other grounds, Petitioner cites Szmigielski for the motivation to combine: “one of the biggest costs for digital currency miners is the cost of electricity and access to cheap power is desired.” Petition, 82, *citing* EX1009, 90.<sup>2</sup> Setting aside that the cited page does not state that “access to cheap power is desired,” Petitioner fails to consider Szmigielski’s teaching on the same page that power must also be *reliable*. EX1009, 105. A POSITA would not have considered MAGS as a suitable power source because, as already established, MAGS consumed all of the power it produced or supplied it to the wellhead equipment. EX2001, ¶97. Even if some electrical output could be hypothetically allocated to an external load, it would vary considerably based on gas flow and power needs of MAGS and wellhead equipment, similarly to Dickerson’s generator. *Id.*

Moreover, the overall electrical output is unlikely to be sufficient for Polivka’s miner. For example, the Young reference provides an example of a MAGS-200 system consuming gas of a composition typical for the Bakken formation. EX1014, ¶¶143-145. The system was projected to produce about 450kWh of electrical power per day. EX1014, ¶144. The Polivka reference provides an example of Polivka’s miner consuming 120.3kW. EX1015, 25. At that power level Polivka’s miner would consume the entire daily electrical output of

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<sup>2</sup> EX1009, 105 with exhibit pagination.

MAGS in less than four hours even assuming an unlikely scenario where none of the power was used to power MAGS or wellhead equipment. EX2001, ¶98.

Operating a crypto miner for a few hours every day is prohibitively uneconomical. EX2001, ¶98. However, it is highly unlikely that MAGS could supply the current necessary to operate Polivka at 100kW or more given its relatively low total output. *Id.* In that case, Polivka's miner could not operate at all or would have to be throttled down. Either scenario is highly undesirable and, once again, shows that MAGS was too unreliable a power source for a POSITA to consider combining with Polivka. *Id.*

In addition, Petition alleges that MAGS internal generator output 480 VAC. Petition, 78, *citing* EX1014, ¶198. Polivka's miner, on the other hand, appears to have operated on 240 VAC. EX1015, 25; EX2001, ¶99. Accordingly, MAGS electrical output (even if the internal generator could hypothetically power an external load) was incompatible with Polivka. In any case, the internal generator identified by Petitioner drove "the compressors and electrical components onboard the MAGS system" rather than an external load like Polivka's miner. EX1014, ¶198. All of these factors would have precluded a POSITA from considering MAGS as a power source for a power-hungry crypto miner such as Polivka.

**b. Petition fails to establish reasonable expectation of success**

Petitioner conclusory treatment of reasonable expectation of success states

only that a “POSITA would have had a reasonable expectation of success in the combination at least because ‘the first MAGS field unit was tested in the spring of 2014 and units were sent to North Dakota later that fall.’” Petition, 83, *citing* EX1013, 3. It is unclear how the testing of MAGS in North Dakota could bear on the expectation of success in combining MAGS with Polivka. A POSITA would not be motivated to combine MAGS with a crypto miner just because MAGS had been tested, where there was no evidence of success of said testing and no indication of testing with a power-hungry external load like a crypto miner. EX2001, ¶101. In any case, a POSITA would have had no reasonable expectation of success given the incompatibility of MAGS power output with Polivka’s requirements discussed above. *Id.*

**c. Szmigielski teaches away**

Petitioner’s reliance on Szmigielski for motivation to combine is misplaced. Szmigielski teaches away from the combination of MAGS and Polivka because it sets forth the requirement that electrical power for crypto mining must be reliable, unlike MAGS’ variable, inadequate or unavailable electrical output. EX1009, 105; EX2001, ¶102. This further undermines the alleged motivation to combine. *See Rembrandt Wireless Tech.*, 853 F.3d at 1379 (“Surely a showing that a prior art reference teaches away from a given combination is evidence that one of skill in the art would not have been motivated to make that combination to arrive at the

claimed invention.”).

**d. Petitioner's own patents support nonobviousness**

As discussed above for Ground 1, the hindsight bias in the Petition is further established by Petitioner's statements in its own patents that post-date the '372 patent. EX2001, ¶103.

In its '307 patent that postdates the '372 patent by approximately a year and a half, Petitioner described the state of the art and asserted that “there remains a need for systems and methods for generating electricity from natural gas produced from oil wells,” and that “[i]t would be beneficial if such electricity could be produced and consumed on-site, for example by using it to operate power-intensive, modular processing units... employed to mine cryptocurrency.” EX2002, 2:35-42. The '307 summary section described as allegedly novel “convert[ing] raw natural gas into a fuel gas stream to power any number of on-site power generation modules” which in turn power “distributed computing units” that “may be adapted to mine cryptocurrency.” *Id.*, 2:45-55.

Thus, in mid-2018 Petitioner considered a combination of a raw natural gas to fuel gas converter and generator –a system exactly like MAGS – and a crypto miner (Polivka) to be novel. EX2001, ¶105. This demonstrates that this same combination was not obvious in early 2017. *Id.* More generally, the '372 patent further illustrates that a POSITA did not consider remote oil well facilities to be in

the same field of art as crypto mining or data centers more generally. *Id.* The Federal Circuit requires explicit analysis of reasons to combine disparate references. *InTouch Tech.*, 751 F.3d at 1351. Petitioner's conclusory treatment of motivation to combine, contradicted by its own patents, does not meet that standard.

