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

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**CRUSOE ENERGY SYSTEMS, LLC,
Petitioner,
V.**

CERTIFIED COPY

**UPSTREAM DATA INC.,
Patent Owner**

**Case PGR2023-00039 (US PATENT NO. 11,574,372)
Reference 54598-0001PS1**

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REMOTE CONFERENCING DEPOSITION OF FENGQI YOU, Ph.D.

**Stenographically reported by NICOLE HATLER
California CSR No. 13730
June 27, 2024**

JOB No. 24-137875

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PAGE

PETITIONER

Exhibit 11 Mr. Barbour's declaration.....170
(Retained by counsel)

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Exhibit 1013 Document regarding Mags.....250
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Exhibit 2031 Mining bitcoin with carbon capture.....42
And renewable energy for carbon
Neutrality across states in the USA

Exhibit 2032 Patent Application dated 12-28-23.....59

REMOTE CONFERENCING DEPOSITION OF FENGQI YOU, Ph.D.

BE IT REMEMBERED, that pursuant to Notice, and on the 27th day of June 2024, commencing at the hour of 9:10 a.m., in the respective locations via Zoom, before me, NICOLE HATLER, a Certified Shorthand Reporter, State of California, personally appeared FENGQI YOU, Ph.D., produced as a witness in said action, and being by me first duly sworn, was thereupon examined as a witness in said cause.

---oOo---

APPEARANCES ALL REMOTELY VIA ZOOM

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FENGQI YOU

sworn as a witness

testified as follows:

EXAMINATION BY MR. ZHU:

Q. All right. Dr. You, can you please give your name and address for the record?

A. Yes. My name is Fengqi You, F-E-N-G-Q-I, Y-O-U. I'm currently located in Ithaca, New York 14850.

Q. Thank you, Dr. You.

Are you currently at home or in the office?

A. I'm in my home office.

Q. Oh, I see. Is there anyone else with you in the room?

A. Not in this room, but in the home, there are family members.

Q. Understood.

Dr. You, have you been deposed before?

A. No. This is my first time for a deposition.

Q. Okay. Then I'll go over some ground rules with you.

Have you ever, otherwise, testified in any court proceeding or administrative proceeding before?

A. No. I believe this is my first time.

Q. Okay. Understood.

So do you understand you are testifying under

1 oath today?

2 A. Yes, I believe so.

3 Q. Okay. And do you understand your testimony, you
4 know, under oath today will be given in the same effect
5 as if you were testifying in a courtroom?

6 A. Yes, I believe so.

7 Q. Okay. Perfect.

8 Is there any reason, medical or otherwise, that
9 makes you -- cannot provide your full and complete and
10 truthful testimony today?

11 A. Not as far as I'm aware of.

12 Q. Okay. All right. Do you understand that during
13 today's depo, I'll be asking questions and you will be
14 providing answers?

15 A. Yes, I understand.

16 Q. Okay. So as Nicole mentioned earlier, it's
17 important that you and I -- not to talk over each other,
18 right, because she needs to make a clear recording of the
19 conversation. In other words, if I ask a question, you
20 think you know the answer even before I finish, it's
21 still important to let me finish my question so that
22 Nicole can take down the testimony.

23 Does that make sense?

24 A. Yes, I understand that.

25 Q. Yeah. And along the same lines, for the benefit

1 of Nicole, can you please provide verbal answers as
2 opposed to nodding your head or shaking your head?

3 Is that okay?

4 A. Yes, I understand that.

5 Q. Perfect. Hopefully my questions will be clear.
6 If you don't understand my question, just let me know,
7 and I'll try to rephrase it. If you don't ask for a
8 clarification, I'll assume you understand the question.
9 Okay?

10 A. Okay. Thank you.

11 Q. Yeah. And during the depo -- I know it's going
12 to be, you know, quite a few hours. If you ever need a
13 break for either -- you know, get water, go to the
14 bathroom, just let me know, and we'll take a break, as
15 long as there's no pending question. If there is a
16 question pending, you can still answer the question
17 before the break.

18 Do you understand that?

19 A. Yes, I understand that. And I think I do need
20 some breaks.

21 Q. We all do.

22 And during the depo, you may hear Mr. Thompson
23 say "objection" from time to time, but, you know, you're
24 still required to answer the question, unless you're
25 instructed not to.

1 Do you understand that?

2 A. Yes, I understand.

3 Q. Okay. Perfect.

4 Do you swear to tell the truth, the whole truth,
5 and nothing but the truth?

6 A. Yes, I swear to tell the truth.

7 Q. Perfect.

8 Okay. Let me go over some -- you know, some
9 part of your CV.

10 Dr. You, where did you go -- go to college?

11 A. I attended college in Tsinghua University in
12 Beijing, China, and my bachelor's degree in chemical
13 engineering.

14 Q. I see. I see.

15 And did you go to graduate school afterwards?

16 A. Yes. I attended Carnegie Mellon University in
17 Pittsburgh, Pennsylvania for my Ph.D., also getting a
18 Ph.D. degree in chemical engineering, with a focus on
19 process systems engineering and artificial intelligence.

20 Q. I see. Thank you.

21 And where did you go after graduate school?

22 A. After my Ph.D., I worked in Argonne National Lab
23 for two years as an Argonne schooler, primarily in the
24 mathematics and computer science division --

25 (Reporter clarification.)

1 THE WITNESS: Yes. After my Ph.D., I joined
2 Argonne National Laboratory in Illinois. My primary
3 appointment in Argonne was in the mathematics and
4 computer science division. I also had some joint
5 appointment in a few other divisions within Argonne.

6 BY MR. ZHU:

7 Q. I see.

8 Seems to be a quite a switch from chemical
9 engineering to mathematics and computer science. What
10 triggered the switch?

11 A. I will not consider it as a switch because my
12 Ph.D. or my graduate training, it's in process systems
13 engineering, and, in fact, this is a domain that lies in
14 the interface between chemical engineering, computer
15 science, electrical engineering, and all of this
16 artificial intelligence, in general.

17 Q. I see.

18 A. And it's a very consistent pathway moving from,
19 you know, one division to the other. And, in fact --

20 (Reporter clarification.)

21 THE WITNESS: In fact, now I'm at Cornell
22 University as a professor. I have researched and
23 teaching appointments in many departments, including
24 chemical engineering, electrical and computer
25 engineering, systems engineering, computer science,

1 mechanical and aerospace engineering, civil and
2 environmental engineering --

3 (Reporter clarification.)

4 THE WITNESS: Civil, C-I-V-I-L, and
5 environmental engineering. Applied mathematics,
6 oppression research and information engineering, applied
7 information systems, and a few others.

8 So it's highly interdisciplinary research and
9 teaching domains that I'm involved.

10 BY MR. ZHU:

11 Q. I see. Thank you.

12 And where do you go after your appointment at
13 Argonne National Laboratory?

14 A. Yes. That's a very good question. So as a
15 matter of fact, after my Ph.D., I was hired to
16 Northwestern University as a tenured track --

17 (Reporter clarification.)

18 THE WITNESS: As a tenured track faculty member,
19 as an assistant professor, at Northwestern University,
20 located in Evanston, Illinois.

21 Well, I decided to defer the appointment for two
22 years so that I would have some advance and full training
23 in Argonne National Lab before officially starting my
24 tenured track position at Northwestern University.

25 So when I was in Argonne, I also hold joint

1 appointment at Northwestern University as a adjunct
2 professor, where we mentor students working with problems
3 all your gas energy systems, among others.

4 So after I completed my two-year tenure at
5 Argonne National Lab, I joined Northwestern University as
6 an assistant professor of chemical and biological
7 engineering, and later I have a curtesy joint appointment
8 in industrial engineering and management science
9 department.

10 BY MR. ZHU:

11 Q. I see. And how long did you stay at
12 Northwestern?

13 A. Yes. I was officially in Northwestern
14 University as a tenured track faculty member from 2011 to
15 2016, so it's about five years.

16 But in a similar position, I was hired to
17 Cornell University somewhere around 2015. Based on
18 discussion of all the parties, I agreed to stay for one
19 more year at Northwestern University, helping them with
20 teaching on chemical process design and topics related to
21 Argonne gas energy systems, and officially started at
22 Cornell university in July 2016.

23 Q. I see. And is that where you currently are?

24 A. Yes. I'm currently a professor at Cornell
25 University.

1 Q. I see. Thank you.

2 So during your education, did you take any
3 classes on blockchain mining?

4 A. So during my education, I did not take any
5 classes on blockchain mining, and I do not believe there
6 is a -- such a class, to the best of my knowledge, when I
7 was an undergraduate or graduate student.

8 Q. Okay.

9 A. However, I was involved in research on
10 blockchain mining over a few years.

11 Q. And around what time was that?

12 A. So my first time starting to look into
13 blockchain mining was about 2020, but somehow -- I would
14 say a boundary is very hard to estimate because, you
15 know, this blockchain mining concept has been around for
16 some time, but it was not getting sufficient attention.

17 So I have been learning, studying, and somehow
18 engaging in research activities related to blockchain
19 mining even before 2020. But officially, I will say it's
20 in 2020.

21 Q. I see. So during your education, did you take
22 any classes on gas generators?

23 A. Yes, absolutely. That's part of my training as
24 a chemical engineering professional, and I also teach
25 course on chemical process design that involve a lot the

1 of gas and oil processing.

2 Q. Thank you.

3 So you mentioned you were involved in blockchain
4 mining research in 2020, right?

5 Did you publish any articles on blockchain
6 mining?

7 A. Yes. We have quite a few articles published on
8 blockchain mining and energy systems together. Some of
9 these papers were published in more prestigious journals,
10 such as the --

11 (Reporter clarification.)

12 THE WITNESS: Proceedings of the National
13 Academic of Science of the United States. Somehow people
14 call it P-N-A-S. That's a world prestigious journal,
15 published by the National Academy of Science.

16 And other journals would be Energy and
17 Environmental Science; ACS, sustainable Chemistry and
18 Engineering; journal of --

19 (Reporter clarification.)

20 THE WITNESS: Cleaner production, among others.

21 And some of these papers were even selected and
22 featured on the covers of the journals. And they also
23 received quite a few media reports in outlets such as
24 Fortune Science Daily Tech Exploi. It's a website.

25 //

1 BY MR. ZHU:

2 Q. And do you remember what these publications were
3 about?

4 A. These publications are about energy systems and
5 blockchain mining.

6 Q. Are they about, let's say, renewable energy and
7 how they can be used to mine Bitcoin?

8 A. Some of them involve renewable energy, but I
9 will say that, in general, in a broader area of energy
10 systems.

11 Q. Are any of these publications about anything to
12 add power generation?

13 A. So these publications are not about casing
14 generations, but they are broadly relevant to gas
15 processing because there are a lot of gas involved, as
16 well.

17 Q. Have you published anything relating to
18 casinghead gas power generation?

19 A. We have conducted research in this area, but
20 they were not published.

21 Q. I see.

22 A. Because publication requires peer review, and
23 not everything we've done will be published.

24 Q. I see.

25 Have you designed a generator before?

1 A. Well, that's part -- depending on how you call
2 design, I teach courses on --

3 (Reporter clarification.)

4 THE WITNESS: -- energy systems and chemical
5 process design. So if you consider design is the same
6 kind of design that we are teaching in the classes, then
7 that's definitely part of the topic, because we teach
8 classes on nature of gas processing for research.

9 BY MR. ZHU:

10 Q. Have you designed a blockchain miner before?

11 A. No. We don't design blockchain miner before.

12 Q. Have you heard about --

13 (Reporter clarification.)

14 BY MR. ZHU:

15 Q. Have you heard of Crusoe, C-R-U-S-O-E, Energy?

16 A. No. I wasn't aware of Crusoe Energy until I'm
17 engaged in this case.

18 Q. I see.

19 So have you ever heard about Upstream Data
20 before?

21 A. No. I haven't heard about Upstream Data before,
22 until I'm engaged in this case.

23 Q. I see. I see. Thank you.

24 Let's see. Do you consider yourself an expert
25 in the oil and gas industry?

1 A. Yes, I believe so, with my educational training
2 and the research in teaching appointment.

3 Q. Do you consider yourself an expert in blockchain
4 mining industry?

5 A. I believe so. Because of our research
6 activities and also some relevant teaching activities in
7 this field.

8 Q. Do you know anyone else that's similarly
9 situated as yourself?

10 A. That's a very good question that I don't have a
11 clear answer right now because I do know a lot of experts
12 in oil and gas industry, and I know a lot of experts in
13 the blockchain mining industry. There could be some
14 people doing similar work, but they're pretty much coming
15 out from my research group, to the best of my knowledge.

16 Q. Let's see. Have you ever been to an oil and gas
17 field before?

18 A. Yes. As a chemical engineer by training, that's
19 actually part of the curricular in the undergraduate
20 process.

21 Q. I see. So based on your experience in
22 blockchain mining, what are, you know, some of the more
23 important considerations for setting up a blockchain
24 mining operation?

25 A. Well, there are quite a few of them, and all I

1 can say is I could offer a few examples, definitely not
2 extensive. One particular issue is energy problem, and
3 that's why we are particularly interested in research on
4 energy systems and blockchain mining.

5 Because blockchain mining was designed to be
6 energy intensive, and that task requires quite a bit of
7 energy. So they are --

8 (Reporter clarification.)

9 THE WITNESS: It's designed to be energy
10 intensive, and that involve quite a few concerns, not
11 only in terms of energy consumption, but also the
12 relevant greenhouse gas emissions and all of the
13 consequences.

14 The other major issue is the reliability of the
15 power supply for blockchain mining, and that's another
16 major issue the industry has been working on over the
17 past few years. And these are exactly some of the
18 motivation, of course not all, for our research in this
19 domain.

20 BY MR. ZHU:

21 Q. Can I get you to elaborate a little bit on the
22 reliability of the power supply?

23 What do you mean by "reliability"?

24 A. Yes. Because blockchain mining was designed to
25 be energy intensive, and that's fundamental in its

1 algorithm design. If you have this power supply -- let's
2 say on-off supply, such as solar panels, right,
3 produce -- sometimes you get electricity and sometimes
4 you get nothing -- then that could potentially affect the
5 equipment and also create loss.

6 So for many years and for a long time,
7 blockchain mining industry has been looking for reliable
8 power sources for these particular activities. And in
9 some places, they use hydropower or hydroelectricity as
10 the major source of energy for blockchain mining.

11 Q. When you're saying hydropower, do you mean power
12 from the grid?

13 A. Yes and no. Because we use --

14 (Reporter clarification.)

15 THE WITNESS: Because when Mr. Zhu was talking
16 about grid, grid is the carrier for transmitting
17 electricity. It's not a source of energy.

18 Here, we are talking about the source of energy,
19 where the energy comes from. It may or may not need to
20 be coming from grid. There are blockchain miners
21 connected to some of hydropower dams directly. They
22 don't need to go through grid. And in fact, I believe
23 some places ban blockchain mining using electricity from
24 a grid directly.

25 //

1 BY MR. ZHU:

2 Q. I see.

3 So in terms of the reliability of the power
4 supply, does it mean the voltage is reliable and doesn't
5 fluctuate?

6 A. It's not only about a voltage. The key issue is
7 whether there's reliable energy generated from a source
8 to power production. And of course, if the energy is not
9 reliably generated, then they would potentially affect
10 the voltage coming, among others.

11 Q. So if a power source, you know, produces
12 fluctuating voltage, do you consider that a reliable
13 source?

14 A. Well, that's an interesting question. The
15 issue, again, is the voltage could be adjusted in the
16 device or in some sort of equipment between the device
17 and the energy source. So we look at a question
18 sometimes, when you say energy output, it's a function of
19 both voltage and the current. So voltage is just one of
20 the multiple factors that we consider for energy input or
21 output.

22 Q. So in other words, the power supplied can still
23 be reliable even though the voltage fluctuate?

24 A. It depends on how we design this blockchain. It
25 depends on how we design the whole system. They are

1 engineering and technical masters to potentially make the
2 power supply reliable.

3 Q. And can you give me an example of such a mansell
4 [phonetic] that can make the power supply reliable?

5 A. Well, I don't have any example immediately in
6 mind, but the key point I was trying to say was that,
7 based on the question you were asking, when the power
8 supplies are unreliable, can we maintain the voltage?
9 And the answer is potentially, yes, if we want to
10 maintain the voltage. But we do have to sacrifice other
11 factors, such as the current and so on.

12 So again, the power input and power output of
13 the system from energy source will be a function of
14 multiple factors, and voltage is just one of them. I
15 will not connect voltage as a reliability.

16 Q. I see.

17 What other factors are there?

18 A. Well, simply current, right?

19 Q. Right.

20 A. If the voltage is fluctuating, what about the
21 current? We can fix the voltage, but then the current
22 will be fluctuating, and that will be a problem, as well.

23 Q. I --

24 A. -- both. Well, then it goes back to energy
25 output from the source. Do we have reliable output of

1 energy from the source?

2 Q. I see.

3 A. These, again, are just some of the examples.

4 Q. Got it.

5 So I guess in other words, you know, the power
6 supply is a combination of both voltage and current,
7 right? You know, if you don't have a stable current, you
8 may compensate by, you know, adjusting the other; is that
9 correct?

10 A. I will say partially because, you know, we are
11 getting the power to electronics. How the power is being
12 converted from one place to another, there are issues
13 about transmission, like what you mentioned, the grid,
14 for instance, then they have some specifications about
15 voltage, right?

16 But if it's connected directly to some kind of
17 sources, then depending on a lot of electronics involved
18 and everyone, they're placed lower in this process. As
19 long as the voltage and current -- these are just some of
20 the examples in the higher level, but there are a lot of
21 details that contribute to all of these factors.

22 Q. Makes sense.

23 So earlier, you mentioned some people tend --
24 chose hydropower, right, because it is reliable.

25 What makes hydropower reliable?

1 A. Well, in the context of hydropower, because the
2 energy generation could be adjusted in terms of how much
3 water is being transferred from one place to another. So
4 the output is somehow easier to control, and that's the
5 control mechanics that you have resource.

6 So somehow, you consider the water in the
7 reservoir as a potential -- significant amount of
8 potential energy. And with the dam there and with all
9 adjustments there, we can potentially team to --
10 discharge the energy and how much to withdraw there.

11 Q. I see. And -- and that is contingent on if
12 there's water in the reservoir, right?

13 If it's a -- for example, a dry season and
14 there's no water, then I guess hydropower would be not
15 reliable; is that correct?

16 A. If there's no water, there's no energy from
17 hydro. So it's not a reliability problem. It's just no
18 energy.

19 Q. Yeah. For example, a story I heard is in --
20 Nepal is, you know, high -- a country highly reliant on
21 hydroelectricity, and they have terrible power outages
22 because of dry seasons, right?

23 MR. THOMPSON: Object --

24 BY MR. ZHU:

25 Q. Have you heard about that issue?

1 MR. THOMPSON: Objection. Form; foundation.

2 THE WITNESS: I haven't studied this issue about
3 Nepal. It's a bit far away from my current location, so
4 I do need some time to study it if you really want an
5 answer from me today.

6 BY MR. ZHU:

7 Q. I see.

8 What about other forms of power supply, do you
9 consider nuclear power a reliable source of power?

10 A. If nuclear power is well controlled and
11 regulated, it could be a reliable source of power for
12 blockchain mining and for any other applications, but
13 again, any source of energy would require careful
14 engineering and control to provide reliable power supply.

15 Q. What about renewable energy, like wind or solar,
16 do you consider those reliable?

17 A. Again, they could be reliable if there is
18 sufficient engineering and technologies involved. For
19 example, in our research, we do involve quite a few
20 energy storage options to deal with the intermittency
21 issues of wind and solar. This would involve, you know,
22 a battery, for instance, or green hydrogen, in certain
23 cases, to mitigate the intermittency issues or
24 reliability issues of the power -- or energy generation
25 from these renewable sources.

1 Q. I see. So -- so I guess, in your opinion, wind
2 and solar can also be reliable if you -- you know, I
3 guess good engineering were put into effect, right?

4 A. I guess my answer is that, based on our research
5 from 2020, we did share some ways to make wind and solar
6 to be reliable. But if you're talking about my own
7 research, indeed, before -- to my best of knowledge,
8 before our publications, there were not considered to be
9 reliable sources for blockchain mining. And these
10 publications came out in 2022, 2023, and 2024.

11 Q. I see.

12 So what about fossil fuel power, would you
13 consider fossil fuel power to be reliable?

14 A. The fossil fuel, it's a very broad concept that
15 may involve oil, gas, or other kind of hydrotronic forms,
16 right? So again, any power source, any energy source
17 with careful engineering, detailed technologies, and
18 regulation and control, they could eventually be
19 reliable. But it doesn't mean that you hook up anything
20 directly, it's going to give you a reliable power supply.
21 And when -- as you mentioned earlier, if there's no
22 water, how can hydropower be considered reliable? And,
23 in fact, the question -- the answer is simple. If
24 there's no water, there's no hydropower.

25 Q. I see. So is there, like, a general consensus

1 of which of these big categories are more reliable versus
2 the other?

3 I'm talking about nuclear, hydro, wind and
4 solar, and fossil.

5 A. I believe there are different opinions in terms
6 of a response to your question. And, in fact, this is
7 still very controversial topic. Different groups,
8 different individuals have different prefers.

9 The key issue, in my opinion -- this is my
10 personal opinion -- to make some energy source reliable,
11 the key issue is we should have sufficient control of the
12 source.

13 And the reason we say most people or some people
14 consider hydropower to be reliable when it's being
15 generate -- used to generate energy, because we have a
16 whole significant amount of water in the reservoir, and
17 we have these engineering devices out there to control
18 how much energy from this water to be converted to
19 energy, when to do that. So there's a perfect or optimal
20 control mechanics to release the energy for the water and
21 convert them into electricity, for instance.

22 The same could be applied to nuclear. You can
23 carefully control them and nucleize them, but we all know
24 there are issues about nuclear. For instance, Fukushima
25 was a disaster.

1 Q. Right.

2 A. So to consider that one as a reliable supply,
3 well, it's really questionable, right? So there are
4 simply concerns and many other regulation and control
5 issues involved.

6 Similarly, to wind and solar, as we discussed
7 just now, there are intermittent issues. But if we could
8 carefully design a system and devices to mitigate those
9 intermittent issues, they could become reliable.

10 Q. I see. And -- and some of those methods will be
11 batteries and hydrogen -- sorry -- what was the other
12 one? You --

13 A. There is much -- battery and hydrogen are the
14 two examples I mentioned because we consider them in our
15 research.

16 But again, I will say even if we're talking
17 about battery, you know, there are so many different
18 kinds of battery out there. For hydrogen, people talk
19 about green hydrogen and other kind of hydrogens. And we
20 even consider something like ammonia, which could be
21 another energy storage media.

22 But all of these activities are really in the
23 past two or three years.

24 Q. I see.

25 Can you please explain to me a little bit about

1 how blockchain mining works, just the basic concepts?

2 A. Yes. So blockchain mining, it's fundamentally
3 connected to some sort of computing algorithm, and these
4 kind of computing algorithm is designed to be energy
5 intensive, such that your system will be able to generate
6 this product we call Bitcoin or other kind of
7 cryptocurrency in a certain amount that's under control
8 then.

9 Q. What's the purpose of blockchain mining?

10 A. Well, I guess -- I'm trying -- I probably need
11 to understand your question a little bit better. Because
12 when you say "purpose," are you saying -- are you asking
13 the applications of blockchain mining, are you asking
14 what these products from blockchain mining could be used,
15 or what specifically are you asking for in terms of
16 blockchain mining?

17 Q. I -- yeah. I -- so earlier you mentioned
18 blockchain mining involves running algorithms that's
19 designed to be energy intensive, right?

20 I'm just wondering, what's the utility of doing
21 that?

22 A. I see. So if your question is about why
23 blockchain mining should be energy intensive, then I
24 could give a brief explanation.

25 Would you please confirm it?

1 Q. Yeah, please do. Thank you.

2 A. If I could have one minute to briefly refer to
3 my declaration --

4 Q. Sure.

5 A. -- I'd like to give you a clear answer.

6 Q. Yeah. Go ahead.

7 A. Yeah. So as you can see in my declaration -- I
8 believe it's in paragraph 36 -- blockchain mining differs
9 from many other kinds of computing in that it's
10 intentionally designed to be resource -- resource
11 intensive and difficult so that a number of blocks farmed
12 every day by miners remain steady.

13 This is unlike most other computation loads,
14 such as those running a conversion data center, which are
15 typically designed to be as efficient and computationally
16 economical as possible. This intentionally energy
17 intensive problem comprised of cryptographic hashing
18 algorithm.

19 Q. I see. You know, I guess my question is a
20 little different. I'm not asking why it is energy
21 intensive, right. What we, kind of, get is -- is there
22 any benefit from running any of these algorithms?

23 Do we get any utility out of it?

24 A. So if I understand correctly, your question is
25 about by running these algorithms, what products or

1 benefits we could get?

2 Q. Yeah. That's right.

3 A. Well, I don't think there is a universal answer
4 to this question in the field, but one, among many other
5 possibilities, is that, by running these algorithms we
6 call blockchain mining, we could mine some potential
7 cryptocurrencies, such as Bitcoin. And currently, there
8 is a market very for the Bitcoin mined from these
9 blockchain mining activities.

10 Q. So in other words, running these algorithms can
11 bring profit to the miner. Is that what you're saying?

12 A. I disagree with your statement, especially as --

13 Q. Okay. Pardon --

14 A. -- with profit because we consider profit is
15 looking for the cost and the benefit. So there is
16 certainly potential economic value embedded in some of
17 the cryptocurrency, like Bitcoin mining by blockchain
18 mining activities. But it all depends on the market
19 value of these products and the cost involved in these
20 blockchain mining activities, and these costs may be
21 group energy costs, among others.

22 Q. I see. So does running these algorithms also
23 help to verify blockchain transactions?

24 A. I'm not sure if I fully understand your
25 question.

1 Are you -- what particular kind of algorithms
2 are you asking and what blockchain transactions are you
3 referring to?

4 Q. Example of a blockchain transaction is I
5 transfer one Bitcoin to you, right? That's one example
6 of blockchain transaction.

7 By running these algorithms, I was referring to
8 the same energy intensive computer programs you were
9 talking about, when we talked about blockchain mining.

10 A. I'm not sure your question is related to
11 blockchain mining or blockchain transaction that you are
12 discussing. I'm a bit confused about your question. I'm
13 sorry.

14 Q. Yeah, yeah, yeah. Let me -- let me rephrase.

15 Does running these energy intensive algorithm
16 help verify blockchain transactions?

17 A. Well, that's -- I guess you're talking about two
18 different issues. One is about mining, the other one is
19 about verification of the transactions.

20 Q. Yeah.

21 A. So there are many blockchain applications. It
22 doesn't need to be just mining some cryptocurrency. In
23 fact, blockchain has many applications beyond
24 cryptocurrencies, as I mentioned earlier. To mine,
25 sometimes cryptocurrencies, they may involve a

1 verification process.