**2. Board Should Exercise Discretion Under Section 325(d) to Deny Institution**

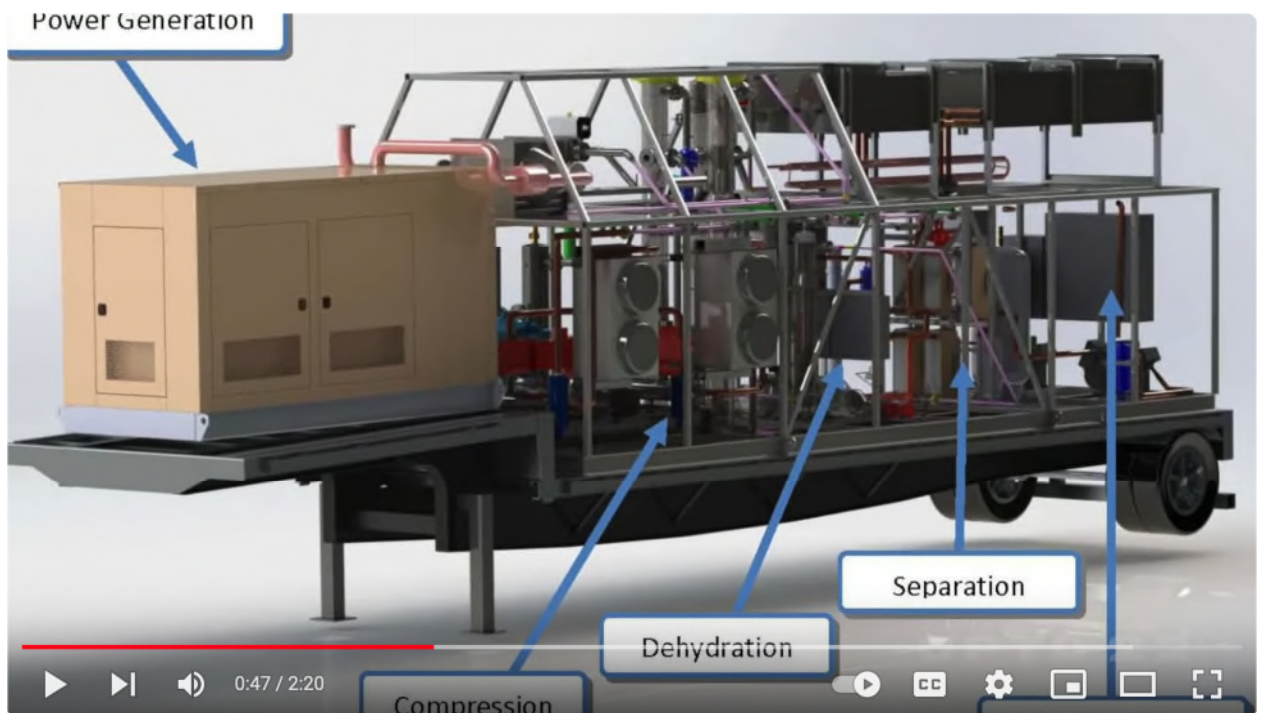
The details of the Board's two-prong framework for evaluating Section 325(d) are laid out for Ground 1 above. The following sections apply the Benson-Dickson factors relevant to the Section 325(d) considerations. *Advanced Bionics*, IPR2019-01469, Paper 6 at 8; *Becton, Dickinson*, IPR2017-01586, Paper 8 at 17–18. Because Ground 5 effectively substitutes MAGS for Dickerson and Polivka for CryptoKube with the same motivation to combine, many of the reasons that favor denial of institution for Ground 1 apply to Ground 5.

**1. *Becton-Dickinson* Factor One: the similarities and material differences between the asserted art and the prior art involved during examination**

**a. MAGS**

Petitioner incorrectly states that MAGS was not considered in prosecution. Petition, 121. The Examiner did consider MAGS. The Examiner found and considered a video available on YouTube titled "Why is natural gas flared? What is the solution?" EX1002, 346. Starting at approximately the 45 second mark, the

video disclosed the MAGS system comprising equipment to separate and consume unusable wellhead gas to generate electrical power, and thereby reduce greenhouse emissions by displacing diesel consumption. EX2006; EX2001, ¶106; EX2008, ¶¶27-28. At the 00:47 second mark the video showed MAGS with its components mounted on a trailer for mobility:



Among other aspects of MAGS operation, the video considered by the Examiner (e.g., at approximately 00:45 to 2:20 minutes) explained deployment of MAGS at remote oil sites; using MAGS to consume gas that would otherwise be flared by separating it into three streams; using one stream to power a generator to replace local diesel consumption; using another stream (ethane) to power MAGS; and compressing a third gas stream for offsite consumption. EX2006; EX2001,

¶107. Accordingly this video comprised substantially the same disclosure regarding MAGS as raised in the Petition. *Id.*

**b. Polivka**

While the Examiner did not consider Polivka itself, he considered substantially similar prior art. As discussed for Ground 1 above, the Examiner found that Gleifchauf disclosed all of the elements that Petitioner claims to find in CryptoKube. Polivka's crypto miner was substantially similar to CryptoKube. EX2001, ¶¶108-109. Polivka himself admitted that CryptoKube was a similar earlier system: "To be perfectly honest on this: these guy's beat me to it: <http://cryptokube.com> - they came out when I already purchased the container, however I think my concept is more suited for mining and less like traditional shipping container data centers." EX1015, 11. Thus, Petitioner's substitution of Polivka for CryptoKube in Grounds 4 and 5 does not add any disclosure that the Examiner did not already find in Gleifchauf.

The Examiner took the position that Gleifchauf disclosed the same subject matter that Petitioner alleges to be taught by Polivka, including:

- "the blockchain mining device has a network interface and a mining processor" EX1002, 338-339.
- "the network interface is connected to receive and transmit data through the internet to a network that stores or has access to a blockchain

database” EX1002, 338-339.

- “the mining processor is connected to the network interface and adapted to mine transactions associated with the blockchain database and to communicate with the blockchain database” EX1002, 338-339.
- “the network is a peer-to-peer network” EX1002, 338-339.
- “the blockchain database stores transactional information for a digital currency” EX1002, 338-339.
- “the mining processor comprises a plurality of mining processors” EX1002, 339.

These disclosures attributed by the Examiner to Gleifchauf generally comprise claim elements 1c, 1c[i]-[vi] for which Petitioner relies on Polivka. Petition, 83-86. Thus, with regard to every claim element in exemplary claim 1 for which Petitioner relied on Polivka, Gleifchauf's disclosure is not materially different. Petitioner generally cites the same disclosures in Polivka for other challenged claims such that claim 1 is illustrative of Petitioner's reliance on Polivka. See Petition, 83-99. Accordingly, the Examiner considered art that was not materially different from Polivka.

The Examiner also considered other substantially similar prior art such as the BitFury BlockBox AC Mobile Datacenter (“BlockBox”) which was submitted in an IDS and considered by the Examiner on 04/16/2022. EX1002, 361. BlockBox

was a containerized and mobile Bitcoin mining unit with “Bitfury’s unique 16nm ASIC” mining processors “requiring only a suitable and affordable power source and internet access,” as described in the online brochure that the Examiner considered:

### BlockBox AC – Air Cooled Mobile Datacenter



The BlockBox AC is one of the first mobile Bitcoin mining units that has the scale of a full-size data center, allowing for easy access to the Bitcoin network. For the first time, Bitcoin mining can be readily purchased at petahash-scale.

EX2007, 1; *see also* EX2008, ¶¶22-26.

To a POSITA, BlockBox disclosed substantially the same subject matter as Polivka, comprising a mobile crypto mining container with custom mining processors and network connectivity to access the Bitcoin Blockchain “within hours of delivery.” EX2007, 1-2; EX2001, ¶¶110-111.

For these reasons this factor favors denial of institution.

## 2. ***Becton-Dickinson* Factor Two: the cumulative nature of the asserted art and the prior art evaluated during examination**

As demonstrated above, the Examiner considered MAGS. Therefore, MAGS

is cumulative to the art considered during examination. Likewise, the Examiner considered Gleifchauf to disclose the elements that Petitioner claims to find in Polivka. Moreover, Polivka has substantially the same disclosure as the BlockBox crypto miner considered by the Examiner. Therefore, Polivka is cumulative to the art considered during prosecution. Accordingly, the references in Ground 5 are cumulative to the prior art considered during examination. For these reasons this factor favors denial of institution.

**3. *Becton-Dickinson* Factor Three: the extent to which the asserted art was evaluated during examination, including whether the prior art was the basis for rejection**

While MAGS and Polivka did not form the basis for a rejection, the Examiner based his rejection on a substantially similar combination of Belady-837 and Gleifchauf. EX1002, 335-345. For example, the Examiner took the position that Belady-837 disclosed the same subject matter that Petitioner relies on in MAGS, including:

- “a source of combustible gas produced from an oil production, storage, or processing facility; (see at least Figure 1 as well as associated and related text; paragraphs 004, 0028” EX1002, 336.
- “a generator connected to the source of combustible gas; (see at least Figure 1 as well as associated and related text; paragraphs 004, 0028)” EX1002, 336

- “Belady discloses a server but does not specifically disclose a blockchain mining device.” EX1002, 336.

In the same office action rejecting the claims over Belady-837 and Gleifchauf the Examiner described MAGS and other references located by the Examiner as “considered pertinent to applicant’s disclosure.” EX1002, 346. Accordingly, the Examiner evaluated MAGS but may have considered Belady-837 as more pertinent.

Likewise, as discussed above, the Examiner considered Gleifchauf to disclose the elements that Petitioner claims to find in Polivka.

For these reasons, this factor is at best neutral.

**4. *Becton-Dickinson* Factor Four: the extent of the overlap between the arguments made during examination and the manner in which Petitioner relies on the prior art or Patent Owner distinguishes the prior art**

As established above in the discussion of the first *Becton-Dickinson* factor, there is substantial overlap between the Examiner’s arguments in rejecting the then-pending claims over the Belady-837 and Gleifchauf combination and Ground 4. The Examiner relied on Belady-837 for the same elements that Petitioner alleges to be in MAGS. The same correlation exists between Gleifchauf and Polivka. Moreover, the Examiner used a similar motivation to combine argument, based on Belady-837’s teaching regarding desirability of low-cost electricity located at a source of available gas, that Petitioner attributes to Szmigielski.