2 But the question you are posing seems to be more
3 about transacting -- transactioning -- making a
4 transaction of transferring one Bitcoin from one to
5 another. So that's a bit different question in this
6 context.

7 Q. So does blockchain transactions require
8 blockchain miners?

9 A. I think you're asking two different questions
10 here, or multiple questions here. Again, blockchain
11 mining specifically means mining some cryptocurrency or
12 other products through these algorithms. But when you
13 say blockchain transactions, it doesn't need to be
14 involved with virtual digital currencies. It could be
15 any kind of blockchain transactions involved.

16 Q. So --

17 A. And when you refer to the miners are the group
18 of people who try to extract value from these digital
19 virtual currencies.

20 And I think the next question you're asking is
21 about transaction, which is a process of transferring
22 from one to another, and that's another kind of process.

23 Q. I see. Yeah. Let me try to rephrase my
24 question.

25 So, for example, if I were to transfer one

1 Bitcoin to you, right, I'd need to somehow re-mark that
2 Bitcoin as belonging to you, right?

3 If we were to shut down all the blockchain
4 miners in the world, can we still do that?

5 A. Well, I'm not sure if I fully understand your
6 question. So are you asking, if we shut down all the
7 blockchain miners, can we still transfer one Bitcoin from
8 one to another?

9 Q. Yeah.

10 A. I would need some time to look into this problem
11 because this is a hypothetical case, and I don't believe
12 all the blockchain miners were shut down, things that
13 were invented at this moment.

14 Q. I see. So other than -- I guess running these
15 algorithms, one utility is you get rewarded, right, by
16 getting some sort of a token; is that correct?

17 A. In some cases, yes. And again, when we talk
18 about this blockchain mining, they are one type of a
19 variety of products. Bitcoin is just one of the many
20 possibilities to a digital currency we are talking about.

21 Q. Understood.

22 Other than getting that token, is there any
23 other utility of running these algorithms?

24 A. Well, again, blockchain activities and
25 blockchain transactions could have applications in many

1 domains. Mining is -- virtual digital currency is just
2 one of the possible applications, and to my
3 understanding, that's the one that's relevant to this
4 particular case.

5 Q. So any work in running these mining algorithms,
6 the only utility or the only benefit is getting that
7 token, right?

8 There is no other utility from running these
9 algorithms; is that correct?

10 A. Can you be specific, what algorithms we are
11 talking about?

12 Q. The algorithms that you already mentioned that
13 are designed to be algorithm intensive.

14 A. So I guess you are referring to the algorithms
15 discussed in this particular case relevant to the patent.

16 Q. Yes, uh-huh.

17 A. I think it's U.S. 11574372.

18 Q. That's correct.

19 A. In this particular case, they are talking about
20 blockchain mining. And the idea is that -- generally,
21 some virtual digital currencies that has economic value.

22 But in addition to creating some sort of
23 economic value from these blockchain mining activities,
24 there's another very important dimension about dealing
25 with, you know, waste gas, from the oil and oil gas

1 production fields. That's what we call a casinghead gas.

2 For that kind of gas, if we don't process them
3 properly -- the typical way is just venting through the
4 air -- they could create some emissions concerns or, sort
5 of, flare process.

6 Q. So are you saying running these algorithms can
7 also bring benefits in terms of not venting those gas
8 into the atmosphere?

9 A. Well, that's not my opinion, but that's
10 something I do see from this particular case. And the
11 discussion of the main invention here is to solve a
12 variety of problems.

13 One of them, as we discussed just now, is that
14 there's casinghead gas coming off from oil and gas
15 fields. If we don't manage them properly, these could
16 become environmental issues or even sometimes the safety
17 issues. To utilize this gas and to adjust this problem,
18 one possibility, as disclosed in this patent, is to -- is
19 to generate -- is to utilize the energy involved in this
20 gas for running some blockchain mining activities.

21 Q. I see.

22 So other than, you know, getting a token and
23 utilizing the casinghead gas, do you see any other
24 utility from running these energy-intensive organisms?

25 A. I will need some time to form my opinions,

1 because this was not involved in the initial petition or
2 considered before.

3 Q. Okay. Do you need internet connection to
4 mine -- to mine cryptocurrency?

5 A. Would you please repeat your question?

6 Q. Do you need internet connection in order to mine
7 cryptocurrency?

8 A. I believe network connectivity is important and
9 necessary in this particular case.

10 Q. Can you mine cryptocurrency without internet?

11 A. Again, I guess you are talking about two
12 different things. One is the internet, and the other one
13 is the network connectivity. And as I mentioned just
14 now, network connectivity, it's important and necessary
15 for blockchain technology.

16 Q. Can you please explain how is internet
17 connection different from network connectivity?

18 A. Well, internet is a specific kind of network
19 that we use daily, just like what we're using now for
20 Zoom. But network connectivity is just some sort of
21 connections from one source to the other or one source to
22 many others. It may or may not need to involve the
23 entire internet.

24 Q. So let's -- let's use Bitcoin as an example.

25 Does mining Bitcoin require internet

1 connectivity?

2 A. I believe most Bitcoin and mining activities
3 require internet connectivities.

4 Q. What --

5 A. Although --

6 Q. Uh-huh.

7 A. Although there are certain ways to bypass it,
8 but that's not something that I would be able to answer
9 how to handle immediately.

10 Q. So when you say most Bitcoin mining requires
11 internet, that suggests some Bitcoin mining does not
12 require internet, right?

13 Is that correct?

14 A. No. As I mentioned, Bitcoin mining would
15 require network connectivity.

16 Q. But I'm talking about internet connectivity. So
17 does Bitcoin mining require connection to the internet?

18 A. As I said, most Bitcoin mining activities would
19 require internet connections.

20 Q. Okay. Can you give me an example of Bitcoin
21 mining that does not require internet connection?

22 A. I don't have one immediately in mind. I do need
23 some time to find this particular case. And to the best
24 of my knowledge, most of the activities are connected to
25 the internet.

1 Q. So in order to mine Bitcoin, do you need to
2 communicate with other computers?

3 A. In my understanding, most connections are
4 through the network connectivity. So once it's connected
5 to network, that would involve other computing devices or
6 networking devices.

7 Q. I see.

8 So when you say "network connectivity," does it
9 mean just communicate with other computers in the
10 network?

11 A. It's -- I will not consider "computer" as a
12 specific term here because there are connections to miner
13 transactions associated with the blockchain database and
14 also to communicate with the blockchain database. So
15 when you say "computer," it's a very vast concept. It
16 depends on where these database are housed and how they
17 are being connected.

18 Q. And is there some noncomputer way to house these
19 blockchain database?

20 A. Well, again, the term "computer" could be very
21 specific. For example, would you consider a data center
22 to be a computer?

23 Q. That's a good question. Do you -- do you
24 consider a data center to be a computer?

25 A. I haven't formulated my opinion on this, but

1 again, these are two different terms, and that's the key
2 question I have -- a key confusion I have. When you say
3 "computer," what specifically are you referring to?

4 Q. So what -- what's your definition for a data
5 center?

6 A. Well, there are many definitions of data center.
7 Are we talking about a definition in this particular
8 patent or a generic definition?

9 Q. Just your understanding.

10 A. My understanding of data center will be some
11 sort of computing facilities that involve data
12 transactions, but here, I use the term "computing
13 facilities" more on the computer because, for most
14 people -- just like a regular person, when you say
15 computer, it may refer to a laptop, a desktop, and so on.

16 Q. I see. I see.

17 So -- so are you aware there are, you know,
18 these blockchain mining data centers called crypto cubes?

19 A. Well, again, I will not consider the term
20 blockchain mining data center. So data centers are data
21 centers; blockchain mining devices are blockchain mining
22 devices. I wasn't aware of crypto cube before this
23 particular case.

24 Q. So are you saying the crypto cube system is not
25 a data center?

1 A. Again, it goes back to the definition, and
2 sometimes I think people call it claimed constructions.
3 When a crypto cube would be considered a data center or
4 not, it's probably not relevant to this particular case.
5 This is similar to whether we say whether computer
6 includes data center or not.

7 Q. I'm -- I'm -- which claim are you talking
8 about --

9 A. So --

10 Q. -- when you say in this claimed construction?

11 A. Yeah. So I guess when you say blockchain data
12 center, I wasn't aware of any term like this in the
13 patent or in this particular case. So that's why my
14 concern is that, are we talking about blockchain mining
15 system devices or machine versus a data center? Because
16 usually a data center, it's a data center. It's not a
17 blockchain mining data center.

18 Just like when you say a computer, sometimes
19 people refer to a desktop computer, a laptop computer,
20 but you will not consider your phone as a computer. But
21 a phone -- smartphone, nowadays, can perform some
22 computational task.

23 Q. I see.

24 A. People would not say a data center to be
25 equivalent to a computer, either. Although, we call it

1 computing devices or computing facilities in some other
2 ways.

3 Q. I see. So let me ask you a different question.

4 Can a data center be used to mine
5 cryptocurrency?

6 A. If you're asking about a possibility, yes, and
7 they will need to be adapt to run these kind of
8 algorithms and adapt to connect to the network in related
9 transactions, among others.

10 Q. Can -- can a clone computer be used to mine
11 cryptocurrency?

12 A. Similarly, I believe any computing devices or
13 computing facilities could be a back-up to run blockchain
14 mining after sufficient engineering and technologies.

15 Q. I see.

16 What about smartphones, do you think smartphones
17 can be used to mine cryptocurrency?

18 A. In theory, again, after sufficient adaptation
19 and engineering, it's possible, if you're asking for
20 possibility. In practice, it's probably not worth doing
21 that because this whole process is very energy intensive,
22 and the computing power, among other specifications of a
23 smartphone, may not meet the requirements of blockchain
24 mining.

25 Q. I see. I see. Thank you.

1 We've been going now for about an hour. How do
2 you say we take ten minutes break?

3 A. Sounds good to me.

4 Q. All right. Thank you, Dr. You.

5 MR. THOMPSON: Thank you.

6 (A recess was held from 10:08 a.m. to 10:18 a.m.)

7 BY MR. ZHU:

8 Q. Dr. You, how did you prepare for your deposition
9 today?

10 A. Are you asking what did I do today or before
11 today?

12 Q. Before today.

13 A. I have reviewed my declarations. I have
14 reviewed the patent and some other relevant documents. I
15 also had a few meetings with my counsels to understand
16 the legal process because this is my first deposition.

17 Q. Makes sense.

18 How -- how long did you talk to your counsel in
19 preparation of the depo today?

20 A. I don't have the number immediate in mind. We
21 had a few meetings so that I could better understand the
22 legal process --

23 Q. I see.

24 A. -- because my first deposition, and I have no
25 experience before about such a process.

1 Q. I see.

2 How many times did you meet with counsel in your
3 preparation for today's depo?

4 A. I believe a few times. But again, I don't have
5 the exact number in mind because I was engaged in an
6 international trip early this month and just returned a
7 couple weeks -- last week, actually.

8 Q. I see.

9 So would you say more than three times?

10 A. Probably around that, but again, I don't have
11 the exact number in mind.

12 Q. Okay. Are you being compensated for your
13 testimony in this proceeding?

14 A. So I have been compensated for my work in this
15 case, but this compensation is not contingent on the
16 nature of my findings or the outcome of this litigation,
17 and I'm offering my independent opinions.

18 Q. May I ask what -- what's your hourly rate for
19 this proceeding?

20 A. As stated in my declaration, I'm being
21 compensated at a rate of \$700 per hour for my work in
22 this case.

23 Q. Okay.

24 A. But I'm offering my independent opinions as an
25 expert.

1 Q. And how many hours have you billed so far, do
2 you have a general idea?

3 A. I do not have a general idea because this has
4 been a long process, started from last year, I believe.

5 Q. I see.

6 Is this the first patent litigation -- I'm
7 sorry. Is this the first patent case that you have
8 worked on?

9 A. Yes. To the best of my knowledge, this is the
10 first patent litigation case that I'm involved, although
11 I have personally filed a few patent applications and
12 relevant invention disclosures.

13 Q. I see. Thank you.

14 MR. ZHU: Court Reporter, let's introduce
15 Exhibit 2031. Let me drag it into the chat so you can
16 download it.

17 (Exhibit 2031 was marked for identification.)

18 BY MR. ZHU:

19 Q. Doctor, do you see the document from the chat
20 box?

21 A. Yes, I see a document, and I'm downloading it
22 right now.

23 Q. Okay.

24 A. Please bear with me for a few minutes --

25 Q. Sure.

1 A. -- for the internet transaction.

2 Now I have the particular examination, 2031.

3 This is a paper we published last year, I guess, and was
4 submitted in 2022.

5 Q. And this is one of the articles we discussed
6 earlier, correct, regarding Bitcoin mining?

7 A. It's one of the papers that I published before,
8 yes.

9 Q. I see. Did you draft this article?

10 A. Can you please repeat your question?

11 Q. Sorry.

12 Did you draft this article -- or did you write
13 this paper?

14 A. Yes. I write also on this paper, one of the
15 four coauthors of this paper, as you can see from the
16 author list.

17 Q. I see.

18 And do you have -- do you remember what this
19 article was about?

20 A. Yes. As stated in the title of this title, it's
21 about mining Bitcoins with carbon capture and renewable
22 energy for carbon neutrality across states in the United
23 States of America.

24 Q. I see.

25 So if you turn to PDF page 3 -- actually, let me

1 share my screen so you can look at what I'm looking at.

2 So this is a -- you know, the cover page of the
3 article, right? This is the abstract, this is the
4 introduction. And on the right-hand column, I think what
5 you say, "Miners started to move to other cryptocurrency
6 friendly countries, such as Serbia and predominantly to
7 New York and Texas in the U.S., accounting for
8 19.9 percent and 14 percent of Bitcoins hash rate share
9 within the U.S. respectively."

10 Do you -- do you have an idea why people move
11 to, you know, either New York or Texas for Bitcoin
12 mining?

13 A. As you can see from the citation at the end of
14 this sentence, there's a reference here which goes back
15 to Reference Number 6.

16 Q. Uh-huh.

17 A. If you don't mind moving to page 21 of this
18 article, the Reference Number 6 is for CNBC news story.

19 Q. Yeah.

20 A. And it, basically, says that there are different
21 policies and reasons that Bitcoin miners are moving to
22 different locations, such as Texas and New York.

23 Q. I see.

24 So that's your reason for that statement, right?

25 But do you have any idea behind, you know, why

1 people move to Texas or New York?

2 A. Well, there are definitely a few reasons for
3 miners to move and relocate their facilities. I could
4 give some specific examples.

5 Q. Uh-huh.

6 A. One particular example in New York is the
7 hydropower resources available here, but again, that's
8 just one of the many reasons. In Texas, there are
9 similar reasons -- I mean, in addition to their power
10 grid composition and local policies, there are also a few
11 other factors.

12 So locating these mining facilities, it's a very
13 complicated issue with many factors to consider. So
14 there's no single reason saying that -- why they pick one
15 location over the other. It's the same as we, you know,
16 buy a house or invest in a particular location. There
17 are many reasons involved.

18 Q. I see.

19 Are there also hydropower in Texas?

20 A. No. Texas, they do have a lot of renewable and
21 wind and solar.

22 Q. Oh, I see.

23 A. Among other issues, Texas has a relatively
24 favorable pack structure, as you have heard about, along
25 with the favorable energy cost because --

1 Q. I see.

2 A. -- Texas produces a lot of energy locally
3 compared to other states.

4 Q. I see.

5 Does New York also have cheaper energy cost?

6 A. Depends on how you define "cheaper." When you
7 say "cheaper," it's comparing one location over another,
8 right?

9 Q. Right.

10 A. And the other issue is that, when we talk about
11 the cost of mining, it includes a number of factors. For
12 example, the cost of electricity from the grid, it
13 changes almost in real time, right? And there are just
14 so many factors involved. So it's hard to generalize and
15 say one place is cheaper than the other, generally.

16 We can definitely talk about a state average.
17 And so -- but one major effect in New York is that
18 there's a lot of hydropower resources nearby, and that's
19 among many other possible reasons.

20 But again, keep in mind this is a very
21 complicated social economic issues. Cost and economic
22 factor is one. Policy and relevant regulations, the
23 other one. Technology, supply chain, infrastructure,
24 among many others. So many factors to consider, as well.

25 Q. I see.

1 When you say New York has a lot of hydropower,
2 does that mean the energy is more reliable in New York?

3 A. I will disagree with this statement.

4 Q. Okay.

5 A. New York is a very large state.

6 Q. Right.

7 So how would, you know, the fact that New York
8 has a lot of hydropower affect the decision for the
9 miners to move to New York?

10 A. Because their opportunities -- again, these
11 opportunities for miners to connect their facilities with
12 the hydropower. But when you're asking about the overall
13 state labor energy infrastructure assistance, then it's a
14 completely different story.

15 Q. I see. I see.

16 A. New York state has a lot of hydropower, but
17 other states also has a higher percentage of hydropower.
18 So again, it's not only about the quantity and
19 percentage, but also about many other issues.

20 Q. I see.

21 A. Accessibility is the other issue, whether they
22 will have access to these resources, whether local
23 policies support it, whether there's enough
24 infrastructure to do that, will it be favorable in terms
25 of location, transportation, storage, among other issues.

1 So there are a lot of factors to consider.

2 Q. Got it.

3 A. And again, this particular statement in this
4 paragraph picks from the article in the CNBC news
5 stories.

6 Q. Uh-huh.

7 A. So this is not a statement that we are making in
8 our opinion, but more quoting what's going on out
9 there --

10 Q. Got it. Yeah, yeah.

11 A. -- according to the news story.

12 Q. Understood. Yeah. Thank you.

13 So if we turn to the -- sorry -- page number 5,
14 we see the bottom right, "Preliminaries, Bitcoin mining
15 farms and miners." The first sentence says, "Crypto
16 mining farms are technically data centers equipped with
17 devices with high computational power, designed to solve
18 complex mathematical problems to mine cryptocurrency as
19 an incentive."

20 So I -- I guess, do you still agree with this
21 statement, that crypto mining farms are technically data
22 centers?

23 A. Well, again, the statement says that they are
24 data centers equated with devices with high computational
25 power designed to solve the complex mathematical problems

1 to mine cryptocurrency as an incentive.

2 Q. Yeah.

3 A. So this particular statement, basically, defines
4 that this is a specialized kind of data center equated
5 and adapted to solve the mathematical problems to mine
6 cryptocurrency. And this is consistent with what I
7 mentioned just now that the data center could be
8 effective to mine blockchain systems.

9 Q. I see.

10 So it's, I guess, one subset of data centers,
11 right?

12 It's a special -- specialized data center, is
13 that what you're saying?

14 A. It's a data -- type of data center that's being
15 adapted and engineered to perform this specific
16 specification of mining cryptocurrency.

17 Q. I see.

18 And I guess -- this article talks about
19 renewable energy, right, in the title.

20 Do you consider casinghead gas a renewable
21 energy?

22 A. No, I do not consider casinghead gas as a
23 renewable. However, I should point out, in this
24 particular article, we measure renewable energy, but the
25 main focus, it's on sustainability. And as you can see

1 from the abstract and the introduction of this paper, we
2 are dealing with climate issues, we are dealing with --

3 (Reporter clarification.)

4 THE WITNESS: -- environmental issues.

5 So as you can see, I think, from line -- one,
6 two, three, four, five, six, seven -- the line seven of
7 abstract will clearly state it from both economic and
8 environmental perspectives. We evaluate whether --
9 emissions, essentially.

10 So the key forms on this paper, again, also in
11 the journal, is called energy and environmental science.
12 We are dealing with problems with the energy and
13 operating around the issues. Casinghead gas is not a
14 kind of renewable energy, but it's an environmental
15 problem that we also want to address.

16 BY MR. ZHU:

17 Q. So what -- what is the environmental impact of
18 crypto mining?

19 A. Are you asking for crypto mining only or are you
20 asking for crypto mining with casinghead gas?

21 Q. Just crypto mining, in general.

22 That's what this paper is about, right?

23 A. Well, this paper is about crypto mining and
24 energy systems together, so it's not about how to mine
25 crypto.

1 But just to offer a straight answer to your
2 question, the main issue with crypto mining, from an
3 energy perspective, is the significant amount of energy
4 consumption. And this energy consumption, as you can see
5 from the first sentence of the abstract, Bitcoin mining
6 requires a significant amount of electricity to validate
7 blocks, increasing greenhouse gas emissions.

8 Where does greenhouse gas emissions come from?
9 Because if the energy we use, the electricity we use to
10 mine the coins, are not 100 percent renewable, they incur
11 some greenhouse gas emissions.

12 Q. I see.

13 So that's a concern, right, Bitcoin may increase
14 greenhouse emission?

15 A. Well, I will be a bit caution about the
16 statement you made. You said Bitcoin may increase the
17 greenhouse gas emission. The term "increase" means it's
18 a comparison with the baseline of particular benchmark.
19 And there are arguments that, if you don't like Bitcoin,
20 you may use electricity somewhere else.

21 But fundamentally, the key issue or statement is
22 saying that by mining Bitcoin, if we don't use
23 100 percent renewable energy and 100 percent carbon-free
24 energy sources throughout the life cycle, there will be
25 some sort of greenhouse gas emissions incurred in the

1 process --

2 Q. I see.

3 A. -- and additionally contribute to our climate
4 issues.

5 Q. I see. And what was the finding of this study?

6 A. I appreciate the --

7 (Reporter clarification.)

8 THE WITNESS: I appreciate the rigorousness of
9 this question, so I would like to point out to page 4 --
10 at the end of the page 4, the bottom right corner of page
11 4. And also on page 5 of the PDF document.

12 So basically, page 4 and page 5, this particular
13 section, provides a brief summary of this article and
14 also the major findings of the study.

15 BY MR. ZHU:

16 Q. I see.

17 So I'm looking at -- you know, without looking
18 at a page, I scrolled down to the very end, I'm looking
19 at the second to the last paragraph. So it says, "The
20 findings such as the states with a high share of
21 renewable energy in the grid and lower electricity prices
22 could offer a solution."

23 And I guess it -- further, it says Washington
24 was the most profitable state, followed by Vermont and
25 New York. Did -- are -- why -- why do you think

1 Washington is the most profitable state, based on your
2 study?

3 A. Well, this is a very comprehensible study with a
4 lot of parameters to optimize and analyze, so that's
5 number one. So there's no single reason saying why one
6 state is being so profitable as an outcome of analysis.
7 There's a great detail supporting information on this,
8 article which is the one we are referring to.

9 The other issue I want to emphasize here is
10 that, throughout this study, it's basically a hypothetical
11 study. So what we mean is that we are looking at the
12 state-level analysis rather than pointing out to a
13 specific location.

14 For example, I'm currently located in Ithaca,
15 New York 14850. If I'm blockchain mining here, it does
16 not represent the average of New York state. For the
17 second of this particular study, as we clearly mention in
18 the article, we use the state-level average data as the
19 processing, because that's the best data available to us
20 at the moment --

21 Q. Yeah.

22 A. -- for all these kind of analysis.

23 And the whole idea is not to guide and tell the
24 people where to mine Bitcoins, but more of an
25 understanding the impact from energy and environmental

1 perspectives of blockchain mining and some possible ways
2 to mitigate those concerns.

3 Q. I see.

4 Would electricity price be one of the
5 considerations why, you know, Washington was the most
6 profitable?

7 A. It's -- electricity price is definitely one of
8 the many factors we consider in the study. I would like
9 to bring up to page -- if you don't mind, we could go to
10 page 7 all the way down to page 9, and you could see all
11 the equations -- different equations involve many
12 indexes.

13 So there are many, many parameters involved in
14 this analysis. You know, electricity price, it's one of
15 them.

16 Q. So what other consideration makes Washington
17 more profitable than other states?

18 A. Well, we had to conduct some sort of technical
19 economic analysis to understand the process. There are
20 capital expenditures, there are operating costs, right?
21 Electricity price goes to operating cost, but not all of
22 them.

23 So for instance -- and there are also other
24 factors, such as tax incentive, and also the possible
25 technologies that could be optimized in each location

1 would be different.

2 So this particular study, looking to multiple
3 scenarios, right? Multiple scenario means -- let me go
4 back to the PDF. I'm referring to the figure -- I guess
5 figure 1 on page 5 that gives an overview of the
6 framework that we are studying.

7 And as you can see, there are a lot of bolts and
8 nuts here, right? CO2 is an issue, therms is an issue,
9 and there is an optimization model here to account for
10 equipment, account for fixed cost equipment, operating
11 costs, annualized cost, and so on, so on.

12 And so -- yes, so these are particular, you
13 know, different issues. But remix is another issue,
14 which in this particular study, we use the state level --

15 Q. Uh-huh.

16 A. -- average data. And that's the past data, not
17 the current one, because --

18 Q. I see.

19 A. -- 2022 study, and we use the best data
20 available at that moment.

21 And you cannot do that -- blockchain miner may
22 connect it to a different energy source other than the
23 grid, and they will give a different answer.

24 So again, these high-level conclusions, the
25 state -- one state is probably more favorable than the

1 other one, we are talking about average case, without
2 specific unit, without specific locations.

3 But in the bottom of this figure, as you can
4 see, we are looking to a techno-economic analysis and
5 break-even selling price of Bitcoin. Again, that was the
6 time --

7 Q. Uh-huh.

8 A. -- and all the data coming out at the time of
9 the study. And we did present some sensitivity analysis
10 as well, understanding that many parameters will change
11 over time. For example, the cost of energy change over
12 time, the price of Bitcoin change over time, among
13 others.

14 Q. So --

15 A. And we are --

16 Q. I see. Sorry -- sorry. I started to interrupt.
17 But why would the cost of energy change over time?

18 A. Well, because here we are using the grid energy
19 cost data here, right? For instance, the electricity
20 price in New York state --

21 Q. Oh, I see.

22 A. -- in 2022 is different from the price right now
23 to date.

24 Q. I see. Got it.

25 A. It's a dynamic process. And the same for

1 Bitcoin price, the same for equipment cost, we don't
2 account for inflation, we don't account for depreciation.

3 Q. I see.

4 A. So many factors and so many bolts and nuts
5 there. Yeah.

6 Q. Got it.

7 Is Bitcoin getting more and more difficult to
8 mine year over year?

9 A. I would agree with this statement, in general,
10 yes. But again, if you're asking me for future
11 projection, everything is possible because, you know,
12 things will change, as you can see from some of effort
13 and merge, you know, couple of years ago.

14 Q. I see.

15 Is it because the computational effort that you
16 need to mine one Bitcoin increases from year to year?

17 A. As of now, the current status, it's indeed true
18 that Bitcoin is getting harder and harder to mine, and
19 that was because of inherent algorithm that was designed,
20 as we discussed earlier, to try to ensure that the
21 algorithm is intensive, such that the number of blocks we
22 can mine every day will be somehow consistent.