The manner in which Applicant distinguished the prior art during prosecution is also substantially similar to PO's criticism of Petitioner's suggested motivation to combine in this Petition. For example, Applicant argued to the Examiner that "[b]lockchain mining is not synonymous with regular data center processing and cannot be compared as such. By contrast, blockchain mining is known to be energy-intensive (Applicant's paragraph 55 and Gleifchauf paragraphs 4 and 60) – more so than traditional data processing." EX1002, 222. The same reasoning was presented with regard to the lack of motivation to combine herein: as discussed above, the energy intensive nature of crypto mining makes it especially sensitive to energy reliability which was known to be lacking in prior art remote oil field waste gas generation facilities such as MAGS or Belady-837. EX2001, ¶68. Accordingly, a POSITA was not motivated to combine existing crypto miners such as Gleifchauf (prosecution) or Polivka (Petition) with remote oil field gas generators such as Belady-837 (prosecution) or MAGS (Petition).

For these reasons this factor favors denial of institution.

**5. *Becton-Dickinson* Factor Five: whether Petitioner has pointed out sufficiently how the Examiner erred in its evaluation of the asserted prior art**

Petitioner has not adequately identified any error by the Examiner. Petition, 123. Petitioner makes two arguments which are not tied to the specific grounds or references in the Petition. PO addressed both arguments in its discussion of

*Becton-Dickinson* Factor Five above. *See* Section IV.A. As established above, Petitioner's showing is conclusory and unpersuasive. Accordingly, Petitioner has not established that the Examiner committed any error or that the Examiner did not have before him any prior art reference that is materially different from those considered during prosecution. For these reasons this factor favors denial of institution.

**6. *Becton-Dickinson* Factor Six: the extent to which additional evidence and facts presented in the Petition warrant reconsideration of prior art or arguments**

As established above, the Petition relies on cumulative art which it combines in the same manner as considered by the Examiner. Petitioner's proposed motivation to combine these references was also considered by the Examiner. Therefore, Petitioner's allegations of error during examination are without merit. For these reasons this factor favors denial of institution.

**7. *Petitioner* has not demonstrated material error by examiner**

As demonstrated above, the first prong of the two-factor section 325(d) analysis is satisfied because Petitioner's art and arguments are substantially the same as those considered by the Examiner. If the first prong is satisfied as it is here, the Board considers "whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of challenged claims." *Advanced Bionics*, IPR2019-01469, Paper 6 at 8.

Petitioner has not demonstrated any material error by the Examiner for the reasons discussed above for *Becton-Dickinson* factors three, five and six. See Section IV.D.4-6.

For these reasons the Board should exercise its discretion to deny institution pursuant to Section 325(d).

**E. Ground 5**

**1. No Motivation to Combine or Reasonable Expectation of Success**

Ground 5 combines the primary references of Ground 4 (MAGS and Polivka) with Belady-989. Petition, 99-100. Petitioner does not offer any additional rationales for combining MAGS and Polivka beyond those discussed above for Ground 4. Accordingly, as already explained for that ground, Petitioner has not established a sufficient motivation to combine MAGS and Polivka because its analysis is conclusory and contradicted by the references. *See In re Kahn*, 441 F.3d at 988 (“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements.”)

In Ground 5, Petitioner alleges that it was obvious to combine Belady-989's so-called gas shock absorber with the “MAGS mobile power generation system” and the “Polivka mobile Bitcoin miner.” Petition, 100. The purported motivation for this further combination is to “improve the energy usage efficiency.” *Id.*

Petitioner does not explain how a POSITA was supposed to combine the gas

shock absorber system with MAGS, nor does Petitioner address the reasonable expectation of success in even a cursory fashion. This alone should lead the Board to deny institution. The Petition must identify “with particularity ... the evidence that supports the grounds for the challenge to each claim.” 35 U.S.C. § 312(a)(3). The burden of proving a reasonable expectation of success is on Petitioner. *Eli Lilly*, 8 F.4th at 1348–49 (“[I]t was, at all times, [petitioner's] burden to show that the claims would have been obvious, including that a skilled artisan would have had a reasonable expectation of success in achieving the claimed invention.”).

Petitioner's failure to present evidence specifically directed to reasonable expectation of success of the proposed combination in Ground 5 weighs heavily against institution. *See Juniper Networks*, IPR2021-000682, Paper 26 at 23 (Board found challenged claims non-obvious in view of Petitioner's failure to address reasonable expectation of success and criticized Petitioner for “leap[ing] silently over the requirement to evidence a reasonable expectation of success.”)

In fact, no reasonable expectation of success was possible because a POSITA would conclude that Belady's gas shock absorber was incompatible with MAGS. For example, Belady-989 (the disclosure of which is substantially the same as Belady-837 considered by the Examiner as discussed for Ground 1 above) taught shutting off gas flow to the generator when supply gas pressure rises: “were the gas supply 110 to experience a positive gas pressure spike, the gas pressure

sensor 171 of the pressure regulating valve 170 could detect such a high-pressure and could trigger the gas shutoff valve 171 to stop the flow of pressurized gas to the gas-to-electricity converter 180.” EX1011, ¶23.

If Belady's system was connected to MAGS as proposed in Ground 5, a POSITA would understand that the sudden loss of feed gas could be substantially detrimental to MAGS operation. EX2001, ¶116. This is because inlet gas flow rate and system operating pressure were two “key” system parameters in MAGS. EX1014, ¶16; EX2001, ¶116. MAGS required the use of specialized flow controllers and valves to carefully manipulate these parameters to achieve the desired methane number of the dry gas stream. EX1014, ¶18; EX2001, ¶116. The Young patent application (EX1014) further noted that MAGS required its inventors to “carefully select[] the process operations and process parameters.” EX1014, ¶167. The sudden loss of gas pressure caused by Belady-989 gas shock absorber operation during a positive pressure spike could disrupt MAGS' carefully selected and adjusted gas flow and system pressure process parameters and even damage the MAGS equipment. EX2001, ¶116.

Accordingly, a POSITA would understand that at the very least a substantial amount of experimentation and changes to MAGS and Belady-989 would be required to determine whether these systems could operate together. The outcome would be uncertain at best because MAGS was so dependent on controlling gas

flow rates. EX2001, ¶117. In any case, combining Belady-989 and MAGS would require a volume of experimentation and process knowledge beyond the level of one of ordinary skill as articulated by Petitioner. EX2001, ¶¶117.

Belady-989's gas shock absorber was also incompatible with crypto mining's need for reliable power as articulated by Szmigielski. EX1009, 105; EX2001, ¶118. Gas shutoff during positive pressure spikes interrupted gas flow to the Belady-989 generator which would prevent Polivka's miner from operating. EX1011, ¶23; EX2001, ¶118. As another example, when gas storage 160 had an insufficient amount of gas, Belady-989 expected the data center to offload work or throttle down its processors. EX1011, ¶33. Yet there is no evidence that Polivka's miner was capable of doing so or could be modified without undue experimentation. EX2001, ¶118. The power stoppages and requirement for offload or throttling down depending on gas storage 160 would lead a POSITA to conclude that Belady-989's gas shock absorber resulted in power that was too unreliable to combine with Polivka. *Id.* Therefore, a POSITA would not have a reasonable expectation of success and would not attempt the combination in Ground 5. *Id.*

## **2. Board Should Exercise Discretion Under Section 325(d) to Deny Institution**

The two primary references in Ground 5 (MAGS and Polivka) are the same as Ground 4. As established for Ground 4, Section 325(d) favors denial of institution because (1) MAGS and Polivka are identical or substantially similar to

the art considered by the Examiner and (2) Petitioner has not identified any error by the Examiner.

The same conclusion applies to Belady-989. Petitioner acknowledges that the Examiner considered Belady-837, a “reference similar to Belady-989.” Petition, 121-22. In fact, the disclosure in these two references is virtually identical.

As discussed above for Ground 1, the Examiner issued an office action rejecting then-pending claims over Belady-837 and Gleifchauf. EX1002, 335-345. Petitioner attempts to distinguish its reliance on Belady-989 from the rejection over Belady-837 by stating that it “primarily relies on Belady-989 for its teachings regarding power load control (adjusting the power load level of the data center based on availability of flare gas)” rather than “using a gas generator to power a data center.” Petition, 122.

Petitioner is incorrect. The Examiner found limitations directed to power load level modulation “in response to variations in a production rate of combustible gas from the remote oil well” were disclosed by Belady-837 (referred to simply as Belady in the office action). EX1002, 340, *citing* EX2004, ¶15. Therefore, contrary to Petitioner's assertion that “this reference was used in a very different manner” during prosecution (Petition, 121-22), the Examiner used Belady-837 in the same manner as Petitioner.

Accordingly, the first prong of the two-factor section 325(d) analysis is satisfied because Belady-989 and Petitioner's arguments are substantially the same as those considered by the Examiner regarding Belady-837.

Petitioner does not identify any error in the Examiner's analysis of Belady-837 which is virtually identical to Belady-989. Petition, 123. Petitioner's arguments are (1) not directed to this reference; (2) conclusory and (3) unpersuasive for reasons discussed above for Grounds 1 and 4. Therefore, Petitioner has not "demonstrated that the Office erred in a manner material to the patentability of challenged claims." *Advanced Bionics*, IPR2019-01469, Paper 6 at 8.

For these reasons the Board should exercise its discretion to deny institution pursuant to Section 325(d).

#### **V. THE CLAIMS RECITE PATENT ELIGIBLE SUBJECT MATTER**

According to Petitioner, all that the '372 patent entails is a trip to Home Depot to buy a generator and to Best Buy to pick up a home computer. Plainly, Petitioner misreads the '372 patent. For one, Petitioner ignores that the source of combustible gas for the recited generator in the '372 patent is not a residential gas line that can be turned-off without consequences; it is a hydrocarbon facility that continuously flows combustible gas used by the generator. EX2001, ¶¶121. Petitioner also ignores that the mining of blockchain is energy intensive requiring

multiple mining processors among the recited blockchain mining devices. *Id.*

Clearly, this machine is a meaningful technological and engineering contribution that fits within the statutory categories of subject matter appropriate for a patent.

35 U.S.C. § 101; Manual of Patent Examining Procedure (“MPEP”) at § 2106.03, subsection III, Step 1 (“Is the claim to a process, machine, manufacture or composition of matter?”). The Petition falls short of showing that the claims are ineligible at each step of the analysis. *Alice Corp. v. CLS Bank Int’l*, 573, U.S. 208, 217-18 (2014)(citing *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 75-77 (2012)); EX2001, ¶129.