23 Q. I see.

24 So I guess, does it take more electricity to
25 mine one Bitcoin year over year?

1 A. This is the very interesting question, right,
2 because you are talking about how much electricity will
3 be needed to mine a bit coin. As an engineer and as a
4 professor, I want to be very precise because you are
5 talking about electricity input more than electricity
6 directly used --

7 Q. I see.

8 A. -- for this algorithm.

9 And again, there is issues about power
10 conversion efficiency, transmission loss, and other
11 issues that we do have account for that. And that's why
12 every state is different, every location is different.

13 Q. I see. I see.

14 So -- so, for example, the amount of electricity
15 to mine one Bitcoin, would you say it's more compared to
16 ten years ago?

17 A. Again, if we're talking about the same device,
18 same system, the same chip, everything is the same, the
19 answer is probably yes, but there are so many factors
20 involved.

21 For instance, the chips are different, the
22 commutative devices are different, the facilities are
23 different, the transmission conversion efficiency are
24 different, the grid is different, the energy sources are
25 different. So there are so many factors, I will tend to

1 be very precise in terms of what we are discussing here
2 to understand the context.

3 Q. I see. Thank you. Let me introduce
4 Exhibit 2032. Let me drag it to the chat.

5 (Exhibit 2032 was marked for identification.)

6 BY MR. ZHU:

7 Q. Dr. You, can you see the new document in the
8 chat?

9 A. Yes. I'm trying to download it now. Please
10 give me a minute.

11 Q. Do you recognize this document?

12 A. Yes. This is a patent application that we
13 filed, I think, last year with the title "Quantum
14 Computing-Enhanced System and Methods For Large-Scale
15 Constrained Optimization." Our initial application was
16 filed in 2020.

17 Q. I see.

18 Do you remember what this patent was about?

19 A. This is a patent that has little relevance to
20 the particular case. This patent is about system methods
21 using quantum computing technologies for solving large
22 scale concern optimization problems.

23 And this is a very solid study we did before
24 2020, of course, to -- looking to the so-called hybrid
25 quantum classic computing approach for optimization

1 province there involved in a variety of sectors and
2 various applications.

3 The methods, basically, concluded in a
4 decomposition base, optimization matter, for solving some
5 part of the problems in the quantum computing part, and
6 somehow the problems in the cross-computing site. So it
7 would reiterate and eventually connected to the system to
8 perform the function and task of solving some kind of
9 complicated optimization problem of practical relevance.

10 Q. I see. Did you draft this patent application?

11 A. So throughout this patent application process,
12 we had been working with Cornell Center for Technology
13 Licensing --

14 Q. I see.

15 A. -- which is a major patent office of our
16 university, and I believe we hired some lawyers or
17 attorneys to help drafting this patent. We are involved
18 in this process throughout to ensure that our ideas and
19 concepts are properly represented in this patent. But I
20 cannot remember exact name of the lawyer, if that's what
21 you're asking for.

22 Q. I see.

23 A. Because there was a team of lawyers who are an
24 individual person. This has been a few years. So --

25 Q. Yeah, yeah. Let me share my screen so you can

1 look at what I'm looking at. I'm looking at paragraph 38
2 of this patent application. The first sentence says,
3 "References in the specification to 'one embodiment,' 'an
4 embodiment,' 'an illustrative embodiment,' et cetera,
5 indicate that the embodiment describes may include a
6 particular feature, structure, or characteristic, but
7 every embody may or may not necessarily include that
8 particular feature, structure, or characteristic."

9 Do you understand what "embodiment" in a patent
10 means?

11 A. To some extent, I think I understand the
12 meaning, but I will not claim myself as an expert of
13 these terms.

14 Q. Do -- do you think an embodiment limit the scope
15 of the patent?

16 A. I guess this will be a question that I will need
17 to refer to my legal counsel when they draft this
18 particular patent, but I do believe that embodiment was
19 part of the materials involved in this patent.

20 Q. Do you think an embodiment limits the scope of
21 the claim?

22 A. Can you be more specific about which embodiment
23 we are discussing and which claim we are referring to?

24 Q. That -- that was just a general question
25 regarding the meaning of embodiment in the patent

1 application.

2 Can -- can you just briefly explain a little bit
3 what is a quantum processor?

4 I'm looking at figure -- figure 3.

5 A. Well, quantum processor -- sometimes it's just,
6 you know, computing processors, aligns with quantum
7 mechanics principles, and its existing devices that we
8 utilize. So for this particular patent, you can see for
9 this -- I mean, you are showing figure 3, which fairly
10 illustrates the structure of a quantum computer.

11 Q. I see.

12 A. It has a processor, sometimes we call QPU,
13 quantum processing unit, that can be used to perform some
14 computation task based on the principles of quantum
15 mechanics. And we have this called classic processor,
16 which is sometimes called CPUs, that we usually refer to,
17 that form whole system we call quantum computer in this
18 big box in figure 3.

19 Q. I see. So is a quantum processor also a chip?

20 A. So quantum processor could be a chip, or it
21 could be a device. It depends on how we define it and
22 the specific architecture of this quantum computer.

23 So there are a variety of methods and tools
24 right now to develop quantum computer. And as you may
25 know, this is an area of various stages of development,

1 so there are a lot of possibilities and alternatives.

2 Q. I see.

3 I guess do you have the same answer for a
4 classical computer processor?

5 It -- can that also be a chip or a device?

6 A. It could be a chip, right. And again, it
7 depends on how this chip is being extended, being
8 adapted. You could call it a device, as well. So there
9 is no clear "yes, no," in terms of what a processor could
10 be. It has to be put in a specific context.

11 Q. I see.

12 Let's -- let's go to paragraph 22. So paragraph
13 22 says, "In some embodiment, the classic computer and a
14 quantum processor are connected by a network."

15 So how -- how is a classical computer connected
16 to the quantum processor?

17 Is that -- does that require some specific
18 hardware component?

19 A. Yes. I mean, I believe anything that would
20 connect to a network would require some hardware, right?

21 It depends on whether this hardware is embedded
22 in a processor or computer or not.

23 If you're talking about processor only perform
24 computational task, as a single GPU quantum chip, or
25 whatever you want to call it, then -- it does not have

1 networking capability, then it needs to have some sort of
2 network devices or connectivities to connect to a
3 network.

4 But if we're talking about a classic computer,
5 then the computers we're using right now for Zoom, you
6 assume there's a network adapter so that you can connect
7 to internet and use the Zoom. But again, not all
8 computers need to have a network adapter. In 1980s, in
9 1970s, there were computers, but there's no network
10 connectivity at the time.

11 Q. I see. That makes sense.

12 So when you're saying the classical computer and
13 quantum processor are connected, does that mean there's
14 data exchanged between the two?

15 A. Yes. As we mentioned, in this particular case,
16 they must be connected by a network. And by connecting
17 to the network, there should be data connectivity
18 exchanged.

19 Q. I see.

20 We can turn back to the figure 3 we were looking
21 at. So a way to say network device or, you know, the --
22 are you referring to the communication circuitry?

23 A. Well, the communication circuitry could be
24 network devices, but, you know, the classic processor
25 could also be adapted to connect to the network, so

1 that's the quantum processor.

2 So these devices, these processors, could be
3 adapted to connect to the network. The communication
4 circuitry is one way of communicating, but in the real
5 world connectivity issues, there could be multiple
6 channels, multiple ways to connect. So I will not say
7 network circuitry is the only way to connect to the
8 network --

9 Q. I see.

10 A. -- but it's possibly one way to connect to the
11 network.

12 Q. And what -- what does -- the nature of the
13 communicatory circuitry, is it another chip?

14 A. It could be a device, it could be a chip, as
15 long as they perform the function of communication.

16 Q. I see.

17 So when it's saying "performs a function of
18 communication," does it mean it sends or receive data?

19 A. Yes. That's what we define as a communication,
20 would be sending, receiving data, among others.

21 Q. I see.

22 A. Sending and receiving data, it's one of these
23 functions, but there could be also other functions.

24 Q. So can this communication circuitry be a network
25 interface controller?

1 A. I will need some time to refresh my memory about
2 these particular patent --

3 Q. I see.

4 A. -- which was quite a few years ago. I'm not
5 sure whether we ever mentioned a term "controller" in
6 this patent. Can I have a minute to look into that?

7 Q. Yeah. Let's -- let's skip that question for
8 now. We can come back later to that.

9 Can this communication circuitry be part of the
10 quantum processor itself?

11 A. Again, I cannot remember whether we mentioned
12 this possibility in the patent. It was five or
13 four years ago --

14 Q. Okay.

15 A. -- and I didn't get a chance to review it,
16 honestly, over the past year. So I do need some time to
17 refresh my memory for this question.

18 Q. Yeah, yeah, yeah. Let me -- let me show you
19 what I'm thinking. I'm looking at paragraph 48.

20 So here we're talking about processor -- well, I
21 guess this is a classic computer processor, right? "The
22 processor may be embodied as any type of a processor
23 capable of performing the functions described herein.
24 For example, processor may be embodied as a single or
25 multicore processor, a single or multsocket processor, a

1 digital signal processor, microcontroller, or other
2 processor or processing controlling circuit."

3 You know, what did it mean by saying the
4 processor can be a multicore processor?

5 Does it include multiple chips in the set?

6 A. Oh, it could be one chip, it could be multiple
7 chips, but typically now, there's this thing about CPUs,
8 they do have multiple cores, and each core performs
9 computational functions. Some are superior, so that's
10 when we call them multicore processors.

11 Q. I see.

12 A. So the processor here -- the processor 202,
13 which is a very specific term, as we can see that we
14 refer to the particular figure, it's basically a generic
15 concept. And here, we say a single or multicore
16 processors refers to the specific computing processors,
17 some of the chip, as you mentioned, in this particular
18 case.

19 Q. Oh, I see. So that one processor, 202, may
20 include multiple processors with it?

21 A. Yes.

22 Q. Okay.

23 A. And that's -- read it in this particular
24 statement. For example, the processor 202 may be
25 embodied as a single or multicore processors --

1 Q. I see.

2 A. -- a single or mutisocket processor, a digital
3 signal processer, a microcontroller, or other processer
4 or processing controlling circuit.

5 Q. I see.

6 Can a processer be, you know, a combination of,
7 for example, a CPU and a microcontroller?

8 A. Well, I would have to review this document,
9 because this was not something I had a chance to check
10 things last year, before formulating my answer.

11 Q. Oh, for sure, yeah. Let me go to the previous
12 paragraph. So here, we say, "For example, the memory or
13 portion thereof may be incorporated into processer 202 in
14 some embodiment."

15 So can a processer include a memory with it?

16 A. Yes. As you are reading this sentence, right,
17 again, it's an example. It says, for example, the memory
18 or portion of the memory may be incorporated into a
19 processer.

20 Q. I see.

21 Let's see. I think I saw something in -- oh,
22 yeah, yeah. Paragraph 51, it also says, "Furthermore, in
23 some embodiments, the communication circuitry may be in
24 the package separate from the processer in a multichip
25 package with the processer or in a system on chip with

1 the processor."

2 So does that mean the communication circuitry
3 can also be incorporated into the processor?

4 A. I think so, based on my understanding. Again,
5 it has been a while since I last reviewed this document,
6 but I do believe the chip could be adapted to connect or
7 embedded with the communication circuitry.

8 Q. I see.

9 Let me turn to figure -- or figure 5, I believe.
10 So here, we have two components in the quantum computer.
11 We have a subproblem solver and a communication engine.

12 Do you remember the function for a communication
13 engine?

14 A. Well, if you mean answer now, I'd need to spend
15 some time to review this whole --

16 Q. Yeah, yeah. Let me -- let me --

17 (Reporter clarification.)

18 MR. ZHU: Oh, I'm sorry. Yeah, yeah, yeah.
19 I'll stop doing that.

20 BY MR. ZHU:

21 Q. So I'm looking at paragraph 18. It talks about
22 a "communication engine configured to control a
23 communication circuitry to send and/or receive data
24 between the quantum computer part and a classical
25 computer part."

1 So is that the function of the communication
2 engine?

3 A. Well, I mean, it agrees with one piece, a
4 communication engine configure. Configure means
5 affected, with my opinion, to control some sort of
6 communication circuitry to perform the function of
7 sending and receiving data between the quantum computer
8 and the classic computer parts.

9 Q. I see.

10 And sending and/or receiving data means
11 communication, right?

12 A. Exchange data, yes. That's what's being
13 regulated.

14 Q. I see.

15 So can the communication engine also be part of
16 the quantum processor?

17 A. If you're asking for the possibility, I will say
18 yes. If you're asking for the practice, I'm not aware of
19 that because quantum computer. It's a very specialized
20 kind of devices.

21 So quantum processor, by itself, it's basically
22 running a specified -- specialized, you know, circuitry.

23 Are you talking about the computer as a whole or
24 as -- or are you talking about a specific processor or
25 specific circuitry by itself?

1 Q. Yeah. Let's see. So I guess -- yeah. I guess
2 I'm looking at paragraph 60, right? So it said, "It
3 should be appreciated that in such embodiments, one or
4 month of the circuits, e.g., the sub problem solver, the
5 communication engine, et cetera, may form a portion of
6 one or more of the quantum processor, the classical
7 processor."

8 I -- I guess, you know, do you agree that, you
9 know, the communication engine can also be part of the
10 quantum processor?

11 A. As I mentioned, as a possibility, yes.

12 Q. I see.

13 A. But as a practice now, I'm not aware of that.

14 Q. Okay. So -- so as a practice now, is the
15 communication engine usually a separate chip aside from
16 the processor?

17 A. Well, I think we're talking about quantum
18 processor, specifically. That's not a typical practice.

19 Q. I see.

20 A. But for the classic one, yes, that's already
21 been there.

22 Q. I see.

23 A. There are, of course, many ways to adapt the
24 classic processors to connect with the network devices.

25 Q. I see. I see.

1 A. Again, we need to put in context that the
2 quantum processor, it's a very specialized device --

3 Q. Right.

4 A. -- made from specialized, you know, circuitry or
5 electronic. And there are many pathways and many
6 alternatives in terms of its architecture and possible
7 configurations, along with the functions.

8 So there's no clear definition saying that this
9 is the standard architecture for quantum computer or
10 quantum processor, at least as of now --

11 Q. I see. Yeah, yeah, yeah.

12 A. -- options and possibilities.

13 Things will also change quite a bit in the years
14 ahead. But quite a bit of these will be relevant to the
15 particular invention that we are discussing here, which
16 is the quantum computing base, I agree, classic quantum
17 masses and assistance for sorting large-scale
18 communication products.

19 Q. Yeah, yeah, yeah. I understand. So just look
20 at figure 2 for a second. This is a classical computer,
21 right?

22 Can the communication circuitry be part of the
23 processor?

24 A. Yes, that's a possibility --

25 Q. I see.

1 A. -- as well.

2 Q. Same -- same goes for memory, correct?

3 The memory can also be part of the processer; is
4 that correct?

5 A. As far as my understanding, yes, that's
6 possible, as well.

7 Q. I see.

8 Is there, like, a communication engine here, in
9 the classical computer?

10 A. I think you are asking is there a communication
11 function or engine?

12 Because in 210, this is communication circuitry.

13 Q. Yeah, yeah, yeah. I'm asking about
14 communication engine. That --

15 A. It's --

16 Q. Yeah. So communication engine controls the
17 communication circuitry, right?

18 Is there, essentially, a component in the
19 classical computer?

20 A. I don't see the term "communication engine" in
21 this particular figure.

22 Q. I see. So -- so what about figure 4?

23 Figure 4, we have a communication engine as part
24 of the classical computer, right?

25 A. Yes. But we need to go to the definition of

1 406. And again, I haven't got a chance to review this
2 patent this last year --

3 Q. Right, right. I understand.

4 A. -- so I don't have an immediate answer, but I do
5 believe communication engine is another claim
6 construction we made in a moment.

7 Q. Okay.

8 A. But I need to review in detail.

9 Q. Sounds good.

10 All right. Let me close out this one. Let me
11 introduce Exhibit 1001, which is the patent at issue.
12 Let me drag it into the chat box.

13 (Exhibit 1001 was marked for identification.)

14 BY MR. ZHU:

15 Q. All right. Dr. You, do you see the new
16 document?

17 A. Yes. I see the document in the chat, and I'm
18 downloading it right now.

19 So now I see this patent, U.S. 11,574,372 B2.

20 Q. Yeah. Do you understand this is the '372 patent
21 at issue in this case?

22 A. Yes. I understand this is the patent at -- and
23 the discussion for this particular case.

24 Q. Yeah. Let me share my screen so we can look at
25 what I'm looking at.

1 So I'm looking at Claim 1 of the '372 patent.
2 So the first sentence says, "A system is disclosed
3 comprising: A source combustible gas produced from
4 facilities selected from a group consisting of hydro
5 production -- I'm sorry -- "hydrocarbon production,
6 storage, or processing facility."

7 So what what's your understanding of the term
8 "hydrocarbon production, storage, or processing
9 facility"?

10 A. So are you asking about the meaning of these
11 term or are you asking me about understanding of this
12 term?

13 Q. Your understanding of the term "hydrocarbon
14 production, storage, or processing facility."

15 A. So this term may refer -- typically, in oil and
16 gas industry, as an oil well, gas well, or oil and gas
17 wells, in general.

18 Q. I see.

19 Does it include a gas tank?

20 A. When you say "gas tank," do you refer to natural
21 gas tank or gasoline tank?

22 Q. What --

23 A. You asked me for gas -- refers to gas or oil, so
24 I want to be more precise. My car has a gas tank.

25 Q. Yeah, yeah, yeah. I understand. Thank you.

1 What about propane tank?

2 A. Again, are you referring to a propane tank in
3 the -- the oil and gas production facility or a
4 standalone, you know, one --

5 Q. Just a -- just a standalone gas tank you can buy
6 from a gas station.

7 A. So by reading this particular claim, 1A, it says
8 there's a source of combustible gas produced from a
9 facility, that is. So I do not believe the propane tank
10 can produce a combustible gas.

11 Q. Okay.

12 A. So this is -- they use the term called
13 "produce." That means there's some sort of hydrocarbon
14 production activities involved in this facility.

15 Q. I see.

16 Would you say this term, "hydrocarbon
17 production, storage, or processing facility," includes a
18 natural gas production facility?

19 A. It could be a natural gas production facility.

20 Q. I see.

21 So does this include a commercial gas pipeline?

22 A. I do not believe, in my opinion, a commercial
23 pipeline falls into this category of a hydrocarbon
24 production, storage, or processing facility.

25 Q. I see.

1 Let's move onto the next one. Next sentence,
2 "Requires a generator connected to the source of the
3 combustible gas to receive a continuous flow of
4 combustible gas to power the generator."

5 Let's see. Oh, yeah. Let's look at the third
6 sentence, as well. Third sentence says, "Requires
7 blockchain mining devices connected to the generator."

8 So do you think this Claim 1 requires blockchain
9 mining devices connected to the same generator?

10 A. In my opinion, in this third sentence, 1C, "the
11 generator" refers to "a generator" in 1B.

12 Q. Yep.

13 A. And 1B says, "A generator connected to the
14 source of combustible gas to receive a continuous flow of
15 combustible gas to power the generator."

16 And here, when they say a generator, as stated
17 in the paragraph right above this claim -- I think it's
18 in columns 19, line 41 to 45. Somewhere in the area, if
19 you could go up a little bit. It's the same page, by the
20 way. Just go up a little bit. It clearly reads that --
21 oh, no, just line 41, please.

22 Q. I'm sorry. 941?

23 A. Yep. The same column. Yep.

24 Q. Here?

25 A. This one says that -- it reads that, "The word

1 'comprising' is used in inclusive sense and does not
2 exclude other elements being presented, and the
3 indefinite article 'a' or 'an' before a claim feature do
4 not exclude more than one of the feature being presented.
5 Each one of the individual features described here may be
6 using one or more embodiments and is not by virtue only
7 of being described here to be construed as essential for
8 all embodiments defined by the claims."

9 So based on this paragraph, my understanding is
10 that a generator connected to the source of combustible
11 gas to receive or produce combustible gas to power
12 generator could be one or more generators. And then the
13 third sentence, the generator refers to a generator in
14 the second part.

15 So there could be multiple generators, as well.

16 Q. Interesting.

17 So if we say a blockchain device connected to
18 the generator, do you also read that as including
19 multiple blockchain mining devices?

20 A. Based on the paragraph before the claim, it says
21 "a" and "an" before the claim feature do not exclude more
22 than one of the feature being presented. When you say a
23 device, then it could be meaning one or more.

24 Q. Interesting.

25 So your read of the third sentence of Claim 1

1 means blockchain mining devices connected to not one
2 generator; is that correct?

3 A. Can -- can you please repeat your question?

4 Q. So -- so your interpretation of the third
5 sentence does not require multiple blockchain mining
6 devices connected to the same generator; is that correct?

7 MR. THOMPSON: Objection. Mischaracterize
8 testimony.

9 THE WITNESS: I disagree, because I was
10 responding just now to your hypothetical question saying
11 that a blockchain mining device is connected to the
12 generator, and I was trying to explain a blockchain
13 mining device refers to one or more.

14 But in the claim language, it reads as
15 blockchain mining devices. It's not stating it's a
16 blockchain mining device. So I do recognize there's a
17 proverb here called blockchain mining devices, and that
18 implies two or more devices.

19 BY MR. ZHU:

20 Q. Let me ask you the same question.

21 Does Claim 1 require multiple blockchain mining
22 devices connected to the same generator?

23 MR. THOMPSON: Objection. Asked and answered.

24 THE WITNESS: I disagree with your opinion
25 because, here, in this particular sentence, it reads as

1 blockchain mining devices. That means two or more mining
2 devices. And the generator refers to the second
3 sentence, which means one or more generators.

4 So there's no requirement, in my opinion, that
5 these devices should be connected to the same generator.

6 BY MR. ZHU:

7 Q. I -- I think we're on the same page.

8 So, you know -- and it's your opinion that Claim
9 1 does not require multiple blockchain devices connected
10 to the same generator.

11 That's correct, right?

12 A. I believe my statement was saying that this
13 particular claim requires two or more blockchain mining
14 devices, and these devices could each connected to an
15 individual generator or there could be a possibility that
16 it connect to, you know, same or similar generators.

17 Q. Yeah, yeah, yeah. I understand. I believe the
18 same thing I just said, but you know, you may disagree.

19 Let's -- let's keep going. So are the generator
20 and blockchain mining devices separate --

21 (Reporter clarification.)

22 BY MR. ZHU:

23 Q. Are the generator and blockchain mining devices
24 separate components of the system?

25 A. By reading the second and the third sentences,

1 my understanding is they are separate. A generator,
2 basically a component of the system, and there could be
3 multiple generators. The third sentence says the devices
4 connected to the generators. So to my understanding,
5 they are different items.

6 Q. Can the generator be a portion of the blockchain
7 mining device?

8 A. Are you asking for my understanding or are you
9 asking about this particular possibility as a technology
10 option?

11 Q. As -- your understanding of the claim language.

12 A. So your question is saying that can a blockchain
13 mining devices include a generator based on this claim or
14 based on this innovation?

15 Q. Based on this claim.

16 A. The claim, in my opinion, has differentiated
17 blockchain mining devices and the generator.

18 Q. So -- so I guess, in your opinion, Claim 1 does
19 not cover the situation where a blockchain mining device
20 comprises a generator, right?

21 MR. THOMPSON: Objection. Legal conclusion.

22 THE WITNESS: I cannot recall. This issue was
23 presented in a petition, and I haven't studied this
24 possibility before. So I will need time to formulate my
25 opinion on the possibility.

1 //

2 BY MR. ZHU:

3 Q. Okay. Let's keep moving. Next sentence says,
4 "In which the blockchain mining devices each have a
5 mining processer and are connected to a network
6 interface."

7 So here, "in which," the "which" refers to --
8 does that refer to the system, in the very first
9 sentence?

10 A. So are you asking the limitations under this,
11 "In which will be defined for assisting or will be
12 defined for blockchain mining devices"?

13 Q. That's right. Yeah.

14 A. My read is that -- when you say "in which," the
15 "which" refers to the whole section before "in which."
16 It reads as blockchain mining devices connected to the
17 generator as the system.

18 Q. Does the system also include a source of
19 combustible gas and a generator?

20 A. Again, "in which" was placed right after the
21 term "blockchain mining devices connected to the
22 generator." So it -- in my opinion, it refers to that
23 particular system, called blockchain mining devices
24 connected to the generator.

25 Q. Oh, interesting. Let's see. Let's go to the

1 next one. So, "In which the network interface that's
2 connected to receive and transmit data through the
3 internet to a network that stores or that has access to a
4 blockchain database."

5 Do you -- do you think that the network
6 interface, you know, is also part of the system including
7 blockchain mining devices and the generator?

8 A. So again, this network interface could be part
9 of the system, and using the system, blockchain mining
10 devices, generator, the network interface could be part
11 of the blockchain mining devices.

12 Q. I see. I see what you're saying.

13 Next one is this, "Mining processors are
14 connected to the network interface and adapted to mining
15 transactions associated with the blockchain database and
16 to communicate with the blockchain database."

17 So I guess in your view, the mining processors
18 are also part of the system, right, including the
19 blockchain mining devices and the generator; is that
20 correct?

21 A. Yes. I understand that the mining processer,
22 it's part of the "in which."

23 Q. I see.

24 And this "in which," in your opinion, does not
25 refer to the "a system" in the sentence one?

1 MR. THOMPSON: Objection. Objection.

2 Mischaracterizes testimony.

3 BY MR. ZHU:

4 Q. Let me ask you another question.

5 In your opinion, does the "in which" -- the
6 "which," does that refer to "a system" comprising in the
7 same -- in the first line?

8 A. As I explained before, my understanding of in
9 which is more blockchain mining devices connected to the
10 "the generator" as described in the third sentence. "The
11 generator" in the third sentence refers to a generator
12 connected to the source of combustible gas to receive a
13 continuous flow of combustible gas to power the
14 generator, as stated in the second sentence of the claim.

15 Q. So in your understanding, "in which," the
16 "which," does that include the source of the combustible
17 gas?

18 A. Since this is the same question that I was
19 just -- I just responded, as I said, "in which" means --
20 in my opinion, refers to the blockchain mining devices
21 connected to the generator as the whole system of the
22 whole term. And here, "the generator" refers to a
23 generator connected to the source of combustible gas to
24 receive a continuous flow of combustible gas to power
25 generator, as discussed in the second sentence. Then the

1 term -- the source of combustible gas was discussed in
2 the first sentence.

3 Can I request a short break? I do need to take
4 a break for a few minutes --

5 Q. Yeah, yeah, yeah. For sure. Let's take a
6 ten-minute break.

7 A. All right. So we'll come back 11:32. Thank
8 you.

9 MR. ZHU: Yeah, yeah, yeah. All right. Thank
10 you.

11 (A recess was held from 11:23 a.m. to 11:34 a.m.)

12 BY MR. ZHU:

13 Q. Welcome back, Dr. You. So earlier we were
14 talking about the term blockchain mining devices
15 connected to the generator in one, right?

16 And in your opinion, that doesn't require
17 multiple blockchain devices connected to the same
18 generator; is that correct?

19 A. My understanding, as I stated previously, is
20 that this blockchain mining devices may or may not be
21 connected within the same generator, and here, the
22 generator refers to one or more generators.

23 Q. I see. So -- so I guess, here, it says, "A
24 generator connected to the source of combustible gas."

25 You know, in this claim, a generator as one or

1 more generators connected to the source of combustible
2 gas, can mean the same thing to you, right?

3 A. Yes, I think the "a generator" here means one or
4 more, as stated in the paragraph before the claims.

5 Q. I see.

6 Same thing goes for, you know, however many
7 times the term "a" appears in the claim library, right?

8 A source of combustible gas means one or more
9 sources of combustible gas to you; is that correct?

10 A. That's my understanding, based on the sentence
11 in the paragraph before the claim. The indefinite
12 articles "a" and "an" before a claim feature do not
13 exclude more than one of the feature being presented.

14 Q. Okay. Just wanted to confirm that.

15 And then we were talking about this sentence
16 before the break. "The mining processors are connected
17 to the network interface and adapted to mine transactions
18 associated with the blockchain data and to communicate
19 with the blockchain database."

20 In your understanding, the term "communicate,"
21 does that just mean data exchange?

22 A. I will not say it's only for data exchange --
23 (Reporter clarification.)

24 MR. ZHU: Oh, okay.

25 BY MR. ZHU:

1 Q. Okay. What other meaning would you ascribe to
2 the meaning "to communicate"?

3 A. So it would exchange data among other
4 informations, and that's what communication is all about.

5 Q. I see.

6 So -- let's see. Here, this same sentence also
7 requires the mining processors being conducted to the
8 network interface, right?

9 Do you think that requires a direct connection?

10 A. Can you please define the term "direct
11 connection"?

12 Because I don't see this term in the claim.

13 Q. Oh -- oh, sure. Does that cover the situation
14 where the mining processors are connected via a, for
15 example, communication circuitry to the networks --

16 A. I'm --

17 Q. So does -- does this claim sentence cover the
18 situation where the mining processors are connected to
19 the network interface via a network interface?

20 A. I'm sorry. I don't quite get your question.
21 Are you asking about the network interface or are you
22 asking about the connection between the mining processor
23 and the network devices?

24 Q. Yeah. So earlier, when we were talking about
25 the quantum computer pad, we looked at something

1 communication circuitry, right?

2 And that is -- to my understanding, is the
3 circuitry that handles communication; is that correct?

4 MR. THOMPSON: Objection. Assumes facts;
5 mischaracterizes testimony.

6 THE WITNESS: So here I think, Mr. Zhu, we are
7 talking about two different patents.

8 BY MR. ZHU:

9 Q. Uh-huh.

10 A. Different patents have different constructions
11 and different terms. Regarding the quantum computing
12 one, it was filed quite a few years ago, and I didn't get
13 a chance to review the details over the past year, so
14 it's hard for me to tell what exactly the claimed
15 construction was more about, but more based on the plain
16 language meaning.

17 For this particular one, when we are talking
18 about mining processors, it has a specific definition and
19 specific terms described in the claim language. So I
20 will not mix these two patents together, even though some
21 of the words like processors, altogether, are similar.

22 Q. So what is your understanding of the term
23 "mining processer" here in this patent?

24 A. So I could read through the whole claim set
25 again if you wish, but a key point here is that a mining

1 processor in this case will be a device or some kind of
2 circuitry which -- well, it meets all elements and
3 limitations, and anything that meets the limitations and
4 elements will be considered as a mining processor, based
5 on the definitions in this particular patent.

6 Q. Does the term "mining processor" cover a CPU
7 from a home computer?

8 A. If you're asking for the possibility if a CPU
9 from home computer meet all these elements and
10 limitations, it could be possible. However, in this
11 particular context, we are talking about blockchain
12 mining using the source from the oil and gas field or a
13 source of combustible gas. I don't think the home
14 computer will be connected to a remote oil and gas field.

15 Q. Oh, yeah, yeah, yeah. Totally understand.

16 So, you know, for example, you've -- if you
17 connect a home computer to a gas generator from an oil
18 and gas field, do you think that will meet this
19 limitation in Claim 1?

20 A. I need to understand your definition of "home
21 computer" here. Are you saying a computer at home
22 matches --

23 Q. I'm sorry.

24 A. -- to an oil and gas field, and that probably
25 implies that the home is located in an oil and gas field.

1 Q. I -- I'll use a different word. A generic
2 personal computer.

3 A. Again, if a generic personal computer will meet
4 all these elements and limitations as the mining
5 processor defined in the claims, then it will be eligible
6 to be considered as mining processors in this context.

7 Q. I see.

8 Is there any special hardware -- hardware
9 configuration required for a processor to be a mining
10 processor?

11 A. Well, as defined in this particular claim in the
12 language here, the mining processors are connected to
13 network interface and adapted -- adapted to my
14 transactions associated with blockchain database and can
15 communicate with the blockchain database.

16 It further defines the network is the
17 peer-to-peer network, and the blockchain database is a
18 disputed database installed on plural nodes in the
19 peer-to-peer network, and the blockchain stores
20 transactional information for a digital currency.

21 Q. Let me ask you the same question again.

22 Do you think the term "mining processor"
23 requires any specific hardware configuration for a
24 processor to be a mining processor?

25 A. Yes.

1 MR. THOMPSON: Objection. Asked and answered.

2 THE WITNESS: I responded just now this claim
3 language clearly stated mining processors here should be
4 adapted to mining transactions associated with blockchain
5 mining database. It should also be connected to the
6 network interface, and this will be used to communicate
7 with the blockchain database.

8 BY MR. ZHU:

9 Q. So, in other words, if the mining processors are
10 not connected to the network interface, then the
11 processor cannot be a mining processor, in your mind?

12 A. No. I disagree with your statement. My
13 statement was saying that the mining process should be
14 connected to the network interface, but it doesn't mean
15 that something not connected to the network interface is
16 not a mining processor.

17 Q. I see.

18 So -- so do you think a CPU from a generic
19 personal computer not connected to the network interface
20 can also be a mining processor?

21 A. I need time to formulate my opinion for this
22 hypothetical question.

23 Q. Is there any specific computational hour or
24 processor speed required for processor to be a mining
25 processor?

1 A. There are definitely specifications required for
2 blockchain mining in order to achieve the energy
3 requirements and other computational demands, but they
4 were not disclosed in this particular claim sentence
5 here.

6 I think your question is about a definition of
7 mining processors in this context, and that's why it's
8 clearly stated that the mine progressor should be adapted
9 to mining transactions associated with blockchain
10 database and there should be a connection from the mining
11 processor to this network interface.

12 Q. I see. So just overall, you know, from all the
13 language in Claim 1, do you think Claim 1 requires any
14 particular computational speed and power for the mining
15 processor?

16 A. The computational and speed and power were not
17 discussed in Claim 1, but they were definitely part of
18 the processors because any processor involves some
19 computational speed and power. And I think there are
20 some later claims talking about how to adjust the
21 specific speed and power for a specific application to
22 utilize this combustible gas facility selected from a
23 group consisting of --

24 (Reporter clarification.)

25 THE WITNESS: Consisting of a hydrocarbon

1 production, storage, or processing facility, as stated in
2 the first sentence of Claim 1.

3 BY MR. ZHU:

4 Q. Are you referring to Claim 10, where it says
5 "Increasing or decreasing the mining activity of the
6 mining processer"?

7 A. I need one minute to take a look at Claim 10.

8 Q. Sure.

9 A. So Claim 10 disclosed some of the information
10 about increasing or decreasing the mining activities.

11 Q. So do you think Claim -- Claim 10 requires, you
12 know, a certain computational speed or power for the
13 mining processer?

14 A. I need to understand your question better. I
15 are you saying that the speed and power were disclosed in
16 Claim 10, or are you saying that, to increase or decrease
17 the mining activities of the mining processer, we require
18 certain speed and power, or maybe other meanings?

19 Q. I guess my question to you earlier was, does
20 Claim 1 require any particular computational speed or
21 power for the mining processer. And I think your answer
22 mentioned some later claims making sure of that
23 requirement, right?

24 Do you think Claim 10 confirms -- requires any
25 particular computational speed or power?

1 A. I need to clarify a little bit about this
2 question.

3 So as my response earlier was saying that in
4 order to perform blockchain mining, some speed and power
5 will be required under specific -- some specifications.

6 And then we are talking about Claim 10, which
7 discuss one particular element of the mining activity
8 adjustments in terms of increasing or decreasing it in
9 order to meet -- in order to power level for these
10 particular activities connected to the generator.

11 Q. I see. So -- let's see. Is it your opinion
12 that Upstream's products embody Claim 1?

13 (Reporter clarification.)

14 MR. ZHU: Upstream. That's the party here,
15 Upstream Data.

16 THE WITNESS: Yes. In my opinion, Upstream Data
17 hash hut and hash generator embody Claims 1 and 24 of
18 this patent.

19 BY MR. ZHU:

20 Q. I see.

21 Do they embody other claims of this patent?

22 A. Yes, I believe so.

23 Q. What other claims do they embody?

24 A. Well, there are many dependent claims they will
25 also embody.

1 Q. I see.

2 Do they embody Claim 10?

3 A. My understanding of Claim 10 is that it's a
4 dependent claim of Claim 1 because there is a system of
5 Claim 1 in which, blah, blah. So it's embodied.

6 Q. I see.

7 Do you know how Upstream's products, you know,
8 realizes increasing or decreasing the mining activity of
9 the mining processor?

10 A. I was not aware of the full details based on the
11 information presented to me, which may need a petition
12 and some declarations.

13 My understanding is here is a certain controller
14 or other devices to operate this function. But again,
15 these are all based on the information that was presented
16 to me. I am not involved in Upstream Data, and I have no
17 prior experience with them.

18 Q. So based on the information presented to you,
19 what does the controller do?

20 Do they turn on and turn off the mining
21 processors, or do they adjust the clock rate of the
22 mining processors?

23 A. My understanding is the later case you
24 mentioned. They adjust the clock rate and some of the
25 mining activities, as stated in Claim 10.

1 And again, when you say the term "controller,"
2 we need to be specific about which controller and what it
3 is. So here, we're talking about a controller that
4 adjusts the mining activities of the mining processer. I
5 hope my understanding is correct.

6 Q. What is your understanding of the controller in
7 Upstream's products?

8 Is that a separate chip?

9 A. Well, again, the term "controller" is a very
10 generic term, just like a computer. So there could be
11 multiple controllers and multiple types of controllers,
12 and my understanding on the issue is that the question
13 here is -- about controller, they could increase or
14 decrease the mine activities of the mining processer, as
15 we discuss right now.

16 Q. So did -- in your opinion, does Upstream Data's
17 products contain the controller?

18 A. I need to understand this question better. Are
19 you asking for my understanding of Upstream products or
20 are you asking whether a controller is necessary Upstream
21 products?

22 Q. Oh, yeah. Just -- you know, because -- because
23 your opinion is Upstream's products embody Claim 10,
24 right? And I -- and I'm just wondering, you know, what
25 is that component that, you know, performs this function

1 in Claim 10 in Upstream's products?

2 A. My understanding is there's some of Upstream
3 products, or most of them, which involve this particular
4 mining processer, would have some devices -- you can call
5 it controller or anything else -- to adjust these mining
6 activities in order to moderate a power load level access
7 by the blockchain mining devices on the generator.

8 Q. And specifically, do they do that by changing
9 the clock rate of the mining processors?

10 A. I did not find this information from the
11 petition. I do need some more information to formulate
12 my opinions.

13 Again, this is more about the specific products
14 in Upstream Data, or in the mining connects, so I do need
15 to have more information to understand what products we
16 are talking about and what specific function of, you
17 know, component that we are discussing.

18 Q. So if the controller turns off a mining
19 processer, does it -- you know, do you raise the mining
20 activity of that mining processer?

21 A. If the processer is off, then it's off. So I
22 guess that's my understanding of your question.

23 Are you asking that if the processer is off, can
24 it still perform the blockchain mining activities? I
25 guess if my understanding -- if that's correct, if a

1 blockchain mining processor is off, it's inactive. And
2 when it's inactive, it's not performing any function.

3 Q. Yeah. My question is more specific to Claim 10,
4 right? Because Claim 10 requires, you know, either
5 increasing or decreasing the mining activity of the
6 mining processor.

7 Do you think, you know, turning a mining
8 processor off will meet this limitation?

9 MR. THOMPSON: Objection. Asked and answered.

10 THE WITNESS: So I believe my understanding
11 about Claim 10 is to increase or decrease the mining
12 activities based on the power load and the source of
13 energy, in this particular context.

14 The question you're asking seems to be about if
15 we turn the processor off, can it still be performing
16 blockchain mining activities. The claim response is
17 that, if the processor is not active, it's not going to
18 perform any function because it's inactive.

19 BY MR. ZHU:

20 Q. So let me rephrase my question.

21 My question is directed to what kind of activity
22 can satisfy increasing or decreasing the mining activity
23 of the mining processor.

24 Earlier, we talked about adjusting the clock
25 rate of the mining processor may satisfy its limitation;

1 is that correct?

2 A. Yes. Adjusting a call rate or adjusting a call
3 voltage of the processor could both meet this function,
4 and there could be other possibilities which I will not
5 exclude.

6 Q. I see.

7 So would turning off the power of the processor
8 meet this limitation?

9 MR. THOMPSON: Objection. Asked and answered.

10 THE WITNESS: So when you're turning -- can you
11 repeat your question? Are you saying that -- turning off
12 the power and shut off the entire processor directly?

13 BY MR. ZHU:

14 Q. That's right.

15 A. So my understanding is you're referring to this
16 on/off case, turning on and turning off.

17 Q. That's right.

18 A. And that's quite different from my understanding
19 in terms of increasing or decreasing the mining
20 activities, because once we turn it off, you don't
21 increase the activities.

22 Q. When you're turning off, does it decrease the
23 mining activity?

24 A. By definition, when you're turning off, then
25 there is no mining activities, then it reduces to zero.

1 But it's not the way we talk about in a control or
2 adjustment, because turning off, it's just going to reach
3 the zero status.

4 And here we are talking -- I think -- I believe
5 understanding -- my understanding of this particular
6 claim here is that we need to adjust it by increasing or
7 decreasing to a specific level as needed by the system.
8 Unless the gas input or energy input is zero, I just
9 don't see the point it will be fully decreased to zero,
10 theoretically.

11 Q. Okay. So is it fair to say, you know, if a
12 system says like -- can simply, you know, turn off a
13 mining processor, that does not meet this claim
14 limitation?

15 A. No, I did not say that. All I'm trying to say
16 was that to this particular -- this particular claim
17 includes the options to increase and decrease the mining
18 activities. So an on/off case would be powerless, but
19 there could be other options. It's just like adjusting
20 anything else. We are not talking about decreasing to
21 zero, which is a specific case that you are describing.

22 Q. In your mind, is this -- decreasing to zero
23 still decreasing?

24 A. Yes, I believe so. But in this particular
25 context, I believe -- I understand that this Claim 10 is

1 based on Claim 1. And in Claim 1, it's connected to a
2 source of combustible gas as a byproduct from a
3 hydrocarbon production storage of processing facilities.

4 These casinghead gas would unlikely be going
5 down to zero at any time in a certain computer. So to
6 handle and nucleize this casinghead gas, it has to be
7 adjusted in a feasible way, and that's the feasibility
8 that we are discussing, and understand that this
9 particular claim is about a feasibility to adjust the
10 mining activities brought in the feasibility of being
11 turned on or off.

12 Q. I see.

13 So, you know, you -- the controller that's
14 configured to turn on or off, you know, a certain number
15 of processors, would you say that meets Claim 10?

16 MR. THOMPSON: Objection. Asked, answered.

17 THE WITNESS: Are you describing a hypothetical
18 scenario for this particular case or are you asking for a
19 possibility, whether such a controller would exist?

20 BY MR. ZHU:

21 Q. I -- yeah. I believe that's -- you know, I'm
22 talking about my understanding of -- of Upstream's hash
23 generator product. I think there's a controller that can
24 turn off and -- on and off a certain number of
25 processors. I'm just asking your opinion of whether that

1 satisfies Claim 10.

2 MR. THOMPSON: Objection. Asked and answered.

3 THE WITNESS: So for a controller, they can turn
4 on and off, it can be part of Claim 10. But again, as I
5 just mentioned now, Claim 10 is about the feasibility to
6 adjust the mining activities, as needed, for the entire
7 system.

8 BY MR. ZHU:

9 Q. Okay. So earlier you mentioned Claim 1 requires
10 utilizing gas, you know, produced as a byproduct of oil
11 production right?

12 A. Can you repeat your question.

13 Q. Earlier you mentioned Claim 1 requires utilizing
14 casinghead gas that's produced as a byproduct of oil
15 production. Is that correct?

16 A. Well, I was seeing there was -- one example is
17 the -- in the first sentence of Claim 1, which states as
18 a source of combustible gas produced from a facility
19 selected from a group consisting of a hydrocarbon
20 production, storage, or processing facility.

21 Q. So does Claim 1 cover other sources of
22 combustible gas other than casinghead gas?

23 A. I need some time to refer to my declaration
24 before answering this question.

25 Q. Go ahead.

1 A. So back to this question, from Claim 1
2 perspective, the language by itself basically doesn't
3 creates the casinghead, but I do believe the earlier
4 stage of the patent -- I think it's column 6, line 51 to
5 54.

6 It reads that, "In Upstream production of oil
7 and gas, natural gas may be produced as a byproduct of
8 oil production, for example, from an oil well."

9 And that's the way, you know, I see this
10 particular patent is related.

11 Q. I'm just reading column 6, line number 51 to 54.
12 "In Upstream production of oil and gas, natural gas may
13 be produced as the primary product, for example, from a
14 gas well, or as a byproduct of oil production, for
15 example, from an oil well."

16 Do you think Claim 1 covers both situations as
17 either a primary product or as a byproduct?

18 A. One -- I believe Claim 1 -- let me double-check
19 Claim 1.

20 So by reading Claim 1, I think it covers both,
21 if it meets the requirement of the source of combustible
22 gas produced from facilities selected from a group
23 consisting of a hydrocarbon production, storage, or
24 processing facilities.

25 But I do feel that the meat of --

1 (Reporter clarification.)

2 THE WITNESS: But I do feel that a lot of
3 discussion so far, it's about the byproduct case, because
4 that's the discussion in the next sentence, or right
5 under the highlight here, "Natural gas produced as a
6 byproduct of oil production may be used in various ways."

7 BY MR. ZHU:

8 Q. Do you understand the scope of the scope of the
9 patent is determined by the claim language?

10 A. Can you please repeat your question?

11 Q. Do you understand the scope of the patent is
12 determined by the claim language?

13 A. Yes, I think so.

14 Q. Is there any specific claim language that
15 requires a byproduct of oil production?

16 A. No. And that's why I mentioned, I think back to
17 your question earlier, does the claim language include
18 byproduct and primary products. I think as long as the
19 byproducts -- all prior products meet the claim terms,
20 they are both eligible.

21 Q. So does Claim 1 cover the situation where the
22 gas is from a commercial sales line?

23 MR. THOMPSON: Objection. Asked and answered.

24 THE WITNESS: I don't think that's the case. I
25 believe this was an earlier question you raised.

1 Claim 1 specifically mentions that a source of
2 combustible gas produced from a facility selected from a
3 group consisting of a hydrocarbon production, storage, or
4 processing facilities. That doesn't happen for a salines
5 line case, and it's not -- the sales line does not
6 produce a source of combustible gas.

7 BY MR. ZHU:

8 Q. Where do you think -- where do you think the gas
9 from a commercial sales line comes from?

10 A. This will come from gas oil wells originally,
11 but --

12 Q. So if --

13 A. -- the sales line is just a source of
14 transmitting the gas.

15 Q. So is a gas production facility -- let me refer
16 to the original language in Claim 1 -- a facility
17 selected from the group consisting of a hydrocarbon
18 production, storage, or processing facility.

19 A. Can you please repeat your question?

20 Q. Yeah, yeah, yeah.

21 Is a natural gas production facility a
22 hydrocarbon production, storage, or processing facility?

23 A. Yes, I think so.

24 Q. So does Claim 1 cover the situation where the
25 gas comes from a natural gas production facility?

1 A. Yes, I think so.

2 Q. And does Claim 1 cover the situation where the
3 gas is coming from a natural gas production facility via
4 a commercial sales line?

5 A. No. I do not think in that way, because here
6 you're talking about a commercial sales line, which is
7 not a hydrocarbon production, storage, or processing
8 facility.

9 Q. Where do you think the gas from a commercial
10 sales line comes from?

11 A. Well, they originally come from this production,
12 storage, or processing facilities, but they are a later
13 stage of the system.

14 Q. So do you think Claim 1 refers to direct
15 connection to the natural gas production facility without
16 any paddocks in between?

17 A. I think the question here is that -- whether the
18 pipe will be classified as a commercial sales line. I
19 believe there are specific definitions about what the
20 nature of the sales lines are about. It's not a simple
21 pipe, in this definition.

22 Q. What is your understanding of commercial sales
23 line?

24 A. Well, they are pipes, but more importantly, it's
25 that -- it's beyond a typical, you know, direct

1 connection from a well. Just like the gas, you know, in
2 our houses, those are commercial sales lines. They go
3 through extensive transmissions. There are certain
4 equipment and devices throughout the way to progress the
5 systems.

6 So they are more like intermediate natural gas
7 transmission facilities and systems, broadly called
8 production, storage, or processing facilities in oil and
9 gas sector.

10 Q. I see. Let's take a look at Claim 2. Claim 2
11 reads, "The system of Claim 1 isolated from a sales gas
12 line and external electrical power grid."

13 So how do you think Claim 2 further narrows
14 Claim 1?

15 A. Can you please repeat your question?

16 Q. Yeah, yeah, yeah. How do you think Claim 2
17 further narrows Claim 1?

18 A. So Claim 2 seems to exclude those cases that
19 connected to the sales gas line and connected to the
20 external electrical power grid.

21 Q. Do you think Claim 1 include system connected to
22 the sales gas line?

23 A. No. As I mentioned, I don't think Claim 1
24 includes that because sales gas line is not typically
25 considered as a hydrocarbon production, storage, or

1 processing facility.

2 Q. Yeah. I understand that. But the gas from the
3 sales gas line comes from such a facility, right?

4 MR. THOMPSON: Objection. Mischaracterizes
5 testimony.

6 THE WITNESS: I think there was question that I
7 just answered, right. We have this -- in Claim 1, this
8 is a source of combustible gas produced from a facility
9 in a different group of -- consisting of hydrogen
10 production, storage, or processing facilities.

11 When we put it in this context, it seems that
12 you're implying that a sales gas line is producing a
13 source of combustible gas, which does not really seem to
14 be the case when we talk about hydrocarbon production,
15 storage, or processing facility.

16 BY MR. ZHU:

17 Q. I see. So if the system, you know, including
18 the blockchain mining devices, are connected in a direct
19 way to a natural gas production facility, that will
20 satisfy this limitation. But if it's located miles away,
21 you know, connected by a sales gas line, then that does
22 not satisfy Claim 1.

23 Is that correct?

24 A. Again, the term "sales gas line" has a specific
25 meaning, and the key issue is that this is not a gas

1 line. It's a sales gas line. There should be a customer
2 down at the end. There is some kind of specifications
3 involved. There is some, you know, natural gas
4 infrastructure systems in this case.

5 So this is similar to the question I think we
6 discussed at the beginning. A power grid is different
7 from a power generation facility.

8 Q. I see.

9 Are you suggesting there could be other sources
10 for the gas from a sales gas line?

11 A. No. I'm not suggesting that. I'm trying to
12 differentiate a sales gas line from a hydrocarbon
13 production, storage, or processing facility that could
14 produce a source of combustible gas.

15 Q. I see.

16 So let's, you know, ignore the term "sales gas
17 line." Just -- let's imagine there's a pipe, you know,
18 linking the blockchain mining devices to a natural gas
19 production facility.

20 If the pipe is, you know, miles long, do you
21 still consider that satisfies Claim 1?

22 A. When you say miles long, can you define how many
23 miles, specifically?

24 Q. Let's -- let's say ten miles.

25 A. So when you say ten miles, are you saying at a

1 distance, from a source of the combustible gas to a
2 blockchain mining system, or in any other kind of major
3 way?

4 Q. Yeah. That's right. From the blockchain mining
5 devices to the source of the combustible natural gas.

6 A. If that pipeline ten miles long, it's only for
7 transmitting this gas for the blockchain mining devices,
8 then, yes, they will probably be eligible, in my opinion.

9 Q. I see.

10 So there's no, you know, distance requirement in
11 Claim 1; is that correct?

12 A. I don't see a distance limitation in Claim 1,
13 but one thing we do need to keep in mind is that, to
14 transmit the gas, it incurs cost, it incurs energy. So
15 there's always a practical consideration about why we
16 ship something for long distance or are locating it
17 nearby.

18 Q. Yeah.

19 A. This is the -- excuse me. If I could add one
20 more thing here. And that's the main difference between
21 a sales gas line and the typical natural gas pipe.
22 Because a sales gas line is eventually to send the gas to
23 a customers, just like our individual houses.

24 Q. Yeah.

25 A. We put them in our houses, at least most people,

1 when they put a house on an oil and gas field. But when
2 you have these devices, that's a different story. With
3 them, that seems to do that. For a common person in this
4 field, there is no point to locate a facility farther
5 than closer equipment.

6 Q. I see what you're saying. I'm just trying to
7 get, you know, how you draw the line in between the two
8 situations.

9 So, you know, let's -- I guess ten miles pipe,
10 it doesn't matter if it's 100 miles, it doesn't matter --
11 is that correct? It's still, you know, going to be
12 covered by Claim 1?

13 A. Again, the distance was not clearly spelled or
14 stated in the claim, so I don't think the claim has any
15 limitation or restriction in terms of the distance of the
16 pipe.

17 However, we need to make sure that the pipe
18 satisfies all these connection requirements, like
19 connecting -- basically, the second sentence of this
20 Claim 1, a generator connected to the source of
21 combustible gas, to receive a continuous flow of
22 combustible gas to power the generator.

23 As long as it meets all these limitations, I
24 don't think distance was a limitation or constraint in
25 this case. But practically, if we have the feasibility

1 to locate a generator or facilities nearby the source,
2 there's no reason to put it far away.

3 Q. I see. I see. So if a 100-mile long pipe
4 doesn't change, you know, the answer, what -- what
5 particular nature of a sales gas line changes your
6 answer?