Petitioner violates the bedrock principles guiding the application of 35 U.S.C. § 101, namely properly “determining what the inventor has invented by reviewing the entire application disclosure and construing the claims ....” MPEP § 2106.04, subsection II, Step 2A. Instead of appropriately applying the guidance provided the USPTO, Petitioner shreds the invention by arguing “any means of generation using combustible gas and any computerized means of blockchain mining are claimed” and repeatedly suggests that the sum total of Upstream’s invention is represented by the delivery (or “co-locating”) of a generator and a home computer to a remote oil facility. Pet. 1, 5-6, 115, 117. But, the independent claims confirm that more is recited than simply the use of natural gas to power a blockchain mine. Claims 1 and 24 recite a generator capable of using a continuous

flow of natural gas (including raw natural gas also known as casinghead gas) from a hydrocarbon production, storage or processing facility to electrically power mining processors within blockchain mining devices that connect to a network interface with access to a blockchain database storing transactions associated with digital currency. EX2001, ¶120. These claims recite a concrete, physical elements. The claims are not abstract at all.

Even if the Board were to adopt Petitioner's oversimplified view of the claims, the invention clearly discloses meaningful inventive steps that require significantly more than Petitioner's disjointed abstract idea. *See* MPEP § 2106.05. The integration of the special-purpose generator of the claim that receives the continuous flow of combustible casing gas and the mining processors within the supportive blockchain mining devices is a significantly concrete practical application of technology. *Alice Corp. v. CLS Bank Int'l*, 573, U.S. 208, 217 (2014)(explaining that "in applying the § 101 exception, we must distinguish between patents that claim the 'building blocks' of human ingenuity and those that integrate the building blocks into something more.") (*quoting Mayo*, 566 U.S. at 89 (1971)); EX2001, ¶123. The record presented by the Petition and its declarants falls far short of showing that USPTO erred by issuing the claims and it is not likely that Petitioner would show the unpatentability of any claim through Post Grant Review.

**A. Step 2A, Prong One: The '372 Patent Claims Are Not Directed To An Abstract Idea**

The claims cannot be distilled down simply to “using natural gas to power a blockchain mine” as Petitioner alleges. Pet. 113. This articulation ignores the claims’ recitation that the source of combustible gas is “a facility selected from a group consisting of a hydrocarbon production, storage, or processing facility.” EX1001, claims 1 & 24. It ignores that the generator receives combustible gas as a “continuous flow of combustible gas.” *Id.* It ignores the claims’ recitation of multiple (not only one) “blockchain mining devices” that “each have a mining processor connected to a network interface.” *Id.* Each “mining processor” must be “adapted to mine transactions associated with the blockchain database” that is “a distributed database stored on plural nodes.” *Id.* And, in addition to disregarding the claim language on an element-by-element basis, the Petitioner does not treat the claimed combination as a whole. *See Mayo*, 566 U.S. at 80 (examining “the process as a whole”). Each independent claim resoundingly emphasizes that presence of a specialized generator that can receive raw natural gas as a continuous flow to produce electrical power and resilient mining processors that are powered from the generator’s electrical output (not from the electrical grid) to mine digital currency using a network interface. EX2001, ¶122. Both as separate elements, and as combination, the challenged independent claims do not simply cover an abstract idea. *Id.*

The Petition's analysis of the claims is incomplete in other ways. To provide additional predictability in the application of the Supreme Court's two-part test, the Office published guidance on the application of § 101. 2019 Revised Patent Subject Matter Eligibility Guidance, 84 Fed. Reg. 50 (Jan. 7, 2019)(the "2019 Revised Guidance"); Update: Subject Matter Eligibility (Oct. 17, 2019)(the "October 2019 Update") now promulgated in MPEP § 2106. The Office's published guidance is applicable to this proceeding. 2019 Revised Guidance, at 51 ("All USPTO personnel are, as a matter of internal agency management, expected to follow the guidance."). Yet, the Petition and supporting declaration do not attempt to apply the rubric outlined in the USPTO's § 101 guidance which is an independent reason to deny institution of the Petition.

The Office's guidelines distill abstract ideas based on the relevant case law into three enumerated categories: (1) mathematical concepts, (2) methods of organizing human activity, and (3) mental processes. MPEP § 2106.04(a). The claims of the '372 patent do not fall within any of these categories, and the Petition does not allege otherwise. "If the identified limitation(s) do not fall within any of the groupings of abstract ideas, it is reasonable to find that the claim does not recite an abstract idea [and] [t]his concludes the abstract idea judicial exception eligibility analysis ...." *Id.* The claims are akin to the examples of claims that do recite abstract ideas provided in the MPEP, including the example of "a washing

machine comprising a tub, a drive motor operatively coupled to the tub, a controller for controlling the drive motor, and a housing for containing the tub, drive motor, and controller.” MPEP § 2106.4(a)(1). Thus, even if Petitioner's articulation of the alleged idea of the claims were accepted, the Board should still deny institution as the idea falls outside the categories of abstract ideas distilled from the case law.

Notably, Petitioner does not offer even one exemplary prior case for comparison where a similar invention was found not to be patentable subject matter, tellingly seeking in this proceeding to expand exception to patentable subject matter. The Board should decline the invitation, recognize that the claims are not abstract without belaboring the remaining questions concerning the judicial exception.

Finally, Petitioner's arguments that the claims preempt “any innovation within the broad field of using field gas to power any kind of blockchain computer” is blatantly inconsistent with its articulation of the alleged abstract idea of “using natural gas to power a blockchain mine.” Apparently, Petitioner does not dispute that the claims do not preempt the alleged abstract idea of “using natural gas to power a blockchain mine.” Moreover, the recited limitations of the independent claims confirm that “using field gas to power any kind of blockchain computer” is also not preempted. The independent claims require, for example,

that the system and method include multiple (not only one) “blockchain mining devices” that each have “a mining processor” and “a network interface” to communicate with “blockchain database [that] is a distributed database.” EX1001, claims 1 & 24. Moreover, the claims are not directed to “any kind of blockchain computer,” and are instead focused on mining transactions only for “digital currency.” Petitioner’s arguments regarding preemption are again premised on disregarding the claim language.

**B. Step 2A, Prong Two: The ’372 Patent Claims Are Not Directed To An Abstract Idea**

Even if the Board somehow found that Petitioner’s alleged concept of “using natural gas to power a blockchain mine” fell within one of the categories of abstract ideas, the claims when taken as a whole are clearly integrated into a practical application. “[T]he analysis should take into consideration all the claim limitations and how those limitations interact and impact each other when evaluating whether the [alleged abstract idea] is integrated into a practical application.” MPEP § 2106.04(d), subsection III.

The Petition skips this inquiry, omitting any examination of Prong Two of Step 2A. The challenged claims go far beyond “using natural gas to power a blockchain mine.” Though not exhaustive, the challenged claims expressly include practical applications because, for example, (1) the generator of the independent claims uses natural gas from a hydrocarbon production, storage, or processing

facility (not from a utility sales-gas line) that produces a continuous flow to improve oil field waste gas technologies, (2) the independent claims recite multiple (not only one) blockchain mining devices that facilitate the modulation of the load applied to the generator to improve the cost effectiveness of blockchain mining and overall power generation reliability, (3) the generator, mining processors, and network interface of the independent claims are each, separately and as a whole, a particular machine that is integral to the claims. EX2001, ¶124.

The independent claims are surely tied to a practical technical application as the generator component, mining processors, and network interface, for example, are integrated and it would be impossible to carry out Petitioner's proposed abstract idea of using natural gas to power a blockchain mine without these hardware components. Though this list of ways in which the challenged claims practically apply the notion of using natural gas to power a blockchain mine is not exhaustive, it is a more than sufficient showing that the independent claims embody a practical application of technology. EX2001, ¶124. This is surely the case here where the Petition did not endeavor to perform an analysis of whether the claims recite a practical application under Step 2A, Prong Two.

**C. Step 2B: The Claims Of The '372 Patent Include Inventive Concepts Beyond Using Natural Gas To Power A Blockchain Mine**

The Petitioner predicates its determination regarding the presence of inventive concepts within the claims on misreading the claims, treating each

element of each claim as unconnected and orphaned, and disregarding the invention as a whole. The Petition fails to both consider the elements of the claims individually and in combination, and doing so confirms that the claims contain inventive concepts that were not well understood, conventional or routine. MPEP § 2106.05.

Though the Petition's analysis is razor thin, the little analysis that is provided is inconsistent in meaningful respects. For example, the Petition initially argues that the claims "do[] not even require the computers be located at or near a [hydrocarbon] facility," yet in the next paragraph the Petition compares the claim to "geographically locating any energy intensive computer process near a cheap source of energy." Pet. 116-117. In light of these inconsistent statements, the Petition's conclusion regarding the alleged omission of an inventive step collapses.

Of course, the Petition misapprehends the claims insofar as it contends that the claimed system and method need not be proximate to the hydrocarbon facility that is the source of the claimed "continuous flow of combustible gas." The claims themselves recite that the "generator [is] connected to the source of combustible gas" that is "produced from a ... hydrocarbon production, storage, or processing facility." EX1001, claims 1 & 24; EX2001, ¶125. By disassociating the claimed elements, the Petition errs in concluding that the claims do "not require the computers be located at or near such a facility." Pet. at 116.

Relatedly, the Petitioner wrongfully dilutes the inventive concept of the independent claims by proposing a construction of “continuous flow of combustible gas” that reads “continuous” out of the claim. Patent Owner’s Preliminary Response addresses Petitioner’s mistaken claim construction of “continuous flow of combustible gas” above. The ’372 patent explains that “[i]n upstream production of oil and gas, natural gas may be produced ... as a by-product of oil production, for example from an oil well.” EX1001, 6:51-54; 4:62-63 (“The source of combustible gas comprises raw natural gas.”); 8:66-9:3. The ’372 patent describes this source of raw gas as having a “continuous flow” that must be consumed or otherwise disposed of. *Id.*, 9:28-32. Often oil wells are remote, and with respect to the natural gas, may be “lacking in accessible infrastructure such as an external pipeline network (sales line) ....” *Id.*, 7:46-49; 8:49-63. The ’372 patent teaches that the oil well operator is left with few desirable options to dispose of the raw natural gas, such as “venting the gas to atmosphere un-combusted [or] combusting the gas on site via flare ....” *Id.*, 7:56-60; 8:5-10. The ’372 patent therefore directs the casinghead gas to a generator used to operate a blockchain mining device. *Id.*, 11:24-36. The ’372 patent introduces the ability to “[c]hang[e] the blockchain mine electrical load over time in response to changes in the excess or stranded gas volume availability.” *Id.*, 5:35-37. Using the ’372 patent’s invention, a well operator can “[m]inimize[e] the

vented or flared gas volumes by changing the mining hardware load in reaction to observed changes in average natural gas source rates over time.” *Id.*, 5:38-41.