7 Why -- why is the commercial sales line, you
8 know, different from a 100-mile long pipe?

9 A. Well, again, as I said, this -- this particular
10 claim, it's not about the pipe. This particular claim,
11 as I read it, is -- first sentence of Claim 1, it's about
12 a source of combustible gas from a facility, which it's
13 selected from a group consisting of a hydrocarbon
14 production, storage, or processing facilities.

15 So it's about a facility, not the pipe. So I
16 don't think pipe is clearly stated here. That's point 1.

17 And point 2 is when we talk about a sales gas
18 line, there's a particular customer towards the end of a
19 sales line. And this particular customer in sales line,
20 they have no choice to change location. It's more of a
21 meeting the demand in those specific locations.

22 Well, by reading through Claim 1, as we see in
23 the second sentence and the third sentence, the purpose
24 here is to use this gas to power the generator and
25 support the blockchain mining activities, which are

1 different from the customers -- they don't have the
2 feasibilities to change locations, as in a typical sales
3 gas line.

4 Q. Does Claim 1 require a ability to change
5 locations?

6 A. No. But when you talk about sales gas line, it
7 implies that there is a particular customer or somebody
8 to be sold for this gas.

9 Q. So for example, I'm a customer, you know, of
10 Upstream. I buy an Upstream gas generator, I link it up
11 to my utility -- you know, natural gas line.

12 Would that satisfy Claim 1?

13 A. Can you repeat your question? I need to
14 understand better context of the hypothetical scenario.

15 Q. Yeah, yeah, yeah, yeah.

16 Does -- I think this is from, you know,
17 deposition from a better time with Mr. Barber.
18 Sometimes, you know, as Upstream, we sell products,
19 right, hash generator or hash hut to customers, but
20 sometimes we don't know what the customers use it for,
21 right?

22 If a customer simply connects the device to a
23 commercial sales line, would that satisfy Claim 1?

24 MR. THOMPSON: Objection. Form;
25 mischaracterizes testimony; lacks foundation.

1 THE WITNESS: I was not presented with the
2 materials and information about Mr. Barbour's details, so
3 I don't have time to formulate my opinion on these
4 particular question.

5 BY MR. ZHU:

6 Q. And what information do you need to formulate
7 the opinion?

8 A. So are you asking the question whether the
9 customer will be able to buy the products from Upstream
10 and connect it to a commercial sales gas line?

11 Q. That is the situation I'm asking you about.

12 A. Well, I'm not a -- I'm not a customer, and it's
13 hard for me to tell what the customers will do. I don't
14 have any information about what customers will do by
15 buying a product from Upstream in this particular
16 hypothetical scenario.

17 Are you asking about a feasibility from
18 technology side or are you asking more about a fact
19 that -- whether somebody has done it?

20 Q. I'm asking about your opinion on Claim 1. Does
21 Claim 1 cover that situation?

22 A. Oh, what particular situation, a situation is
23 about customers purchasing the product or about --

24 Q. The situation is connecting a hash rate
25 generator to a commercial sales line.

1 A. In my understanding, I don't think Claim 1
2 covers the case of a commercial sales line connecting to
3 these Upstream products.

4 Q. I see. So what language in Claim 1 do you think
5 rules out that situation?

6 A. Well, again, as I mentioned -- I replied a few
7 times, right, Claim 1, it's about specifically dealing
8 with a source of combustible gas produced from
9 hydrocarbon production, storage, or processing
10 facilities. And in my opinion, a commercial sales gas
11 line is not part of the system of these kind of
12 facilities.

13 Q. I see.

14 Do you think the gas from a source line contains
15 gas produced from, you know, something other than a
16 hydrocarbon production, storage, or processing facility?

17 A. No. I -- I don't think so, but again, this
18 particular claim language is saying that it is a source
19 of combustible gas produced from such a hydrocarbon
20 production, storage, or processing facilities. A
21 commercial sales gas line does not produce a source of
22 combustible gas, and it's not typically considered as a
23 hydrocarbon production, storage, or processing facility.

24 Q. Okay. Let's see. So what's your understanding
25 of the term "casinghead gas"?

1 A. So we have some specific definition about
2 casinghead gas. I'd rather refer to my declaration so
3 that I could give you a more specific response.

4 Q. Sure.

5 A. So as stated in my declaration in paragraph,
6 30 --

7 (Reporter clarification.)

8 THE WITNESS: I'm sorry. "In Upstream
9 production of oil and gas, natural gas may be produced as
10 the byproduct of oil production, for example, from an oil
11 well. This form of natural gas is referred to as
12 undesirable casinghead gas, casing gas, or simply load
13 gas.

14 BY MR. ZHU:

15 Q. So does the term "casinghead gas" include gas
16 produced as a, you know, primary product from a natural
17 gas production facility?

18 A. No. The casinghead gas is specified as a
19 byproduct of oil production, for example, from an oil
20 well.

21 Q. I see. What's your understanding of the term
22 "dry gas" or "nonassociated gas"?

23 Have you heard of these terms?

24 A. When you talk about dry or wet gas, that refers
25 to the composition of the natural gas that we extracted,

1 and those are not about casinghead gas because that does
2 typically refer to the main products.

3 Q. I see.

4 A. Although the casinghead gas, as a byproduct,
5 will have some correlations in terms of compositions of
6 the main gas production.

7 Q. I see. I -- I think Claim 1 also has another
8 limitation, right, regarding continuous flow of
9 combustible gas.

10 What's your understanding of a continuous flow
11 of combustible gas?

12 A. So can you be more specific about your question?

13 Are you asking about a definition about this
14 continuous flow of combustible gas concept or are you
15 asking about what a continuous flow of combustible gas is
16 all about?

17 Q. Does the term continuous flow combustible gas
18 require that the gas is a byproduct of hydrocarbon
19 production, storage, or processing?

20 A. As stated in my declaration -- I believe it was
21 there, paragraph -- I will refer to my declaration, which
22 is paragraph 35 --

23 (Reporter clarification.)

24 THE WITNESS: Yes, please. I'll do it slowly.
25 I'm sorry for that. "The '372 patent specification

1 confirms that the continuous character of the flare gas
2 in the '372 patent derives from the fact it's a byproduct
3 of hydrocarbon oil production, storage, or processing and
4 cannot be avoid in oil production. In remote areas,
5 where an oil field operator is confronted with this
6 continuous source of natural gas, the operator is forced
7 to do something with this excess, or stranded gas, and is
8 left with few options, such as venting, flaring, or
9 ceding production.

10 "The natural gas that's the focus of the '372
11 patent is casing gas, also known as casinghead gas,
12 that's produced as a byproduct from a producing oil well.
13 The recitation of a continuous flow of combustible gas
14 reflects that combustible gas is a continuous byproduct
15 of hydrocarbon production, storage, or processing. This
16 is consistent with the ordinary meaning of a continuous
17 flow of combustible gas that will be applied by a person
18 of ordinary skill in the field."

19 BY MR. ZHU:

20 Q. So after reading this paragraph, do you still
21 stick by your answer regarding whether Claim 1 covers a,
22 you know, natural gas produced as a primary or byproduct?

23 A. I'm trying to understand your question. I
24 can't --

25 Q. Does one cover never gas produced as a primary

1 product, or does it require the natural gas has to be a
2 byproduct?

3 A. Well, the continuous nature -- nature here
4 refers to the byproduct case, as we discussed just now.

5 Q. Is a natural gas produced as a primary product,
6 not continuous?

7 A. If it could be shut off, assuming it could be,
8 although in practice would be challenging, it may not be
9 continuous.

10 Q. Can natural gas produced as a byproduct not be
11 shut off?

12 A. Well, when you say as a byproduct involved in
13 this production, then it's hard to be controlled. In
14 fact, a lot of oil and gas wells, even after you stop
15 production, still emits some of this flare gas.

16 Q. So let me ask you the same question again.

17 Does Claim 1 of the '372 patent cover natural
18 gas produced as a primary product?

19 MR. THOMPSON: Objection. Asked and answered.

20 THE WITNESS: Again, if the case you mentioned
21 meet all the specifications, then it will be included.
22 And the key issue is whether the case -- whether it's a
23 byproduct or a main product. It's not directly connected
24 to these elements. It's more about specifications and
25 limitations that we are discussing here.

1 BY MR. ZHU:

2 Q. Well, but continuous flow of natural gas is a
3 limitation on the Claim 1, right?

4 A. Yes.

5 Q. Does that limitation require the gas to be a
6 byproduct?

7 A. Well, the case of being continuous typically
8 refers as a byproduct case. But as you say, natural gas
9 production, it's the main -- natural gas will be the main
10 product of the system. As long as it satisfies
11 continuous flow of combustible gas products, it will be
12 considered under the limitation.

13 Q. I see.

14 So I guess, in other words, you know, the term
15 continuous flow of combustible gas, itself, does not
16 require, you know, the gas to be a byproduct.

17 Is that correct?

18 A. I don't think the term "byproduct" was clearly
19 stated here in the claim.

20 Q. Okay. Are you aware that during oil production
21 there are, you know, periodical shutdowns or
22 interruptions?

23 A. Yes. I'm aware of these cases.

24 Q. I see. So during these shutdowns, do you think,
25 you know, the -- the casinghead gas is still continuous?

1 A. It all depends on the specific oil wells and
2 cases and how to control these flare gas or casinghead
3 gas in the production process.

4 So sometimes, when you say we shut down
5 operations, that means we cease the operations, but it
6 may or may not involve capping a well or stopping
7 emissions. And in fact, gas emission is much harder to
8 control than oil, you know, production, because one is
9 done in the liquid phase, the other is a gas phase.

10 Q. I see.

11 Are there, like, you know, safety valves where
12 it can just shut down the casing gas from coming out?

13 A. Are you asking for possibility or are you asking
14 for the practice?

15 Q. Let's start from the possibility.

16 A. It is potentially possible, I will say, in the
17 future, but it's very hard. Because the gas coming out
18 from underground, right, and it's emitting up. It's not
19 the same as saying, I put a cap here and it's not going
20 to come out.

21 You can seal it very nicely. There's always
22 some sort of leakage. And there's a lot of discussion
23 right now in the field about, you know, leakage from all
24 these gas fields and even some oil fields.

25 So it all depends on specific formation, the

1 geological formation, the production model, the well
2 configuration, the equipment, the technology, and many
3 other factors. We could always minimize it, but you
4 won't reduce to zero.

5 Would it be possible in the future? I will not
6 exclude that possibility. But is it possible now, to be
7 that all-zero combustible, you know, casinghead gas, I
8 believe that was a challenge. And that's not an energy
9 systems problem, but also an environmental concern
10 because of the climate impact.

11 Q. I see. I think we discussed the lunch break at
12 about 12:30. Do we want to do that now?

13 A. Sorry. What -- can you --

14 Q. I think we talked about taking a lunch break.

15 A. Oh, yeah. That would be great, if we could take
16 a lunch break now.

17 Q. Okay.

18 A. So can we come back at 1:15 or 2:00 or so?

19 Q. Sure. Yeah. Let's say 2:00. Why not? All
20 right. Thank you, Dr. You.

21 A. Thank you.

22 (A recess was held from 12:34 p.m. to 2:01 p.m.)

23 BY MR. ZHU:

24 Q. Okay. Dr. You, before the break, I think we
25 were talking about the term continuous flow of

1 combustible gas, right?

2 Well, first of all, did you communicate with
3 counsel during the break?

4 A. No. I did not communicate with any counsel
5 during the break.

6 Q. Okay. Have you heard about the term synthetic
7 natural gas?

8 (Reporter clarification.)

9 THE WITNESS: Yes. It's called synthetic
10 natural gas.

11 BY MR. ZHU:

12 Q. Yeah, can you explain to me what that is?

13 A. You mean the particular term of synthetic
14 natural gas?

15 Q. Yeah.

16 A. Well, there could be a few definitions. In some
17 of the context of our studies, syn gas involves --
18 sometimes we call syn gas, S-Y-N-G-S, for short. Syn gas
19 is, basically, a mixture of parts, such as some methane
20 and hydrocarbons.

21 Q. I see.

22 Are you aware of a technology where you can
23 convert oil to natural gas?

24 A. Yeah. I think there are some technology that
25 can convert oil into natural gas --

1 Q. Are you --

2 A. -- oil to gas technologies. Yes.

3 Q. Can you get natural gas out of the coal mines?

4 A. Can you repeat your question, please?

5 Q. Can you get natural gas, instead of from oil
6 lines, from coal mines?

7 A. So when you say get it out, are you talking
8 about intentionally making the natural gas production
9 from coal mine or as a byproduct of coal mine?

10 Q. Either way is fine. Let's just start with as a
11 byproduct of mining coals.

12 Are you aware that you can produce natural gas
13 from that?

14 A. Yeah. I'm aware of some gas omissions from coal
15 mines.

16 Q. I see.

17 So, you know, do you think Claim 1 is broad
18 enough to cover natural gas produced from a coal mine?

19 A. Well, this is an interesting question. I
20 haven't had time to consider it, so I probably need some
21 time to think about it before I can get back to you.

22 Q. I see.

23 Do you think a coal mine counts as a hydrocarbon
24 production, storage, or processing facility?

25 A. If you recognize coal as a kind of

1 hydrocarbon -- I mean, there are some straight
2 definitions and some vast definitions. But if we agree
3 that coal is kind of a hydrocarbon, then coal mine would
4 be considered as a hydrocarbon production facility.

5 Q. I see.

6 A. However, in the industry, usually when we talk
7 about hydrocarbons, most cases it refers to oil and gas.

8 Q. I see.

9 Is there any reason why someone would think
10 Claim 1 does not apply to natural gas produced from a
11 coal mine?

12 A. I'm not sure if I understand your question
13 directly. Are you saying that -- does Claim 1 cover
14 natural gas from coal mine or not?

15 Q. Uh-huh.

16 A. And as I say, if we agree that natural gas --
17 sorry, coal, it's a kind of hydrocarbon, then it would
18 fit this definition as a hydrocarbon production
19 facilities.

20 Q. I see.

21 A. Although in the industry, most people, when they
22 refer to hydrocarbon, typically refer to oil and gas
23 business.

24 Q. I see.

25 Do you -- have you ever heard of, you know,

1 people producing natural gas from fermentation or, in
2 another term, bio gas?

3 A. Yes. I'm aware of this concept, bio gas.

4 Q. I see.

5 Same question to you, right?

6 Do you think Claim 1 is broad enough to cover
7 natural gas produced from fermentation or bio gas?

8 A. I don't think Claim 1 covers the case of bio
9 gas, and the reason is that a bio gas production involve
10 fermentation process in most cases. This particular case
11 may not meet -- may not meet the requirement as the
12 continuous flow of combustible gas, defined in the second
13 sentence.

14 Q. I see.

15 A. In terms of the first sentence, do you consider
16 a fermentation facility as a hydrocarbon production,
17 storage, processing facility or not, I will be a bit
18 reservative -- a bit reserved -- I have some reservations
19 in this regard.

20 Because most people in the industry that is in
21 the circle do not consider a fermentator as a hydrocarbon
22 production, storage, or processing facility, although it
23 does generate some bio gas. The key issue is that, in
24 the fermentation process, it not only produce bio gas,
25 but also produce our products. Usually we don't call it

1 main product or side product, but call it coal products.

2 Q. I see.

3 So when you say, you know, fermentation-based
4 production natural gas may not be continuous flow of
5 combustible gas, is it because, you know, the
6 fermentation may, I don't know, have a certain life span
7 and it may run out in a relatively shorter period of
8 time?

9 A. It could be. I mean, you know, there could be
10 many reasons that gas -- bio gas production from a
11 fermentor may not continue.

12 Fundamentally, the process of fermentation is
13 quite different from the oil and gas business. In the
14 oil and gas business, the resource is underground, and
15 the so-called production is, basically, extracting the
16 resource directly from underground. Of course, there is
17 a downstream processing and other steps, but that's the
18 later stage.

19 In the fermentation process, it's
20 fundamentally --

21 (Reporter clarification.)

22 THE WITNESS: A biochemical process.

23 So this biochemical process usually use some
24 sources, such as bio mass, as the major source of carbon
25 and eventually produce bio gas, along with others, such

1 as -- you know, CO2, as an example.

2 BY MR. ZHU:

3 Q. I see. So in order to qualify something as a
4 continuous flow, does it require, you know, the flow
5 being continuous over a certain period of time?

6 A. I think this was an issue that we discussed just
7 now, right?

8 Q. Yeah.

9 A. So as I mentioned in paragraph 45, the '372
10 patent --

11 (Reporter clarification.)

12 THE WITNESS: I'm sorry about that. "The patent
13 specification confirms that the continuous character of
14 the flare gas in the patent derives from the fact that
15 it's a byproduct of hydrocarbon oil production, storage,
16 or processing, and cannot not be avoided during
17 production.

18 "In rural areas where an oil field operator is
19 confronted with this continuous source of natural gas,
20 the operator is forced to do something with the excess of
21 trans gas, and is left with few options, such as venting,
22 flaring, ceasing production.

23 "The natural gas that's the focus of the patent
24 is casing gas, also known as casinghead gas, that's
25 produced as a byproduct from a producing oil well. The

1 recitation of a continuous flow of combustible gas refers
2 that the combustible gas is a continuous byproduct of
3 hydrocarbon production, storage, or processing. This is
4 consistent with the ordinary meaning of a continuous flow
5 of combustible gas that will be applied by a person of
6 ordinary skill in the field."

7 BY MR. ZHU:

8 Q. Well -- yeah. Thank you for reading the same
9 paragraph again, but my question is, does the recitation
10 of the term continuous flow of combustible gas require
11 that the gas is a byproduct?

12 A. Well, as I mentioned in the very first sentence,
13 the patent specification confirms the continuous
14 character of the flare gas in the patent derived from the
15 fact that it's a byproduct of the hydrocarbon oil
16 production, storage, or processing and cannot be avoid
17 during production.

18 Q. I understand that. My question is, you know,
19 again, the -- the scope of Claim 1, right, I'm trying to
20 understand what it covers.

21 Do you think it covers only byproducts produced
22 from an oil well?

23 A. I think there are two questions here, if I
24 understand correctly.

25 Q. Yeah.

1 A. Both questions you have is whether Claim 1
2 covers something beyond the byproduct of hydrocarbon
3 production, storage, or processing facilities.

4 Q. That's right.

5 A. Second question is whether the specification in
6 the patent are relevant to the claims.

7 Q. I'm -- I'm just interested in the scope of
8 Claim 1, right?

9 A. Yeah. So Claim 1 does not clearly state the
10 word "byproduct," but the specification does infer that
11 this is a byproduct of hydrocarbon oil production,
12 storage, or processing.

13 Q. Does the specification limit the scope of
14 Claim 1 to "byproduct"?

15 A. Well, I think there's a specification that
16 confirms these details. But again, this term "byproduct"
17 was not in the claim.

18 Q. Does the specification also talks about natural
19 gas produced as a, you know, main product as opposed to
20 "byproduct"?

21 A. I'm not aware of that in the specification.

22 Q. Oh, I thought we just looked at column 6, line
23 51. So let me read it to you again. "In Upstream
24 production oil and gas, natural gas may be produced as a
25 primary product, for example, from a gas well, or as a

1 byproduct from an oil production, for example, from an
2 oil well."

3 So is it still your opinion that the
4 specification limits the scope to "byproduct"?

5 A. Well, as I said, the claim does not include a
6 term "byproduct" directly. But a specification, as you
7 described just now, has a following sentence saying that
8 major gas produced as a byproduct or in production may be
9 used in various ways, and so on and so on, right after
10 that particular sentence.

11 Q. Uh-huh. Let's see. So if the natural gas is
12 produced as a primary product, right, that can still meet
13 Claim 1, right?

14 A. As long as the natural gas production is
15 considered as a source of combustible gas produced from a
16 facility, selected from a group consisting of a
17 hydrocarbon production, storage, or processing facility,
18 then I think it should be included.

19 Q. Are there -- sounds good.

20 And in terms of, again, the limitation of
21 continuous flow, what if, you know, the gas flows
22 continuously for one line then dries out?

23 Does that still count as continuous flow?

24 A. I will need some time to refer to my declaration
25 before responding.

1 Q. Sure.

2 A. I believe the question was raised in the
3 petition that some mentioned that gas supplied from oil
4 and fuel, it's limited and will eventually dry up.

5 In this particular case, I don't think it
6 supports -- if I'm supporting the specification and it's
7 not related to the product of flare gas, that's a
8 byproduct of hydrocarbon production described in this
9 particular patent.

10 The well may, at any time period, stop producing
11 hydrocarbon. Does not justify that any time period
12 language, because the patent is directed to a problem
13 that exists while flare gas is produced.

14 So someone with ordinary skill in the art will
15 not accept this particular proposed construction for the
16 continuous flow of combustible gas.

17 Q. I'm not trying to construe the claim. I'm just
18 curious about the scope of Claim 1, right?

19 Does Claim 1 cover the situation where the gas
20 dries up after months?

21 A. So I need to understand the question better.
22 Are you saying that, if a source of combustible gas would
23 dry up eventually, would that be qualified in this case
24 under Claim 1?

25 Q. That's right. As a continuous flow of

1 combustible gas?

2 A. So the key question here is how would you define
3 "dry up"? Dry up means -- does it mean the flow goes to
4 zero entirely or just not stopping producing?

5 Q. Just -- you know, it doesn't come out anymore.
6 There's zero gas coming out.

7 A. And is your question asking about after the gas
8 stop coming out, will it still be covered or not be
9 covered in this claim?

10 Q. Just, you know, before it dries up, does it
11 still count as a continuous source of natural gas?

12 A. Oh, okay.

13 MR. THOMPSON: Objection. Form; legal
14 conclusion.

15 THE WITNESS: So whether it dries up or not,
16 it's less relevant or irrelevant to the nature of being a
17 continuous flow of combustible gas, in my opinion. So as
18 long as this particular source of gas involved a
19 continuous flow of combustible gas, then it will fall
20 into this particular claim.

21 BY MR. ZHU:

22 Q. I see. So in your opinion, can you give me an
23 example of, you know, some gas source that does not count
24 as a continuous flow of combustible gas?

25 A. Absolutely. If you're talking about a sales gas

1 line, for instance, as a source of gas but not as a
2 source of hydrocarbon production, processing, storage
3 facility, you can turn off the valve, and there's no gas
4 coming out.

5 Q. I see.

6 So that, in your mind, doesn't satisfy the
7 limitation of continuous flow of combustible gas?

8 A. If it's something that we could manually adjust
9 to turn on and turn off, I would not consider it.

10 Q. I see.

11 A. And the --

12 (Reporter clarification.)

13 THE WITNESS: The emphasis here is on the manual
14 adjustment.

15 BY MR. ZHU:

16 Q. Interesting. So if -- for example, you know,
17 out of the casinghead gas, you know, facility, if there
18 is a safety valve, you can turn off the casinghead gas,
19 that, in your mind, doesn't count as, you know, meeting
20 Claim 1; is that correct?

21 A. No.

22 MR. THOMPSON: Objection to the incomplete --

23 (Reporter clarification.)

24 MR. THOMPSON: Incomplete hypothetical.

25 THE WITNESS: I probably would need more

1 specification in this context to understand how would you
2 stop the casinghead gas.

3 BY MR. ZHU:

4 Q. Just using the same safety valve, you know,
5 every production facility has, right, to just cut off the
6 gas flow?

7 A. I think, based on my understanding, these are
8 two different systems between example and mention and --
9 as production systems that we are discussing here.

10 In a sales gas line, if the valve is closed, the
11 gas may flow somewhere else or there is multiple
12 direction in the route. In a gas production systems, no
13 way of how the operation will be possible unless you
14 cease the production entirely.

15 Q. Oh, yeah. That's what I'm talking about.

16 If you cease the production entirely by manually
17 turning off the valve, does that still count as a, you
18 know, continuous flow of combustible gas to you, if you
19 have that capability?

20 MR. THOMPSON: Objection. Legal conclusion.

21 THE WITNESS: Well, this hypothetical scenario
22 was not presented in the petition or the previous
23 discussion, as far as I can remember, so I haven't got a
24 chance to formulate an opinion in this hypothetical case.
25 //

1 BY MR. ZHU:

2 Q. What information do you need to formulate an
3 opinion?

4 A. I will need to understand how the whole gas
5 system will be shut off and why defined this way, along
6 with some other details.

7 Q. Okay. Let me ask you a different question.
8 The --

9 (Reporter clarification.)

10 MR. ZHU: Yeah, yeah, yeah.

11 BY MR. ZHU:

12 Q. If you were drawing natural gas from a natural
13 gas reserve and you then shut off, you know, the outlet
14 of the natural gas reserve at any time, do you think that
15 natural gas reserve would satisfy the limitation of
16 continuous flow of combustible gas?

17 A. My understanding of this concept of continuous
18 flow of natural gas is that, when it's being continuous
19 after you shut off, then it will not be considered
20 continuous, as far as I could tell.

21 Q. But what about before you shut it off?

22 A. Can you, please, repeat your question in a
23 complete sentence?

24 Q. Yeah, yeah, yeah. Sure. So if you have a
25 natural gas reserve that, you know, you can draw natural

1 gas from the natural gas reserve, right, at any time you
2 want, and you have the option to shut it off at any time
3 you want, would you consider that, you know, still
4 satisfying Claim 1 as giving you a continuous flow of
5 combustible gas?

6 (Reporter clarification.)

7 MR. THOMPSON: Objection. Legal conclusion;
8 incomplete.

9 THE WITNESS: I would need some time to refer to
10 my declaration before forming my opinions.

11 BY MR. ZHU:

12 Q. Sure.

13 A. So as stated in my declaration, paragraph 44, I
14 would disagree with the opinion that you expressed just
15 now. It appears to me that you are stating the word
16 continuously in the claim such as that any time period
17 where flow is momentarily present is continuous. This is
18 inconsistent with the plain meaning of the plain language
19 that requires a continuous flow.

20 Q. I'm not sure how that's related to my
21 hypothetical. My hypothetical is you have a natural gas
22 reserve that keeps producing natural gas, but you have
23 the option to manually shut off the output from the
24 natural gas reserve.

25 Does that, you know, storage of natural gas,

1 meaning the natural gas reserve, still meet the
2 limitation of continuous flow of the natural gas?

3 A. Can you repeat your question? I'm a bit
4 confused now because --

5 Q. Yeah, yeah, yeah.

6 A. -- already.

7 Q. Sure.

8 So earlier, you mentioned the key distinction is
9 the ability to manually shut off the gas, right?

10 Or are you saying Claim 1 requires that you
11 don't have the ability to manually shut off the gas flow?

12 A. I disagree with that. When I said a manual
13 shutoff case is the specific example that you are asking
14 me what will be disqualified as a continuous gas flow.

15 Q. That's right.

16 A. And in that case, I bring up the sales gas line
17 as an example, citing that it could be manually shut off
18 and does not meet the specification in this case.