Thereby, “relatively less gas is wasted during operation.” *Id.*, 11:35-36. This aspect of the invention is captured in the elements of the independent claims, which Petitioner proposes be misread such that the mere presence of any type of gas from any source, for any duration of time would suffice. Without this error, it is clear that the elements of the independent claims reveal an inventive concept that is significantly more than using natural gas to power a blockchain mine. EX2001, ¶126.

The Petition commits a similar error where it divorces the blockchain mining devices that each include a mining processor and network interface from the unique application to digital currency blockchain mining. Patent Owner's Preliminary Response addresses Petitioner's mistaken claim constructions of “blockchain mining devices” and “mining processor” above. The Petition alludes to a “conventional blockchain miner,” but provides no evidentiary support for that proposition, despite applications of blockchain being far from conventional at the time the inventor filed the '372 patent. EX2001, ¶127. The '372 patent recounts that “[t]he first block chain was conceptualized by Satoshi Nakamoto in 2008 and implemented the following year as a core component of the digital currency, BITCOIN....” EX1001, 11:51-55. This was not even ten years before the

application leading to the '372 patent was filed. "Maintaining a blockchain database is referred to as mining, which refers to the distributed computational review process performed on each block of data in the block-chain" (*id.*, 13:5-7), wherein "[e]ach block may include the hash of the prior block ... linking the two" to "form a chain" (*id.*, 12:32-39). With respect to the claimed mining processors, the '372 patent recommends the capability to control the "hashrate" by "changing the core voltage or the clock rate of the processor[s]." *Id.*, 13:52-58. It is the "[m]ining circuitry 130, for example integrated circuit chip, may be used to perform data mining operations, for example verifying cryptocurrency transactions." *Id.*, 14:57-63. Far from being a generic home computer as the Petition suggests, the mining processor is described and recited as a specialized computer processor that was far from conventional at the time of the filing of the '372 patent. EX2001, ¶127.

Even the references relied upon in the Petition confirm that the claims, especially when read as the combination of elements, were far from conventional or routine. The '372 patent explains that blockchain mining operations are highly computationally and energy-intensive by design. EX1001, 13:29-36, 13:49-58. The Szmigielski reference that Petitioner identifies as pertinent prior art teaches that, in addition to being inexpensive, electrical power for crypto mining must be "*reliable*" to power "the hardware and the associated cooling systems." EX1009,

105; EX2001, ¶128. Yet, Petitioner's other art, including particularly the Dickerson reference, teaches that its electrical power is *unreliable* because the system is located "in remote areas" where "no utility power is available." EX1005, ¶24; EX2001, ¶128. As such, a POSITA did not view the claims as conventional or routine, but instead would be skeptical that such a system would work reliably. *Id.*

In fact, even after the filing of the '372 patent, Petitioner itself explained that the combination of elements in the claims were not well known or conventional at the time. As discussed above, Petitioner filed provisional U.S. patent application No. 62/713,368 in August, 2018, approximately a year and a half after the priority date of the '372 patent (and to which Petitioner's U.S. Pat. No. 10,862,307 claims priority). See EX2002. In the '307 specification's Background section, Petitioner described the state of the art and asserted that "there remains a need for systems and methods for generating electricity from natural gas produced from oil wells," and that "[i]t would be beneficial if such electricity could be produced and consumed on-site, for example by using it to operate power-intensive, modular processing units... employed to mine cryptocurrency." EX2002, 2:35-42. The '307 summary section described as allegedly novel "convert[ing] raw natural gas into a fuel gas stream to power any number of on-site power generation modules" which in turn power "distributed computing units" that "may be adapted to mine cryptocurrency." *Id.*, 2:45-55. Thus, a year and a half after the priority date of the

'372 patent, Petitioner confirmed that the combination of elements presented by the claims of the '372 patent was unconventional, not routine, and not well known. Petitioner's admissions regarding the state of in the industry in its '307 patent should be taken over the conclusory and unsupported arguments now made by Petitioner and its expert declarants.

## **VI. CONCLUSION**

For the reasons given above, Crusoe's Petition for institution of a Post Grant Review trial should be denied.

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James Heintz,  
Reg. No. 41,828

**CERTIFICATION OF WORD COUNT**

Pursuant to 37 C.F.R. § 42.24(c) and (d), Petitioner certifies that the word count of Patent Owner's Preliminary Response Regarding Post Grant Review (exclusive of any table of contents, table of authorities, mandatory notices under § 42.8, certificates of service and word count, and list of exhibits or claim listing) as measured by Microsoft Word is 18,652 words.

By: /James M. Heintz/  
James M. Heintz  
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**CERTIFICATE OF SERVICE ON PATENT OWNER  
UNDER 37 C.F.R. § 42.105**

Pursuant to 37 C.F.R. §§ 42.6(e) and 42.105(b) and agreement by the attorneys listed below and the undersigned, the undersigned certifies that, on the 24th day of October, 2023, a complete and entire copy of this Patent Owner Preliminary Response Regarding Post Grant Review, together with all supporting exhibits, were served on Petitioner electronically by emailing a copy of the same to the following attorneys for Petitioner:

By: /James M. Heintz/  
James M. Heintz  
Reg. No. 41,828