19 Q. Yeah.

20 A. But now, when we get back to this particular
21 claim language, as I mentioned just now, the continuous
22 character of these flare gas derived from flaring is a
23 byproduct of a hydrocarbon oil production, storage, or
24 processing and cannot be avoid during production.

25 Q. Well, let me ask you this. I understand you

1 said, you know, this limitation derived from the fact
2 that the gas is a byproduct, right?

3 But does this Claim limitation require that the
4 gas is a byproduct?

5 MR. THOMPSON: Objection. Asked and answered.

6 THE WITNESS: Well, as I stated just now and
7 replied just now, the current language does not include
8 the term "byproduct," but the patent specifications and
9 descriptions does infer some of the information.

10 I think it goes back to the earlier --

11 BY MR. ZHU:

12 Q. I --

13 A. -- mentioned in column 6, which you cite a
14 particular sentence about nature of gas production as a
15 main product, and then you miss the next sentence stating
16 nature of gas produced as a byproduct of an oil
17 production, et cetera, et cetera.

18 Q. I -- yeah. I don't know how that matters in
19 terms of my question. My question is, does Claim 1
20 require, you know, you don't have the manual option to
21 shut off the gas valve?

22 A. Well, Claim 1 does not state anything about a
23 manual option. Again, the manual option was the specific
24 example of the sales gas line that you asked me for
25 particular case.

1 Q. I see. So how can you distinguish something --
2 you know, whether it is continuous or not continuous if
3 the manual option is not a distinction?

4 A. Yes. I stated in paragraph 45 of my
5 declaration, which I just read, right, "The patent
6 specification confirms that continuous character of the
7 flare gas in the patent derives from the fact that it's a
8 byproduct of hydrocarbon oil production, storage, or
9 processing and cannot be avoid during protection.

10 "In remote areas where an oil field operator is
11 confronted with this continuous source of natural gas,
12 the operator is forced to do something with the excess of
13 stranded gas and is left with few options, such as
14 venting, flaring, or ceasing production."

15 Q. Yeah. Thank you. And I understand that's a
16 problem, you know, in the -- that's described in the
17 specification. But --

18 A. If I could just --

19 Q. Yeah, yeah, yeah. Go ahead.

20 A. Again, the recitation of a continuous flow of
21 combustible gas reflects that a combustible gas is
22 continuous byproduct of hydrocarbon production, storage,
23 or processing. And this is consistent with the regular
24 meaning of a continuous flow of combustible gas that may
25 be applied by a person of ordinary skill in the field.

1 Q. So, you know, as you use the term "continuous
2 flow of combustible gas," you know, in your everyday
3 life, do you think that requires the gas to be a
4 byproduct?

5 A. In my opinion, any term we use in our daily life
6 may not be directly applied to the term language of the
7 patent specifications because the claimed language,
8 claimed construction, and specific terms here will have
9 specific meanings based on the patent descriptions and
10 specifications.

11 Q. So in this case, do you think the plain and
12 ordinary meaning of the term "continuous flow of
13 combustible gas" should apply here, or do you think this
14 term needs a special claim construction?

15 A. Well, I think this is the whole discussion that
16 we have been repeating over the past hour, and this
17 context -- this term of continuous flow of combustible
18 gas definitely more some time constructions, as we see --

19 Q. I see.

20 A. -- here in paragraph 44 to paragraph 47 of my
21 declaration.

22 Q. I see. And so, I guess that answers my
23 question, right?

24 My -- my question was, do you think the plain
25 and ordinary meaning should apply, or do you think a

1 special construction should apply?

2 And is your answer that, you know, a special
3 construction shall apply?

4 A. I will not consider --

5 MR. THOMPSON: Objection. Mischaracterizes.
6 Go ahead.

7 THE WITNESS: I will not consider as a special
8 construction. The whole section out of paragraphs 44 to
9 48 is to clarify this claimed construction, based on my
10 understanding of the patent language and specifications.

11 BY MR. ZHU:

12 Q. And based on your understanding, does this term,
13 "continuous flow of combustible gas," requires the gas to
14 be a byproduct?

15 MR. THOMPSON: Objection. Asked and answered.

16 THE WITNESS: This '372 patent specification
17 confirms that the continuous character of a flare gas in
18 the '372 patent derives from byproduct of hydrocarbon oil
19 production, storage, or processing and cannot be avoided
20 during production.

21 BY MR. ZHU:

22 Q. I understand that. I'm just trying to
23 understand, you know, the scope of Claim 1, right, and
24 that -- what you just read to me, that paragraph, is not
25 very clear in terms of whether Claim 1 covers something,

1 you know, that is not by a byproduct.

2 A. I'm not sure if I understand your question. Can
3 you please repeat it?

4 Q. Yeah, yeah, yeah. For sure. Let me -- let me
5 ask you a different question.

6 If a source of natural gas is -- is a very
7 limited source of natural gas, you don't have the option
8 to manually shut it off, but it only flows for a day,
9 before it dries out, do you think that's still a
10 continuous flow of combustible gas?

11 A. I guess this is the same question that you were
12 asking just now, and as I reply in my declaration and
13 also in the previous responses, I disagree that a flow of
14 combustible gas that occurs for a few minutes and then
15 disappear will meet the limits of flow of combustible gas
16 that's continuous for at least a time period.

17 This particular proposal or hypothetical for the
18 case, it's inconsistent with the plain meaning of the
19 claim language requiring a continuous flow.

20 Q. So I guess, if it's only continuous for a few
21 minutes, you wouldn't consider that a continuous flow,
22 would you?

23 A. Can you have a complete question, please?

24 Q. If the natural gas only flows for a few minutes
25 and it dries up, would you still consider that a

1 continuous flow of combustible gas before it dries up?

2 A. Well, I probably have to read the same paragraph
3 again, as I've been repeating, right?

4 So the key issue is that we have to deal with
5 the plain meaning of the current language that requires a
6 continuous flow. And in this particular patent, it
7 confirms the continuous character of the flare gas in
8 this patent derives from a fact that it's a byproduct of
9 hydrocarbon oil production, storage, or processing and
10 cannot be avoid during production.

11 So the recitation of a continuous flow of
12 combustible gas refers that the combustible gas, it's
13 continuous, at some sort of varying production rate,
14 byproduct of hydrocarbon production, storage, or
15 processing. And this is consistent with the ordinary
16 meaning of a continuous flow of combustible gas that will
17 be applied by a person of ordinary skill in the field.

18 Q. Let me ask a different question.

19 Does Claim 1 require that the flow of natural
20 gas be continuous for a certain period of time?

21 A. Well, Claim 1 states that there's a source of
22 combustible gas. And then the second sentence of Claim 1
23 states that there is a generator connected to the source
24 of combustible gas to receive a continuous flow of
25 combustible gas to power the generator.

1 So there's no specification in this particular
2 sentence in response to a question about whether the have
3 the premise, but when you look at the plain meaning, as I
4 stated just now, the ordinary meaning of a continuous
5 flow of combustible gas refers that a combustible gas is
6 a continuous byproduct of hydrocarbon production,
7 storage, or processing, which was described in the first
8 sentence of the claim.

9 Q. I see.

10 So as long as it's a byproduct of carbon -- or
11 hydrocarbon production, it doesn't matter, you know, how
12 long it flows, right?

13 (Reporter clarification.)

14 MR. THOMPSON: Objection. Mischaracterizes.

15 THE WITNESS: I believe the discussion here is
16 about what we call continuous flow of combustible gas,
17 and I think your question is more about the time and the
18 flow rate, which is a bit different, right?

19 BY MR. ZHU:

20 Q. I understand. I'm just trying to get an
21 understanding of, you know, the scope of what is
22 continuous, what is not, right?

23 So I think, based on what you said to me, the
24 key limitation is that it should be a byproduct. Is that
25 the key distinction between something that is continuous

1 or not?

2 MR. THOMPSON: Objection. Mischaracterizes.

3 THE WITNESS: I think that was the same question
4 that we are describing over and over again. For this
5 particular patent's language, it does infer that the
6 continuous character of the flare gas derives from the
7 fact that it's a byproduct of the hydrocarbon oil
8 production storage and processing and cannot be avoid
9 during production.

10 BY MR. ZHU:

11 Q. Okay. So --

12 A. Not just specifically require that it has to be
13 a byproduct, but this term "byproduct" was in the context
14 of the patent specification.

15 Q. I see.

16 What about intermittent flow of combustible gas?

17 Would -- would you say that intermittent flow of
18 combustible gas, you know, still meets -- does that still
19 meet Claim 1?

20 A. Can you please define "intermittent" in this
21 context?

22 Q. It flows for five minutes, stops for five
23 minutes, and then, you know, starts flowing again for
24 another five minutes.

25 A. I think this is consistent with what you put --

1 you know, what the petitioner put in the petition, right?

2 And as I mentioned just now, I disagree that a
3 flow of combustible gas that occurs for only three
4 minutes and then disappear would meet the limit of the
5 flow of combustible gas that is continuous for a time
6 period.

7 Q. I see. So, for example, if we go to, you know,
8 Yellowstone and see the Old Faithful, it flows every
9 15 minutes or so, or five minutes, that wouldn't be
10 considered a continuous flow, would it?

11 A. I have --

12 MR. THOMPSON: Objection. Relevance.

13 THE WITNESS: I have never been to Yellowstone,
14 and I haven't had a chance to form an opinion based on
15 the hypothetical that you mentioned.

16 BY MR. ZHU:

17 Q. So in your opinion, are there casinghead gas
18 that is intermittent?

19 A. Are you asking about the possibility or are you
20 asking more for the practice?

21 Q. Just based on your scientific background or your
22 understanding of the nature of casinghead gas.

23 A. In most cases, the casinghead gas, the idea is
24 that it is continuous.

25 Q. So -- so are there intermittent casinghead gas?

1 A. Can you please describe "intermittent" in this
2 case?

3 How long it takes, how it --

4 Q. Yeah, yeah, yeah.

5 A. -- and defines, because --

6 Q. Let's use the same hypothetical.

7 Flows for five minutes, stops for five minutes,
8 and then flows again.

9 A. Do you think this is a hypothetical case or it's
10 a practice?

11 Q. I -- that -- that's my question.

12 Do you -- do you think that happens in reality?

13 A. Well, I'm not aware of this case, but I will not
14 deny the existence if that really happens.

15 Q. Yeah. So let's assume it really happens. Would
16 that meet Claim 1?

17 A. So can you tell me why it would exist? Because
18 I'm trying to figure out why --

19 Q. Well -- sure.

20 A. -- it exists, and it's very hard for me to say
21 it's something that exists --

22 Q. Yeah, yeah, yeah. I understand.

23 A. I'm not aware of this case, but I would
24 appreciate it.

25 Q. For sure.

1 My understanding is the flow of gas is affected
2 by a lot of factors, right? For example, temperature
3 changes, you know, geographical movements or, you know,
4 microbiomes in the -- in the gas reserve.

5 So for any of the variety of factors -- for
6 example, temperature changes throughout the day, the gas
7 flows for five minutes, you know, and slows down to zero
8 and then flows back up again, would you think that that
9 still meets Claim 1?

10 MR. THOMPSON: Objection. Form; incomplete.

11 THE WITNESS: Well, I would need some time to
12 think about this case because it's a bit far away from
13 the practice that I'm aware of. I would need time to
14 formulate my opinions on this.

15 BY MR. ZHU:

16 Q. How long do you need?

17 A. I'm not sure. I need to think about that.

18 Because this is a hypothetical case, and I have
19 difficulty understanding how the casinghead gas could go
20 down to zero and then suddenly come up.

21 Q. Okay. Let's talk about Upstream's products.

22 How many products does Upstream have?

23 A. I was not presented with this information, so I
24 can't answer this question.

25 Q. How many of Upstream's products are you aware

1 of?

2 A. I believe there is something called Upstream
3 Data hash generator and hash hut.

4 Q. I see. So are those the only two products you
5 reviewed?

6 A. Based on the information I received, these are
7 the products that I become aware of, but I'm not able to
8 present any facts about Upstream's products.

9 Q. I see.

10 So in your declaration, you said, you know,
11 "However, systems such as Upstream Data hash hut and hash
12 generator embodied claims 124 of the '372 patent."

13 Is your opinion limited to those two products,
14 or you know, are you generally referring to, you know,
15 other systems of patent owners?

16 A. Again, I was presented with information about
17 Upstream Data hash hut and hash generator, so I form my
18 opinions using these two cases as examples. Upstream
19 Data may or may not have our products that are involved
20 in these claim terms, but those would be on my current
21 information.

22 Q. I see. So based on your understanding of the
23 hash generator, what kind of gas orders can a hash
24 generator run on?

25 A. Can you, please, repeat the question?

1 Q. Yeah, yeah, yeah.

2 What kind of gas source can a hash generator run
3 on or utilize?

4 A. An example will be a source of combustible gas,
5 such as gas produced in oil well head.

6 Q. Can a hash generator run on normal gas from a
7 gas tank?

8 A. I cannot answer this question because this is
9 beyond the information presented to me.

10 Q. I see.

11 So when you say the hash generator embodies
12 Claim 1, I'm just trying to understand, you know, each
13 limitation -- how each limitation in Claim 1 is met,
14 right?

15 So Claim 1 requires multiple blockchain mining
16 devices, right?

17 (Reporter clarification.)

18 MR. ZHU: Blockchain mining devices.

19 BY MR. ZHU:

20 Q. What are these multiple blockchain mining
21 devices in the hash generator?

22 A. Can you, please, formulate a complete question?
23 I try to understand the question.

24 Q. Yeah, yeah, yeah.

25 What are the multiple blockchain mining devices

1 in a hash generator?

2 A. So based on my reading of the petition and the
3 patentholder's response, there are two views of these
4 blockchain mining devices in Upstream's products' case.

5 In the petition, which coming from petitioner,
6 it states that an installation with a single Upstream
7 Data system with plural mining servers meet limitations.
8 And there was somehow, at some point, you see from the
9 figure on the photo around the paragraph 76.

10 In an alternative view, from the patent owner
11 side, a blockchain mining device will involve the entire
12 box, as you could see in the photo and the paragraph 78.
13 And that particular photo shows multiple blockchain
14 mining devices.

15 Q. So I understand there are two different views,
16 right. Do you endorse both views or do you think, you
17 know, one is wrong and one is right?

18 A. In my opinion, the case having the whole box
19 consider as a blockchain mining device will be more
20 consistent with the claim language and the
21 specifications. So in other words, I disagree with the
22 petitioner view.

23 Q. I see.

24 So in the petitioner's view -- sorry. Can you
25 describe to me the petitioner's view again?

1 A. Yes. In paragraph 77, I stated that petitioner
2 has identified a single crypto --

3 (Reporter clarification.)

4 THE WITNESS: Yes.

5 Petitioner has identified a single crypto cube
6 or perifca [phonetic] system with multiple Aztec mining
7 servers as satisfying the blockchain mining devices, each
8 having a mining processer limitation.

9 BY MR. ZHU:

10 Q. I see. Thank you.

11 So in your view, if the entire container in the
12 figure shown on paragraph 78 is one blockchain mining
13 device, then, you know, would a deployment of just one of
14 these boxes meet Claim 1?

15 A. Well, Claim 1 states that blockchain mining
16 devices, as the prior subject, implies two or more
17 devices together.

18 Q. I see.

19 So if you look at the picture in the previous
20 page, in paragraph 76, would that, you know, single
21 container box meet Claim 1?

22 A. So if it's following the petitioner's view, then
23 yes. But based on my understanding, they would require
24 two or more units.

25 Q. I see.

1 So are you saying, you know, what is shown here
2 in this figure does not meet Claim 1?

3 A. Based on my understanding, that's the case.
4 Because Claim 1 recites blockchain mining devices that
5 involve two or more units. If we say each container,
6 each box, it's a mining device, then this photo does not
7 meet the limitation.

8 However, if we follow the petition's view, let
9 the whole system with multiple ASIC mining server will
10 satisfy the blockchain mining devices, each having a
11 mining processor limitation, then the single container
12 case will meet Claim 1.

13 Q. I see.

14 So, yeah, let's talk about this picture a little
15 bit. I see a container box that's been marked as
16 Upstream Data hash generator or hash hut, right? And
17 then I also see some green towers on the left of this
18 picture. Do you know what those were?

19 A. Well, I did not present with this information
20 about green towers, so I prefer not to make a conclusion
21 here.

22 Q. I see.

23 There -- I think there is another -- something
24 like a hut, you know, right next to the green towers.

25 Do you know what that is?

1 A. I'm not sure which one you are referring to.

2 Q. So there are, you know, two container boxes,
3 right. One is the one that's labeled Upstream Data hash
4 generator or hash hut, and to the left of it, there is
5 another container.

6 Do you know what that is?

7 A. I was not presented with that information, so I
8 would prefer not to make a conclusion I express my
9 opinion on this.

10 Q. Okay. So in your opinion, the term blockchain
11 mining devices, does it require certain components inside
12 it?

13 A. Yes. As stated in Claim 1C, the blockchain
14 mining devices each have a mining processor and are
15 connected to a network interface. The inter -- network
16 interface is connected to receive and transmit data
17 through the internet to a network that starts or has
18 access to a blockchain database.

19 The mining processors are connected to the
20 network interface, and adapted to mine transactions
21 associate with the project database and to communicate
22 with the blockchain database. The network is a
23 peer-to-peer network. The blockchain database is a
24 disputed database start on protonos in a peer-to-peer
25 network. And the blockchain database stores

1 transactional information for digital currency.

2 Q. So does Claim 1 require that the blockchain
3 mining devices are connected to a network interface?

4 A. So as stated in the claim language, it recites
5 that the blockchain mining devices, each have a mining
6 processor and are connected to a network interface.

7 Q. So does that require each of these blockchain
8 mining devices be connected to a network chain interface?

9 A. So that was the same sentence that I just
10 replied. The blockchain mining devices each have a
11 mining processor, and the blockchain mining devices are
12 connected to a network interface.

13 Q. Does it require that multiple blockchain mining
14 devices be connected to the same network interface?

15 A. I don't think the word "same" is included in the
16 claim language. And again, here, when it says a network
17 interface, as we recited in the paragraph right before
18 the claim, the indefinite article "an" and "a" before a
19 claim feature do not exclude more than one of the feature
20 being present.

21 Q. So I guess, in your view, do you read the
22 sentence, you know, are connected to a network interface
23 to mean are connected to one or more network interfaces?

24 A. It could be understood, in my opinion, that they
25 could be connected to one single network interface or

1 multiple network interface, based on the definition that
2 indefinite articles "an" and "a" before a claim feature
3 do not exclude more than one of the features being
4 present.

5 Q. I see.

6 Does Claim 1 require that the network interface
7 be part of the blockchain mining device?

8 A. I need to refer to my declaration to form my
9 opinion.

10 Q. Sure.

11 A. Would you please repeat your question?

12 Q. Sure.

13 Does Claim 1 require that the network interface
14 be a part of the blockchain mining device?

15 A. So Claim 1 states that the blockchain mining
16 devices are connected to the network interface. So it
17 may or may not be part of the network, but may not be
18 part of the -- may or may not be part of the blockchain
19 mining devices.

20 Can I request a break of five minutes?

21 Q. Yeah, yeah, yeah. Of course. Time now is 3:01.
22 How about 3:11?

23 A. Thank you.

24 Q. Okay.

25 (A recess was held from 3:01 p.m. to 3:11 p.m.)

1 BY MR. ZHU:

2 Q. All right. Welcome back, Dr. You.

3 Dr. You, before the break, we were talking about
4 the claim language, blockchain mining devices and network
5 interface.

6 Do you think these are two separate components
7 in Claim 1 system?

8 A. No, I don't think so. Previously, I believe you
9 asked me whether the network interface should be within
10 the blockchain mining devices, and my response was that
11 it may or may not be within the network mining devices.
12 However, the specification on the claim language does
13 require the blockchain mining devices to connect to the
14 network interface.

15 Q. Uh-huh.

16 A. So if you agree that the blockchain mining
17 device, it's the entire container, the question you're
18 asking was, basically, can we move this network
19 interface, for example, some sort of a cellular or
20 satellite -- outside the container.

21 (Reporter clarification.)

22 THE WITNESS: Cellular or satellite module.

23 So those are some of the example network
24 interface. They do not have to be within the container,
25 but from an engineering perspective, if you have a

1 container, what's the reason of putting it outside unless
2 there's a specific purpose?

3 The key issue in this claim language is that
4 they must be connected, and that's the key issue. The
5 location of this particular network interface is less
6 relevant to the claim language, in my opinion.

7 BY MR. ZHU:

8 Q. I see.

9 I think I asked this question before. Do you
10 think the generator and the blockchain mining device are
11 separate components in the system?

12 A. Yes. I remember we discussed this question in
13 the morning, and my response at the time was thinking
14 that the blockchain mining devices are connected to the
15 generator, as stated in the claim.

16 Q. Yeah. Do you think these are different
17 components of the system?

18 A. So can you specify which system we are referring
19 to?

20 Are we referring to the system in the claim
21 language Claim 1, a system comprising ABC?

22 Q. That's right. Yeah. That's exactly what I
23 meant.

24 A. So my understanding is that the whole system
25 involves some elements called blockchain mining devices,

1 and there's a generator. The generator could be
2 indicated within the devices or not. It's less relevant.
3 It's just that the location of its elements.

4 But if we're talking about functions and
5 sub-elements within the blockchain mining devices, then
6 the sub-elements of the blockchain mining devices does --
7 do not include the generator.

8 Q. So can the generator be located in the
9 blockchain mining device?

10 A. So again, it would depend on how we define the
11 blockchain mining devices, right, or particular
12 blockchain mining device.

13 A device involves multiple elements. In this
14 particular context, if we agree that a device includes
15 the container -- if we agree that the device includes the
16 container as shown in the pictures and the paragraph 76
17 and 78, or in the picture after that, it does not mean
18 that everything in the container is part of the
19 blockchain mining devices. That is, some elements
20 relevant to the function of the blockchain mining devices
21 are part of this device.

22 Q. I see.

23 So are you saying the blockchain mining devices
24 may be a subpart of the entire container?

25 A. So it depends on how you define the container.

1 Are you talking about a box, or are you talking about
2 everything in the box? It sounds to me that you're
3 saying that it's everything in the box, including the box
4 itself.

5 Q. Yeah.

6 A. I think what I was referring to is that, when we
7 try to think about blockchain mining devices, it includes
8 the box and those relevant elements within the box.
9 Where the generator is in the box or outside the box,
10 it's irrelevant to the blockchain mining device because
11 the blockchain mining device is not a generator, based on
12 the particular sentence here.

13 Q. I see. I see what you're saying.

14 So my understanding is, if you look at the
15 picture in paragraph 76 or, you know, 78, there is a big
16 container, and it has multiple components inside. And in
17 your view, you know, some parts of the entire container
18 can be the generator, some part of the entire container
19 can be the blockchain mining device.

20 Is that correct?

21 A. Again, the container, we're talking about the
22 box, not the items inside.

23 Q. That's correct.

24 A. This is just an example that if I have a box of
25 a computer, I can still put some stuff inside the box of

1 the computer.

2 Q. I see. I see.

3 Let's see. So are there any other components in
4 the -- you know, in the hash generator other than the
5 blockchain mining device and the generator?

6 A. Well, as I stated in paragraph 80, which is
7 right under the paragraph we are discussing just now,
8 each Upstream Data blockchain mining device, such as a
9 hash generator or a hash hut, houses a number of mining
10 processes, as you can see in the feature below.

11 And then each miner is connected to the hash
12 generator's or hash hut's network interfaces, as
13 illustrated in the rule tables in the screen. The
14 interface, typically, comprised a cellular or satellite
15 module, including the corresponding --

16 (Reporter clarification.)

17 THE WITNESS: Including the corresponding
18 antennas, A-N-T-E-N-N-A-S. Antennas visible in the image
19 of multiple house generator and storage of that. The
20 modem comprises an internet connection with access to
21 nodes comprising a blockchain database.

22 BY MR. ZHU:

23 Q. So for these individual basic miners, are you
24 saying those are the mining processes in Claim 1?

25 A. Can you -- can you specify what those are when

1 you refer to --

2 Q. Yeah, yeah, yeah.

3 The one you just described, we're looking at the
4 picture in paragraph 80, right, where we have some little
5 internet cables connecting multiple -- I guess it's M9 or
6 S9 basic miners.

7 Are these basic miners the mining processors in
8 Claim 1?

9 A. The S9 is the example we presented here in
10 paragraph 82 -- -

11 Q. Right.

12 A. -- and we say miner such as S9 comprises hash
13 bolts with dedicated blockchain mining and controller
14 performing a number of functions, including network
15 communication with blockchain database nodes.

16 Q. Let me ask you a different question.

17 What are the mining processors in hash
18 generator?

19 A. I was not presented with the full information of
20 hash generator because my understanding is that it's a
21 property with some evolving features, and there could be
22 some a variety of mining processors.

23 Q. So I believe, in paragraph 80, you said, you
24 know, the hash generator includes M9 or S9 as in miners;
25 is that right?

1 Is that correct?

2 A. And I was -- that's correct, but I was
3 specifically referring to the picture right under this
4 paragraph.

5 Q. Correct. So earlier you testified, you know,
6 the hash generator embodies Claim 1, right?

7 So there must be a claimed processor in the hash
8 generator; is that correct?

9 A. Can you, please, repeat your question?

10 Q. Sure.

11 Earlier, you testified that hash generator
12 embodies Claim 1; is that correct?

13 A. Yes.

14 Q. And does Claim 1 require a mining processor?

15 A. Yes. And as I stated in paragraph 80, each
16 Upstream Data blockchain mining devices, such as the hash
17 generator or hash hut, houses a number of mining
18 processors.

19 Q. And what are these mining processors?

20 A. Well, I can give you an example, but I cannot
21 give you an extensive list because that's more about the
22 business and operations and Upstream Data.

23 Q. Sure.

24 A. So you can see from this particular photo,
25 right, in paragraph 80, it is this big name, miner S9

1 basic miner, as the example.

2 Q. Okay. Yeah. Let's call it S9 miners to be
3 short.

4 So in your review of these SM miners, are the
5 mining processes in the hash generator, correct?

6 A. Yes, I did state in paragraph 80 that a miner,
7 such as S9, comprises hash wall with the dedicated
8 blockchain mining ASIC and the controller performing a
9 number of functions, including network communicate with
10 blockchain database nodes, and I didn't think they meet
11 the specification and limitations of the time.

12 Q. I understand.

13 And are these mining processors part of the
14 blockchain mining device?

15 A. As I stated just now, each Upstream Data
16 blockchain mining device houses a number of mining
17 processors.

18 Q. And each hash generator, does it also contain a
19 generator?

20 A. I was not presented with the detail information
21 about a generator, so I cannot formulate a concrete
22 response to this question.

23 Q. Okay. Let me ask you another question.

24 Does Claim 1 require a generator?

25 A. So can you be more specific?

1 Are you talking about a physical generator
2 included in the system, or are you talking about a
3 physical generator included in the blockchain mining
4 device?

5 Q. I'm talking about a physical generator included
6 in the system.

7 A. As stated in the second sentence of Claim 1, a
8 generator connected to the source of combustible gas to
9 receive a continuous flow of combustible gas to power the
10 generator.

11 Q. Yeah. Let me ask the second question again.
12 Does Claim 1 require a generator?

13 A. That was my response, right?

14 Claim 1 says that a system includes a few
15 elements, and one element is that a generator connected
16 to the source of combustible gas to receive a continuous
17 flows combustible gas to power the generator.

18 Q. I see.

19 So in the hash generator, do you understand what
20 the generator is?

21 A. I was not presented with that detail
22 information, so I cannot answer this question.

23 Q. But do you believe the hash generator has a
24 generator inside?

25 A. So as you can see from the photo and the

1 paragraph 78, for the specific unit presented in that
2 photo, my understanding is that there is a generator, but
3 I don't have concrete information about these details.

4 Q. Do you think the generator is a subpart of the
5 hash generator product?

6 A. I'm not sure where I would get this information.
7 That would require me to look into Upstream's data
8 product information, and I was not aware of this
9 information before this session, so I do need more
10 information to formulate my opinion.

11 Q. Well, you did tell me, like, an opinion that the
12 hash generator embodies Claim 1, right?

13 A. Well, hash generator embodies Claim 1, but I
14 think your question is whether a generator is included in
15 the particular container, right?

16 Q. So what's your definition of the hash generator?
17 Does that include something in addition to the
18 container?

19 A. Yes, I believe so. As the product that they are
20 selling, my understanding is that it also include some
21 ancillary items, such as connect -- you can refer to the
22 photo right under paragraph 76.

23 So there are some additional pieces to connect
24 this box with the source of combustible gas. And that --
25 as far as I could understand, it's also part of the

1 product portfolio by Upstream Data.

2 Q. So what additional components are there outside
3 of this container box?

4 A. Well, for example, I think, in the photo, it
5 shows a pipe connecting a gas source with generator.

6 Q. Do you think the pipe is part of the hash
7 generator product?

8 A. Well, I will not say it's part of the product,
9 but I believe, to make whole system work, the whole
10 system, as we discussed in Claim 1, we have to connect
11 these blockchain mining devices to the generator, and
12 then the generator to connect to the source of
13 combustible gas.

14 Q. Yes. My -- my question is, are there other
15 components outside of this container box, you know, a
16 part of the hash generator product?

17 A. Again, I was not present with this information
18 about a -- specific components of the hash generator
19 products, so I haven't -- I won't be able to formulate a
20 response.

21 Q. Yeah. So let's look at this picture in
22 paragraph 76. The container box that's labeled Upstream
23 Data hash generator or hash hut, right, and there is
24 another arrow pointing to this container box saying
25 "generator," right?

1 So do you think the generator is located in this
2 container box?

3 A. From the photo, my guess is that the generator
4 is in the box. But again, I don't have concrete
5 information about this photo behind it.

6 Q. Okay. So in your view, the generator can be
7 within the container, or it can be without -- can be
8 outside of the container; is that correct?

9 A. Are you talking about a product or the claims?

10 Q. The product. The hash generator product.

11 A. Well, for the product, it's up to Upstream Data
12 to decide because it's their product.

13 Q. Well, you identified the product embodies
14 Claim 1, right, so it must have a generator.

15 Is that correct?

16 A. I guess your question is whether the product
17 contains the generator or not.

18 Q. Uh-huh.

19 A. Are you asking me whether the generator is part
20 of the Upstream Data's product?

21 Q. Yeah.

22 A. I would need a few minutes to formulate my
23 response.

24 Q. Okay.

25 A. Can I request the deposition from Mr. Barbourso

1 that I could review some materials that he presented?

2 Q. Sorry. What -- what are you requesting?

3 A. Can I request the declaration from Mr. Barber,
4 the inventor --

5 Q. Sure.

6 A. -- and also see the data?

7 Q. Yeah, yeah, yeah. I can -- I can find that for
8 you.

9 There are two different declarations from
10 Mr. Barber. Let's see if I can find the right one.

11 Yeah. I believe this is the right one.

12 Okay. I'm going to introduce Exhibit No. 11.

13 (Exhibit 11 was marked for identification.)

14 THE WITNESS: Okay. I see the information.
15 I'll download it.

16 Yes. I see -- sharing this document, page 14,
17 1-4, paragraph 21, in Mr. Barbour's declaration, it reads
18 that the '372 patent was deployed in October 2017 and
19 called a hash generator, or hash gen. It incorporated a
20 natural gas power generator, a Bitcoin mining system, and
21 associate control system, all housed within the portable
22 shipping container.

23 The purpose of this product was to place an oil
24 well with gen gas, associate gas. The gas will be used
25 to fuel the generator and power the blockchain mine, and

1 the control system will regulate the blockchain mining
2 load on the generator to keep it within operating spec.
3 Today, the newer commercial integrations of this hash
4 generator continue to be Upstream Data's best selling
5 product.

6 So I hope this paragraph from Mr. Barbour's
7 declaration answers your question.

8 Q. I think it does. So it does say both the
9 generator and the Bitcoin mining systems are housing in
10 one portable shipping container. So in your mind, is
11 an -- is the blockchain mining device a subpart of the
12 entire portable container?

13 A. So again, in my view, the blockchain mining
14 devices, as long as they meet the specifications
15 described in the claim language such that the blockchain
16 mining devices each have a mining processor and are
17 connected to a network interface, the network interface
18 is connected to receive and transmit data through the
19 internet to a network that starts and assess a blockchain
20 date base.

21 The miner processors are connected to the
22 network interface and adapted to my transactions
23 associated with the blockchain database. And to
24 communicate with the blockchain database, the network is
25 a peer-to-peer network. The blockchain database is

1 distribute database start on proto nodes on the
2 peer-to-peer network. And the blockchain database starts
3 transactional information for digital currency.

4 If it meets all the claim languages, then it
5 will be considered as a blockchain mining device.

6 Q. So does the combination of the S9 miners and the
7 network interface meet these limitations you just read?

8 A. So are you referring to the blockchain mining
9 device or blockchain mining processor?

10 Q. Blockchain mining device.

11 A. So I need to point out that the claim language
12 includes blockmining processors, including the network
13 interface and some specifications of the network and the
14 corresponding project database. As long as all the
15 specifications are met, then yes.

16 Q. Okay. So in other words, you know, for example,
17 if hash generator has ten S9 miners, then the collection
18 of the ten S9 miners can also be viewed as a blockchain
19 mining device, right?

20 A. I would need more details and context of this
21 hypothetical question. Are you saying all the S9 miners
22 are in the container --

23 Q. Yeah.

24 A. -- already connected to the network interface?

25 Q. That's right.

1 A. Can you tell me how they're connected to the
2 network interfacing?

3 Q. Through Ethernet cable.

4 A. Are you referring to the photo right under
5 paragraph 80 of my declaration?

6 Q. That's -- that's correct.

7 A. If it's the case in that particular photo, my
8 understanding is that there will be something like
9 Upstream Data's products. Then, yes, they will meet --
10 you know, the whole system will become the network --
11 blockchain mining device.

12 Q. I see.

13 In other words, you know, it doesn't require the
14 entire container and everything within to meet the claim
15 limitation of blockchain mining device, correct?

16 A. The container itself, it's a box. So the
17 container, it's not in the claim language.

18 Q. So there are -- there are different components
19 within the container, right?

20 One -- one big part is the generator; is that
21 correct?

22 A. Are you talking about hash hut or hash
23 generator?

24 Q. Hash generator.

25 A. So for hash generator, I stated in Mr. Barbour's

1 declaration there is a generator located within the box.

2 Q. And there is also a Bitcoin miner system within
3 the box; is that correct?

4 A. Let me go back to Mr. Barbour-- the document you
5 just shared.

6 Yes. It says that -- it reads in paragraph 21
7 of Mr. Barbour's deposition -- or sorry, declaration, it
8 incorporates a natural gas power generator, a Bitcoin
9 mining system, and associate control system.

10 So it does include something else beyond a
11 Bitcoin mining system and a power generator. An
12 associate control system is also described in
13 Mr. Barbour's declaration.

14 Q. For example, that can be the controller to
15 control the load of the mining processors, right?

16 Is that your understanding of the associated
17 control system?

18 A. So there are many parameters and many variables
19 to control and many physical systems involved in this
20 invented system. So it's hard to say a single controller
21 also referring to this whole control system as a whole
22 system.

23 Q. I understand.

24 So based on your reading of this paragraph from
25 Mr. Barber, would you say the Bitcoin mining system

1 itself, without a generator, would meet the claimed term
2 blockchain mining device?

3 (Reporter clarification.)

4 THE WITNESS: Well, again, the claim term
5 requires that the blockchain mining devices connected to
6 the generator. So if you have the blockchain mining
7 system that's not connected to the generator, then it
8 will not meet the specification.

9 But in this particular case, I do believe they
10 are connected, based on the declaration.

11 BY MR. ZHU:

12 Q. Did you ever think the generator is also a part
13 of the blockchain mining device?

14 A. No. I don't think the generator is a blockchain
15 mining device.

16 Q. Do you think the associated control system is a
17 part of the blockchain mining device?

18 A. So here, I think we need to differentiate again
19 the term "control." In the generator, there could be
20 controllers. In a blockchain mining system, there could
21 be controls. And outside these systems, there could be
22 other controls. So there are controllers everywhere.

23 Q. So I guess what you're saying is this associate
24 control system may or may not be a part of the blockchain
25 mining device; is that correct?

1 A. Yes. That's correct. But the more important
2 piece, I'll argue, is that we have -- there should be
3 some -- there could be there could be controllers in a
4 power generator. There could be controllers in a
5 blockchain miner systems. They are not included in the
6 so-called associate control systems.

7 Q. I see.

8 And in your view, are the mining processors a
9 part of the blockchain mining device?

10 A. As stated in the claim, the blockchain mining
11 devices each have a mining processer, and that connected
12 to a network interface.

13 Q. Let me ask you the same question again.

14 In your view, are the mining processors a part
15 of the blockchain mining device?

16 A. So the mining processors or the mining devices
17 should have the mining processors, and that's what I
18 responded just now.

19 Q. Should have, but -- well, when you say should
20 have, does -- do you mean must have?

21 A. Well, based on the claim, again, the mining
22 devices each have a mining processors. And it was
23 described in the claim, so yes, I guess so.

24 Q. I see.

25 So in your view, is the mining processer a

1 necessary component of the blockchain mining device?

2 A. So if you are talking a blockchain mining device
3 and blockchain mining processor, in the claims, in this
4 particular patent, then the claim language would read
5 that blockchain mining devices each have a mining
6 processor. Then this would be -- you know, the mining
7 processor would be a required component of the blockchain
8 mining device.

9 Q. I see.

10 Are there any other required components of the
11 blockchain mining device other than the mining processor?

12 A. Are you talking about Claim 1, specifically, or
13 are you referring to all the claims?

14 Q. I'm just talking about Claim 1.

15 A. So in Claim 1, there's also a particular
16 sentence stating that mining devices each have a mining
17 processor in and are connected to a network interface, so
18 there should be some connectivities always.

19 Q. But do you think the network interface is a
20 necessary component within the blockchain mining device?

21 A. I guess this was the question that we just
22 discussed before the break, right?

23 The connection to the network interface, it's
24 necessary because that's defined in the claim made.

25 Q. Uh-huh.

1 A. Whether this particular network interface is in
2 the device or outside the device, it's less regulated.

3 Q. I see. Got it. So let me ask the same question
4 again.

5 Other than the mining processor, is there any
6 other necessary component within the blockchain
7 blockchain mining device?

8 A. Well, as I stated, there should be
9 connectivities to the network interface, and there could
10 be some associate control systems to ensure the entire
11 engineering systems were integrated and functioning.

12 Q. So if I just put two S9 miners in the box, do
13 you think that box can be called a blockchain mining
14 device?

15 A. Are they connected to the network interface?

16 Q. Yes, they are.

17 MR. THOMPSON: Objection. Incomplete.

18 THE WITNESS: Are they meeting all the
19 specifications of Claim 1?

20 BY MR. ZHU:

21 Q. Let me go back to that picture in your
22 declaration, paragraph 80.

23 A. Yep.

24 Q. So paragraph 80, you see a rack full of S9
25 miners, right?

1 A. Yes. That's shown in the picture.

2 Q. Yeah. Well, they're actually two racks, right,
3 one on the left and one on the right?

4 Let's just say the rack on the right is a rack,
5 you know, comprising a bunch of SM miners connected by
6 Ethernet cables to the network interface. Would you say
7 that rack on the right is a blockchain mining device?

8 A. I will need to be more specific to understand
9 your question.

10 Q. Sure.

11 A. First, how did you draw the box?

12 And second, are you referring to the blockchain
13 mining devices that discuss in Claim 1 --

14 Q. Yeah.

15 A. -- the related question in Claim 1 increases
16 that blockchain mining devices connected to the
17 generator, as stated in the third sentence of the claim?

18 So I do need to have more information before I
19 can respond to your question, which is somehow
20 incomplete.

21 Q. Let's see. So does -- in your mind, does the
22 blockchain mining device require a cooling device?

23 A. Can you repeat the question? What device?

24 Q. A cooling device, like a fan or AC.

25 A. So are you asking for the blockchain mining

1 device or blockchain mining processor?

2 Are you asking for the specific case in this
3 Upstream Data system or are you asking more for generic
4 cases?

5 Q. I'm asking regarding the scope of Claim 1, the
6 meaning of the term "blockchain mining devices" in Claim
7 1, does that term require the presence of the cooling
8 device?

9 A. Well, the term "cooling" was not presented in
10 Claim 1. But in practice, most -- I would not say all --
11 most computing facilities involve some soft cooling
12 systems because of the heat generated in the
13 computational process.

14 Q. I see.

15 Does the blockchain mining device in Claim 1
16 require network equipment?

17 A. Can you specify the network equipment here?
18 Because the equipment could mean many other
19 things.

20 Q. Let's say network interface.

21 Does -- does the blockchain mining device have
22 to have a network interface?

23 A. So as stated in the claim, it requires the
24 blockchain mining devices each have a mining processor
25 and are connected to a network interface. So this was

1 the question I answered just now. It has to be connected
2 to a network interface, but whether the network interface
3 is within or outside the box is less relevant.

4 Q. I see.

5 Can a personal computer be a blockchain mining
6 device?

7 A. Are you talking a blockchain mining device as
8 defined in Claim 1?

9 Q. Yes, as -- as defined in Claim 1.

10 A. So as I mentioned just now, Claim 1 clearly
11 stated that blockchain mining devices connected to the
12 generator. So --

13 Q. Yeah. So if the generic personal computer has
14 connection to the network interfaces and is connected to
15 the generator, can it satisfy the term "blockchain mining
16 device"?

17 MR. THOMPSON: Objection. Incomplete.

18 THE WITNESS: Again, Claim 1 has some
19 limitations and specifications of the term "blockchain
20 mining devices." If you believe a personal computer
21 could be adapted and customized to meet all these
22 limitations, then the answer is yes. If they cannot be
23 adapted to meet all these limitations, the answer is no.

24 The personal computer, by itself, is a very
25 broad concept, so we need to be specific.

1 BY MR. ZHU:

2 Q. Is there any reason a personal computer cannot
3 be adapted to meet these limitations?

4 A. For example, it's very unusual to connect a
5 personal computer to a power generator directly.

6 Q. I understand.

7 And is there any reason a personal computer
8 cannot be connected to a power generator?

9 A. Well, there's no reason saying it cannot be. A
10 personal computer could be adapted to meet all these
11 specifications, when they meet all these limitations and
12 satisfy the constraints as defined as a blockchain mining
13 device.

14 Q. I see.

15 Let's take a look at figure 4 of the '372
16 patent. Let me share my screen.

17 So figure 4 shows many components, right?

18 A. Yes.

19 Q. On the right side, it shows, you know, a bunch
20 of mining processors, and on the left-hand side, it shows
21 a splitter, a ventilation fan, a chiller. I don't know
22 what number 80 is.

23 Do you know what number 80 is?

24 A. I need to refer to the patent before I respond
25 to your question.

1 Q. Sure.

2 A. I think on column 16, it reads that 80 is a
3 stepdown transformer.

4 Q. I see.

5 So are these necessary components of the
6 blockchain mining device?

7 A. I would need to refer to the patent for a few
8 minutes before getting back to you.

9 Q. Sure.

10 A. So as stated in column 6 -- on the top of column
11 6, line 1 to 4, it reads that figure 4 is a schematic
12 depicting a blockchain mining device with a priority of
13 mining processors and associate control and network
14 agreement housed within a portable enclosure.

15 So the big box is the portable enclosure to be
16 illustrated here.

17 Q. So I guess, you know, based on your
18 understanding of Claim 1, other than the mining
19 processer, are there any other required components?

20 A. Again, the connection to the network interface
21 will be necessary.

22 Q. Yeah. So -- go ahead.

23 A. Our components are not specified in the claim
24 language. But for system and engineering system to
25 function properly, they are necessary.

1 For instance, the cooling system, the fan, as we
2 discussed just now, it -- they were not stated explicitly
3 in the claim language, but it does not make sense for an
4 energy intensive computing facility to operate without
5 any cooling or venting system.

6 Q. I see.

7 Other than the mining processor and the
8 connectivity to the network interface, does Claim 1
9 require any other components or the blockchain mining
10 device?

11 A. Well, again, Claim 1 states that a blockchain
12 mining device is connected to the generator. So the
13 connection to the generator is also a requirement, and
14 that's one of the major issue we discussed in the first
15 two sentence of Claim 1.

16 In terms of the mining device, there are issues
17 about mining processor connectivity to the network
18 interface and some specifications of the mining processor
19 and network interface that we had discussed before as
20 well. So there are essential components of the mining
21 device.

22 Q. I see.

23 So if I, you know, counted correctly, there are
24 three things that's needed for the blockchain mining
25 device, right?

1 One is mining processor, one is connectivity to
2 the network interface, and one is connectivity to the
3 network generator.

4 Is that correct?

5 A. So for each of these elements, they are further
6 specifications in Claim 1. For instance, no generator
7 will be required to connected to the source of
8 combustible gas to receive a continuous flow of
9 combustible gas to power the generator. And we had
10 discussed a definition of the source of combustible gas
11 just now.

12 For the network interface, there are
13 specifications in terms of how they would be connected to
14 receive and transmit data internet to a network that
15 starts or has access to a blockchain database. And there
16 are further language in Claim 1 that defines the
17 blockchain database and defines the network and relevant
18 terms.

19 Q. I see. So --

20 A. May I request -- I'm sorry to interrupt. May I
21 request another break?

22 Q. Oh, of course. Yeah, yeah, yeah. Of course.
23 The time now is 4:00. Do you want to come back at 4:10?

24 A. That's good for me, if it is for others.

25 Q. Okay.

1 A. Thank you.

2 Q. Thank you, Dr. You.

3 (A recess was held from 4:00 p.m. to 4:11 p.m.)

4 BY MR. ZHU:

5 Q. Okay. So welcome back, Dr. You. I just want to
6 understand, you know, where each of these claim elements
7 are in the hash generator product, right.

8 Can you explain a little bit what is the network
9 interface in the hash generator?

10 A. Yes. I hope you have my declaration in front of
11 you.

12 In paragraph 81, I was referring to the photo
13 right above this paragraph. It reads, "Each miner is
14 connected to the hash generator or hash huts interface,
15 as illustrated by the blue internet cables in the
16 screenshot above. The network interface typically
17 comprises a cellular or satellite modum, including the
18 corresponding antennas visible in the image of multiple
19 hash generator installation above.

20 "That meets the limitation 1C double I, which is
21 the network interface is connected to receive and
22 transmit data through the internet to a network that
23 starts or has assessed to a blockchain database. The
24 node then comprises an internet connection with assess to
25 nodes comprising of blockchain database."

1 And these details were taken from exhibition
2 2011. I believe it's a previous declaration.

3 Q. I guess, are you using the combination of a
4 modum and an antenna for the limitation network
5 interface?

6 A. Well, I need to understand the question better.
7 Would you please repeat it?

8 What do you mean by a combination of a modem and
9 antenna?

10 Q. So what you just read to me said the network
11 interface typically comprises the cellular or satellite
12 modum, including the corresponding antennas.

13 Are you saying the network interface includes
14 both the modum and an antenna?

15 A. My understanding about a word "including" means
16 that the corresponding antennas are involved in whole
17 part of the system called modum.

18 Q. Oh, I see.

19 So you're saying the antennas are part of the
20 modum; is that correct?

21 A. System. The modum system. Although you can
22 also see the word modum to refer to specific devices and
23 having antenna as a separate device.

24 So the key issue is that these whole individual
25 elements in the whole system perform the function as the

1 network interface. And this network interface is
2 supposed to receive and transmit data through the
3 internet to a network that starts or has assessed to a
4 blockchain database.

5 Q. I see.

6 What about a modem without an antenna, would
7 that still satisfy this limitation?

8 A. Well, as the modum has an internet connection
9 with access to nodes comprising a blockchain database, if
10 the single modum we saw antenna, based on your
11 hypothetical scenario, will be able to connect to receive
12 and transmit data through the internet to a network --

13 (Reporter clarification.)

14 THE WITNESS: -- through the internet to a
15 network that starts or has access to a blockchain
16 database.

17 BY MR. ZHU:

18 Q. Can you turn to your declaration, on paragraph
19 41?

20 (Reporter clarification.)

21 MR. ZHU: 41.

22 THE WITNESS: Yes.

23 BY MR. ZHU:

24 Q. So if you scroll down to the middle of the
25 paragraph, I believe it's -- one, two, three, four, five,

1 six, seven, eight -- the eighth line -- the very end of
2 the eighth line of paragraph 41, it says, "The plain
3 language of the claims again tracks the disclosure in the
4 specification and recites that the mining processors are
5 connected to the network interface and adapted to mine
6 transactions associated with the blockchain database and
7 to communicate with the blockchain database."

8 Let's see. "And the POSITA, therefore, would
9 understand that at a minimum, a mining processor is a
10 processor with blockchain mining circuitry."

11 What do you mean by "blockchain mining
12 circuitry"?

13 A. I believe the term was defined somewhere in the
14 declaration, so I do need to refer to my declaration --

15 Q. Sure.

16 A. -- to provide a specific response.

17 Okay. So as stated in the specification, the
18 mining processors could have different types of mining
19 circuitry, such as CPU, GPU, FPGA, and ASIC.

20 Sometimes the mining circuitry, such as CPU, are
21 designed to run software problems. Other types, such as
22 an ASIC, applies specifications in specific degrees
23 circuit, comprise hardware logic to perform specific
24 functions, though they may or may also be stopped with
25 programmable elements.

1 Accordingly, if a mining processor has at least
2 some programmable mining circuitry, then it's adapted to
3 mining transactions because it's programed to mine -- to
4 run the mining algorithm, such as program to run the
5 Bitcoin cryptographic hashing algorithms. In the case of
6 a mining processor with how well implemented logic, it's
7 adapted to mine transactions because it's designed to run
8 mining algorithms.

9 So in the context of this specific patent,
10 number '372, a POSITA understand that mining processors
11 adapt to mining transactions, referring to the mining
12 circuitry, such as CPU, GPU, FPGA, or ASIC that is
13 programed to run the mining algorithms.

14 Q. I see. Thank you.

15 So what are the mining circuitries within the S9
16 miners?

17 A. I need to go back to the earlier paragraph that
18 we discussed. Please give me a minute.

19 Q. Sure.

20 A. So in S9, which is typically a mining
21 processor -- miner ES9, paragraph 82, it reads that S9
22 comprises hash bolts with dedicate blockchain mining ASIC
23 and a controller performing a number of functions,
24 including network communication with blockchain database
25 nodes.

1 Q. Let's see. So is a controller a part of the
2 mining circuitry?

3 A. Are you talking about a case of S9 mining
4 processors, specifically?

5 Q. Yes, talking about S9.

6 A. My understanding -- or in my opinion, S9 has the
7 ASIC miner circuitry and also the controller performing a
8 number of functions, including network communications
9 with blockchain database nodes.

10 Q. So are you saying the controller is not part of
11 the mining circuitry?

12 A. In the case of S9 as a mining processor, it
13 includes an ASIC mining circuitry, and a controller
14 performing a number of functions, such as network
15 communication with blockchain database nodes.

16 Q. What's a function of a mining circuitry?

17 A. I think we just discussed this issue a few
18 minutes ago.

19 So the mining circuitry is adapted to mine
20 transactions because it's programmed to running mining
21 algorithms.

22 Q. So does the mining circuitry communicate with
23 the blockchain database?

24 A. Based on my understanding, mining circuitry is
25 only programed to run the mining algorithms. Network

1 communication is not part of the functions of a typical
2 mining circuitry that's considered in these S9 mining
3 processors.

4 Q. So let's take an example of a generic CPU.

5 Does the CPU communicate with the network
6 interface with the rest of the mining algorithms?

7 MR. THOMPSON: Objection. Incomplete.

8 THE WITNESS: So there are many different kinds
9 of CPUs. We need to be very specific, you know, the make
10 the model, the types, and any adaptations that it has met
11 so far.

12 If you're talking about a standalone CPU by
13 itself, then network connectivity is not part of the core
14 or required function. But you can certainly adapt it to
15 of some of these functions, if needed.

16 BY MR. ZHU:

17 Q. Can you mine blockchain cryptocurrency without
18 communication without the blockchain database?

19 MR. THOMPSON: Objection. Asked and answered.

20 THE WITNESS: Can you, please, repeat the
21 question?

22 BY MR. ZHU:

23 Q. Can you mine cryptocurrency without connection
24 to the cryptocurrency database?

25 MR. THOMPSON: Same objection.

1 THE WITNESS: Can you define what you mean by
2 mine the cryptocurrency?

3 Are you talking about running the algorithm or
4 are you talking about communicating with the network
5 interface and communicating with the blockchain database?

6 BY MR. ZHU:

7 Q. Let's take an example, pick one lane, right.

8 If I were to, you know, run the mining algorithm
9 to mine Bitcoin, can I do it without connection to the
10 blockchain database?

11 A. Again, if we are just going to run the algorithm
12 on the mining circuitry, it does not meet the network
13 communication function. But to generate products to
14 produce the digital currency, it will require
15 communication with the blockchain database.

16 Q. I see. And the whole S9 miners are designed
17 to --

18 (Reporter clarification.)

19 BY MR. ZHU:

20 Q. Are designed to mine Bitcoins?

21 A. My response would be S9 could mine Bitcoins, but
22 I will not say it's only for mining Bitcoins.

23 Q. Can the S9 miner be used to mine other
24 cryptocurrencies?

25 A. There was not -- that kind of information was

1 not presented to me as an engineer. I believe any
2 computer device can be adapted and perform additional
3 functions beyond its initial design.

4 Q. But just based on your knowledge of the, you
5 know, Bitcoin mining industry, are you aware there are
6 other cryptocurrencies that can be mined by the S9 miner?

7 A. Again, S9 miner is a specific kind of device, as
8 shown in paragraph 82. I cannot delineate or say that
9 nobody has ever made any adaption or customization of S9
10 to perform other functions beyond mine Bitcoin. That's
11 beyond my knowledge. But S9 could mine Bitcoin, based on
12 my understanding.

13 Q. I see.

14 And in order to mine Bitcoin, the S9 mining
15 processor need connection to the blockchain database; is
16 that correct?

17 A. Yes. It requires some network connection and
18 network interface to mine the transaction associate with
19 the blockchain database and to communicate with the
20 blockchain database.

21 Q. I see.

22 So can you explain to me a little bit what you
23 mean by hashing?

24 When you say, you know, the ASICs miners are
25 doing -- performing hashing algorithms?

1 A. Yeah. Please give me a minute so that I could
2 get some water --

3 Q. Sure.

4 A. -- just before I respond to the question.

5 So in the short response, hashing could refer to
6 the computations required to mine blockchain transactions
7 performed by the ASIC chips in a hash board, and there's
8 a specific kind of algorithm for solving some
9 mathematical and computational problems designed
10 specifically for blockchain mining.

11 Q. I see.

12 And in order to solve that mathematical problem,
13 you need input into the ASIC processor, right?

14 A. The ASIC processor would require certain data
15 exchange with our components.

16 Q. I see.

17 Would it require data exchange with the
18 blockchain database?

19 A. Can you, please, repeat the question and provide
20 the broader context?

21 Because right now, it seems a bit incomplete to
22 me.

23 Q. Sure.

24 So in order for the ASIC processor to mine
25 Bitcoin, does it need to exchange data with the

1 blockchain database?

2 A. Are you talking about running the algorithm by
3 itself, or are you talking about validating the
4 transactions or communicating with the blockchain
5 database and so on?

6 Q. Let's start with running the algorithm by
7 itself.

8 A. So any algorithm could be run on the computing
9 chip as long as there's sufficient input and output. But
10 in a case of blockchain mining network, connectivity
11 would be necessary in order to mine the transactions and
12 communicate with the blockchain database.

13 Q. I see.

14 And earlier, you mentioned the S9 miner contains
15 both the ASIC chip and the controller, right?

16 A. Please give me a minute to get back to the
17 section that you are in.

18 Q. Sure.

19 A. It's late in the afternoon, so I probably need
20 some more coffee.

21 Q. Yeah.

22 A. Yes. The S9 mining processor comprise a
23 dedicated blockchain miner ASIC and controller to perform
24 suctions, such as communication with blockchain database
25 nodes.

1 Q. I see.

2 So does the ASIC, itself, need to exchange data
3 with the blockchain database when it performed the mining
4 function?

5 A. So when you are talking about blockchain mining,
6 the whole term of blockchain mining would require
7 connections and communications with the blockchain
8 database. But if we are talking about running the
9 algorithms on the ASIC chip itself, the chip could run
10 algorithms without network connection.

11 Q. So where does the input comes from if the chip
12 is not connected to the network?

13 A. It's a very interesting question, and this is
14 probably similar to the way we use a regular CPU-based
15 computer.

16 Without internet connection, we can still use
17 the computer to run all the applications -- not all, but
18 many applications. But for certain applications, such as
19 a Zoom meeting, we do need internet and network
20 connections to make it operable. Although it can still
21 open the Zoom app on the computer without network
22 connection, it doesn't mean that it will meet the
23 functions that we need, for virtual conference, that is,
24 unless there are no computing facility or computer chip.

25 Q. I see what you're saying.

1 So in order to, you know, mine Bitcoin, which is
2 I guess -- in your example is to have a Zoom meeting,
3 right -- the ASIC chip needs to exchange data with a
4 blockchain database, right?

5 MR. THOMPSON: Objection. Incomplete.

6 THE WITNESS: Again, as recited in this current
7 term, it's not about ASIC chip. The content says that
8 this is about blockchain mining devices.

9 BY MR. ZHU:

10 Q. I -- I --

11 A. -- each type of mining processor and are
12 connected to a network interface. And the network
13 interface is connected to receive and transmit data
14 through internet to a network that starts or has access
15 to a blockchain database.

16 The mining processors are connected to a network
17 interface and adapted to mine transactions associated
18 with the blockchain database and to communicate with the
19 blockchain database. So it depends on how you define the
20 lower of the ASIC chip in this particular context, and
21 you need to make sure it meet all the limitations and
22 specifications.

23 Q. So in order to mine Bitcoin, doesn't ASIC chip
24 need to exchange data with a blockchain database?

25 A. Well, again, to mine Bitcoin, exchanging with

1 the blockchain database will be necessary.

2 Q. I see.

3 A. The ASIC chip running the network connection is
4 not a must, but to get a bit -- crypto -- or to get a
5 digital currency, connection communication with the
6 blockchain database will be necessary.

7 Q. Is there any reason why it won't make the ASIC
8 chip programing without connection with the network --
9 to -- to the blockchain network?

10 A. Well, that's the hypothetical case that you are
11 presenting just now, and that's why I bring up this
12 analogy.

13 When my internet is down, I can still use my
14 computer to perform certain functions, such as using
15 Microsoft Word to edit a document or using Adobe Acrobat
16 to read a PDF document. But to perform any task, any
17 applications with a network connection, such as running a
18 network-based internet meeting, I do need internet
19 connection.

20 Q. That makes sense. So that's the limitation of
21 mining processer. Let's go back to the limitation
22 blockchain mining device.

23 In the hash generator, we talked about there are
24 multiple components, right?

25 One is a generator, one is the S9 miners, and

1 there are also these, you know, shelves, right, housing
2 those S9 miners. In your opinion, does a blockchain
3 mining device include those shelves holding those
4 blockchain miners?

5 A. I would need to refer to Mr. Barbour's
6 declaration before responding to your question --

7 Q. Of course.

8 A. -- the document you share with me just now as
9 exhibition 2011.

10 Q. Yeah.

11 A. So on page 14, 1-4, of Mr. Barbour's
12 declaration, it states that it here -- I guess it refers
13 to hash generator or hash general, it incorporated a
14 natural gas generator, a Bitcoin mining system, and
15 associate control system, all housed in a portable
16 shipping container.

17 He also specified that the purpose of this
18 product was to be placed on oil wells with strength
19 associate gas. The gas will be used to fuel the
20 generator and power the blockchain mine, and the control
21 system would regulate the blockchain mining load on the
22 generator to keep it within operating spec.

23 I hope that answers your questions in terms of
24 the elements described by Mr. Barbour in terms of what I
25 included in the hash generator.

1 Q. Let me repeat my question.

2 A. Yes, please.

3 Q. In the hash generator, does the blockchain
4 mining device include the shelves holding the S9 miners?

5 A. So you're asking for shelves --

6 Q. Yeah.

7 A. -- specifically listed in the photo of my
8 declaration, or originally in the declaration by
9 Mr. Barber?

10 Q. That's right.

11 A. From that particular photo, which is on page 10
12 of Mr. Barbour's declaration, I see the shelves housing
13 all these -- some of those units. So is your question
14 about whether shelves are included in the product or are
15 shelves necessarily?

16 Q. I'm just trying to understand what components
17 are included in the blockchain mining device, in your
18 review?

19 A. Oh, so, again, the blockchain mining devices,
20 this particular term was defined in Claim 1, and the
21 shelf was not defined in the claim language. But to put
22 something in a container and to utilize the space within
23 the container effectively, it would infer to have
24 shelves.

25 Q. Do you think the container itself is part of the

1 blockchain mining device?

2 A. I don't believe the term "container" is included
3 in the definition of blockchain mining devices, but
4 blockchain mining devices involve many elements, and you
5 can put all of them into a container.

6 Q. So -- so are you saying the container, itself,
7 may or may not be part of the blockchain mining device?

8 A. So I would like to refer to figure 4 of the
9 patent, which I think you just shared the screen before
10 the break.

11 Q. Yes.

12 A. So you can see in figure 4 and also on the top
13 of page 6, I believe, of the patent -- or column 6, I'm
14 sorry -- on column 6, it reads that "Figure 4 is a
15 schematic depicting blockchain mining device with a
16 priority of mining processors and associate control and
17 network agreement housed within a portable enclosure."

18 Whether these portable enclosures should be a
19 container or our forms would not be, it will be quite
20 feasible, in my opinion. It doesn't specify that a
21 portable enclosure must be a container, although a
22 container will satisfy the definition of a portable
23 enclosure.

24 Q. Is there a portable enclosure in the hash
25 generator?

1 A. Are you asking about whether the hash generator
2 includes a portable -- includes a portable enclosure?

3 Q. That's right.

4 A. Based on the photo presented in Mr. Barbour's
5 declaration, which is on page 8 and page 9 of his
6 declaration, I do see some containers there. And my
7 understanding is that these containers are serving a
8 function as a portable enclosure to include elements
9 required for blockchain mining devices.

10 Q. I see.

11 And are the blockchain mining devices housed in
12 this container?

13 A. I'm getting some water. I'll be back. Sorry.

14 Q. Okay.

15 A. Okay. Can you, please, repeat the question?
16 I'm sorry.

17 Q. Are the blockchain mining devices housed in this
18 container in the hash generator?

19 A. Based on my understanding under the current
20 claim language and the settings, each portable enclosure
21 includes a blockchain mining device, which is the system
22 of multiple elements, as we discussed just now.

23 Q. I see.

24 So the enclosure itself is not part of the --
25 part of the blockchain mining device; is that correct?

1 A. It goes back to the function of this enclosure.
2 Normal person or ordinary person's understanding of a
3 portable enclosure is just to contain and protect items
4 inside. It does not perform the function of blockchain
5 mining or communicating with the network database, among
6 others.

7 Q. I see.

8 So in your view, is the term "blockchain mining
9 devices" defined by the function of the components?

10 A. No. The blockchain mining device or devices
11 include physical elements, as discussed in the plain
12 language.

13 Q. I see.

14 A. So I should go back to Claim 1 again. The
15 blockchain mining devices connected to the generator, in
16 which the -- which here defines the blockchain mining
17 devices connected to the generator. Here, the blockchain
18 mining devices each have a mining processor and are
19 connected to the network interface.

20 So this is a physical element and physical
21 devices with the physical connectivities. The network
22 interface is connected to receive and transmit data
23 through internet -- through a network that starts or has
24 assessed through a blockchain database. The mining
25 processors are connected to the network interface and

1 adapted to mine transactions associated with blockchain
2 database and to communicate with the blockchain database.

3 Again, these are physical elements included
4 there.

5 Q. I see.

6 And these physical element do not include the
7 racks holding the mining processors; is that correct?

8 A. I agree that racks are not explicitly stated in
9 the claims, but my understanding is that, to house
10 multiple equipment units within the container, it's
11 better to have some racks to optimize the space and
12 organize the data.

13 Q. I see.

14 So in your view, in the hash generator, does the
15 blockchain mining device include the racks?

16 A. Can you repeat your question, please?

17 Q. So in the hash generator, there is a blockchain
18 mining device, right?

19 A. Yes.

20 Q. And does that blockchain mining device include
21 the racks holding the S9 miners?

22 A. Are you talking about a hash generator includes
23 the racks or a blockchain mining device includes the
24 rack?

25 Q. Blockchain mining device.

1 A. The term "blockchain mining device," it's a
2 connection of elements, as we discussed just now.

3 Q. Yes.

4 A. Racks are not defined in the claim language, so
5 the racks is not part of the elements. And I will see
6 racks somehow similar to the portable enclosure, as a
7 supporting element to house this equipment.

8 Q. I see.

9 So as -- you know, I take that answer to mean
10 the term "blockchain mining device" does not include the
11 racks; is that correct?

12 A. Are you talking about product or the term?

13 Q. The -- the claim limitation, "blockchain mining
14 device"?

15 A. In the claim language, it doesn't include the
16 term "racks."

17 Q. Okay. Is it fair to say the blockchain mining
18 device is a subpart of the hash generator?

19 A. So can you define the term "a subpart"?

20 Q. A component within the hash generator.

21 A. So my understanding is that hash generator is a
22 system with many elements.

23 Q. Yes.

24 A. Many of these elements within the hash generator
25 system could be considered as blockchain mining device,

1 as a whole, but not everything in the hash generator
2 would be a blockchain mining device, such --

3 Q. I see.

4 A. -- as a generator that we discussed just now. A
5 generator is a generator.

6 Q. I see.

7 And same thing goes for the container box,
8 right?

9 A. It's a portable enclosure, right, and it could
10 be a container box. But as the hypothetical example, if
11 it's not a container but somehow we have a portable
12 enclosure, it will still meet the specifications.

13 Q. Yeah. In other words, the portable enclosure or
14 in the container box may or may not be part of the
15 blockchain miner device; is that correct?

16 A. Yes.

17 Q. I see.

18 A. That's not the main items included in Claim 1.

19 Q. I see.

20 So what about the S9 miner?

21 What about the container holding the ASIC chips
22 and the controller?

23 Is that container, itself, part of the mining
24 processor?

25 A. I'm a bit confused. What container are you

1 talking about?

2 Are you talking about container in the hash
3 generator or --

4 Q. No. I'm talking about the container in the S9
5 miner.

6 A. I need to understand what specific container you
7 are pointing at.

8 Q. Yeah. Let's take a look at your declaration.
9 In paragraph 82 --

10 A. Yes.

11 Q. -- there is a picture of the S9 miner.

12 A. Yes.

13 Q. And do you see there's a container box, right?

14 A. Oh, the box --

15 Q. Yeah.

16 A. -- of S9 miner.

17 Q. That's right. I -- I think you labeled it hash
18 boards's housing?

19 A. Yes.

20 Q. The hash board housing is part of the mining
21 processer?

22 A. Yes. It's part of the mining processer. The
23 whole system describe it in the photo. In my opinion,
24 it's a mining processer.

25 Q. I see.

1 In other words, to qualify for a mining
2 processor within the meaning of Claim 1, you would have
3 to have all of the elements shown here; is that correct?

4 MR. THOMPSON: Objection. Mischaracterizes.

5 THE WITNESS: I disagree, because as I mentioned
6 clearly in the declaration, this is merely an example of
7 an S9 mining processor there could be many other
8 different kinds of blockchain mining processors. And so,
9 as to meet the claim language, they will be qualified to
10 be considered as a mining processor in this case.

11 BY MR. ZHU:

12 Q. I see.

13 For example, there's a front fan, right, in this
14 picture.

15 If you remove the front fan, would you still
16 consider it meeting the claim limitation mining
17 processor?

18 A. So you are talking about hypothetical case
19 that -- whether these mining processor would function
20 without a front -- without a front fan; is that correct?

21 Q. Yeah. Sure. Just talking about in this
22 picture.

23 A. Yes. In this picture, there is a reason that a
24 fan is included in the mining progressor. Because the
25 mining activity is very energy intensive, it could

1 generate a lot of heat. Without fans and cooling
2 systems, the whole device or the whole processor would
3 get into some kind of problem.

4 So I do believe a fan will be required. And, in
5 fact, I would say most computing devices know this,
6 including the regular computers that we are using right
7 now, involve some sorts of fans.

8 Q. I see.

9 Let's see. Can this fan be external to the
10 mining processor or, in other words, not part of the
11 mining processor?

12 A. So if you are talking about --

13 MR. THOMPSON: Objection. Incomplete.

14 THE WITNESS: Are you talking about possibility,
15 for an engineering modification adaptation, or are you
16 talking about a specific product of an S9 mining
17 processor?

18 BY MR. ZHU:

19 Q. I'm talking about possibility.

20 A. Well, if it's a possibility, I think it's
21 possible. I would not exclude that possibility. But
22 whether S9 mining processor would like to do that or not,
23 it's beyond my knowledge --

24 Q. I see.

25 A. -- because I'm not a vendor or manufacturer of

1 S9 mining processer.

2 Q. I see.

3 So, yeah, in a computer CPU, is a fan attached
4 to the CPU part of the CPU?

5 A. Many CPUs I see involve some sort of fans, yes.
6 But again, you can remove the fan, and it's still a CPU.

7 Q. I see.

8 So what about for this, you know, picture of S9
9 miner. If you remove the front fan, is it still a mining
10 processer?

11 A. So that would get to two pieces here. First
12 piece, would it have function to run all the blockchain
13 mining activities without the fans?

14 My answer is possible, if cooling and fans are
15 not necessarily required.

16 But in practice, would that function as well as
17 we typically expect as an ordinary person of skill in the
18 field to run blockchain mining without fans in a
19 computing device or a computing processer?

20 I highly question it. Because again, this kind of
21 blockchain mining activities are very energy intensive
22 and typically generate a lot of heat.

23 Q. I understand.

24 I guess my question is, does a fan have to be
25 integrated within the mining processer? Can it be an

1 external fan that's, you know, not attached to the mining
2 processor?

3 A. So when you say "external," again, it depends on
4 how this fan is being placed and how it's being
5 engineered.

6 In the claim language, it doesn't specify
7 anything about a fan. But for this particular mining
8 processor to function well or normally, some kind of fan
9 or cooling system would be needed to ensure there's
10 sufficient temperature control and normal operations.

11 Q. I see.

12 And what about the hash board housing, is that a
13 necessary component within the mining processor?

14 A. My understanding, based on this photo, of the
15 hash board housing, it's a box outside of circuitry
16 outside of chips.

17 It's just similar to the question you're asking
18 just now in terms of the racks. Are the racks necessary?
19 Well, I just don't see any reason from an engineering
20 side for normal person in the field that -- why you don't
21 want to have a box outside of mining circuitry.

22 But does the box, itself, perform any
23 computational function? The box does not perform any
24 blockchain mining activity, and the box cannot connect to
25 the network or communicate with the database.

1 Q. So in other words, can the mining processer be a
2 subset of, you know, the S9 miner?

3 A. Can you repeat the question, please?

4 Q. Can a mining processer in Claim 1 be satisfied
5 by a subset of the S9 miner?

6 A. Oh, I see what you say.

7 Q. Yeah.

8 A. Again, if a subset of S9 miner, as a whole
9 system, meet the requirements that the mining processors
10 are connected to the network interface and adapted to my
11 transactions associated with blockchain database and
12 communicate with the blockchain database, which follow
13 specification that the network is a peer-to-peer network,
14 the blockchain database is a disputed database start on
15 pearl nodes in a peer-to-peer network, and the blockchain
16 database stores transactional information for digital
17 currency, then, yes, this subset, if they meet all the
18 claim languages, would be considered as a mining
19 processer.

20 Q. I see. Thank you. I --

21 (Reporter clarification.)

22 BY MR. ZHU:

23 Q. So in my hypothetical, if you take out the outer
24 container box, the S9 miner will still meet these
25 functions, right?

1 A. Well, again, a box is not a requirement for a
2 mining processor based on the claim language that I
3 described just now.

4 Q. Yeah, yeah, yeah.

5 A. For a system -- or for a particular physical
6 processor to be in place, we do need some packaging and
7 some inclosures, and that's the lower of these particular
8 hash board housing, and this is similar to what we
9 discussed just now as the container or portable enclosure
10 case, or the racks case.

11 May I request another break, if I could?
12 Because it's 5:00 p.m. now.

13 MR. ZHU: Yeah, yeah, yeah. Of course.

14 THE WITNESS: It's easier for us to stop at an
15 o'clock, so we could come back maybe 5:10.

16 MR. ZHU: Yeah, yeah, yeah. Let's come back at
17 5:10. Thank you.

18 THE WITNESS: Thank you.

19 (A recess was held from 5:00 p.m. to 5:10 p.m.)

20 BY MR. ZHU:

21 Q. So welcome back, Dr. You.

22 Can you please turn to paragraph 86 of your
23 declaration?

24 A. Paragraph 86, I'm here now, yes.

25 Q. So you stated, "It is my opinion patent owner

1 systems such as the Upstream Data hash hut and hash
2 generator embodied claims 10 to 12 and 29, 34 to 37 of
3 the '372 patent."

4 I think we discussed this before, but the only
5 two systems you analyzed are the hash generator and the
6 hash hut; is that correct?

7 A. Yes. I base on, you know, the deposition -- or
8 declaration from Mr. Barbourand looking at his products
9 for formulating his opinion, and that's why I
10 specifically stated, in my opinion, the patent owner's
11 system such as the Upstream Data hash hut and hash
12 generator involved in the claims.

13 Q. I see.

14 In your mind, what is the difference between the
15 hash hut and the hash generator?

16 A. I would like to cross reference to Mr. Barbour's
17 declaration. Please give me a minute.

18 Q. Uh-huh.

19 A. So if we can go to page 15, 1-5, of
20 Mr. Barbour's declaration, he stated that as the market
21 realized the advantages of Upstream Data's technology --
22 sorry -- one sentence before that.

23 (Reporter clarification.)

24 THE WITNESS: Yes. It's a sentence before that.
25 Before this "as the market realized the advantage of

1 storage," it's the sentence before that, which reads that
2 "During this time, Upstream Data continued to improve its
3 systems, including developing the hash hut system for use
4 with existing generators."

5 So based on this sentence, my understanding is
6 that hash hut system differ from hash generator in terms
7 of the generator units, whether it's an existing one or a
8 new one.

9 Q. I see.

10 Are you aware that there were existing
11 generators at oil fields?

12 A. Yes. I think some oil/gas fields have some
13 existing generators.

14 Q. And what do they use these existing generators
15 for?

16 A. There could be many reasons that it would use a
17 generator. For instance, they could be used to burn some
18 oil and gas produced or stranded gas produced there to
19 provide energy to the oil and gas production. Some of
20 its generators could be used as diesel generators to
21 provide better power, among many other functions.

22 Q. Do you think the oil and gas industry has been
23 using these existing generators before 2017?

24 A. I think so. There are generators used in oil
25 and gas industry before 2017.

1 Q. I see.

2 Let's see. So is that the only difference you
3 can tell between the hash generator and the hash hut?

4 A. Well, based on the declaration from Mr. Barber,
5 this is the place that I see the difference as the two
6 products.

7 Q. Okay. Why did you choose to, you know, look
8 into these particular claims, meaning claims 10 to 12,
9 29, 34 to 37?

10 A. I need to refer to the patents to --

11 Q. Sure.

12 A. So I guess your question is why I'm referring to
13 this particular claims in paragraph 86?

14 Q. Yes.

15 A. I have a few reasons. The first reason is that,
16 in the earlier paragraph, I believe in paragraph 76, at
17 the beginning of this session, I already expressed my
18 opinion that Upstream Data systems product involving
19 Claims 1 and 24 of this '372 patent, and my understanding
20 is that Claim 1 and Claim 24 are independent claims.

21 Now, in paragraph 86, we go down further to the
22 Claims 10 to 12 and 29, along with Claims 34 to 37. So
23 these are more like dependent claims, based on my
24 understanding. So this is a follow discussion of our --
25 the patent owner system embody the claims in this '372

1 patent.

2 Q. I see.

3 Did you look at other dependant claims other
4 than these ones?

5 A. Yes, I did review all the claims, but my opinion
6 is that these dependant claims are more important, and I
7 express my opinions here. It doesn't mean that other
8 dependent claims are not important.

9 Q. Do you think the hash generator embodied old
10 claims on the '372 patent?

11 A. I did not analyze all the claims were embedded
12 in -- or embodied in hatch generator based on the
13 information presented to me. So based on information
14 presented to me, I present my opinion that my analysis,
15 for now, the Upstream Data systems embodied the claims in
16 Claim 1 and Claim 24.

17 And further, I've expressed my opinions here
18 that they also embody the Claims 10 to 12, 29, and 34 to
19 37 of the patent.

20 Q. I see.

21 Yeah. Let's keep reading paragraph 86 a little
22 bit. I think the next sentence says, "These systems are
23 available with an optimal" -- I'm sorry -- "optional
24 controller to perform load balancing by increasing or
25 decreasing mining activity."

1 What -- why do you think the controller is an
2 optional controller?

3 A. So I think the optional controller here, as you
4 can see from the particular sentence, refers to Claim 10
5 and Claim 35.

6 So in Claim 10, it says the system of Claim 1,
7 in which the system is configure to moderate a power load
8 level excerpt by the blockchain mining devices on the
9 generator by increasing or decreasing the mining activity
10 of the mining processer.

11 In Claim 35, it reads that the master of Claim
12 34 follow comprising modulating a power load level
13 exerted by the blockchain mining devices, only generated
14 by selecting an action from a group of actions consisting
15 of increasing or decreasing mining activity of the
16 blockchain mining devices.

17 So these are my understanding in terms of the
18 function of this optional controller.

19 Q. So if, you know, the system does not include
20 this optional controller, does this still meet the claim
21 then?

22 A. Can you, please, repeat your question? I did
23 not catch that.

24 Q. Yeah, yeah, yeah. I'm just trying to, you know,
25 get your understanding of the term "optional" here in

1 this sentence.

2 A. Yeah. So -- please, go ahead.

3 Q. Go ahead.

4 A. No, go ahead. Please, I will let you finish
5 your question.

6 Q. Yeah, yeah, yeah. So if a hash generator does
7 not have this optional controller, you know, because it's
8 optional, right, does it still practice Claim 10?

9 A. So again, I believe, based on Mr. Barbour's
10 declaration, some of the products from Upstream Data
11 systems do not include such a controller, and that's why
12 it's called optional.

13 And that's my understanding, that this
14 controller and its relevant functions are defined in a
15 dependent claims, Claim 10 and Claim 35, were all in the
16 independent claim, which are Claim 1 and claim -- let me
17 go back to the specific number -- Claim 1 and Claim 24,
18 which are independent claims.

19 Q. Let me ask the same question again.

20 A. Yeah.

21 Q. Since these are optional controllers, if a hash
22 generator does not have this controller, does it still
23 practice Claim 10?

24 A. Well, I don't have the information about
25 those --

1 (Reporter clarification.)

2 THE WITNESS: About those products from Upstream
3 Data systems, in terms of their capability to perform the
4 functions described in Claim 10 and Claim 35 without such
5 a controller, so I will not comment on that one. All I
6 can say is that, if such a controller is included, they
7 do practice Claims 10 and 35, as described in the patent.

8 BY MR. ZHU:

9 Q. I see.

10 And the -- can you, please, read the next
11 sentence?

12 A. I think you are referring to the sentence saying
13 that, "This was done by controlling circuits to increase
14 or decrease number of patent servers, including in
15 response to variable gas production rate."

16 Q. Is this how claim patent is practiced by the --

17 (Reporter clarification.)

18 BY MR. ZHU:

19 Q. -- by the optional controller?

20 A. So I believe that this particular sentence has
21 the clear citations to Claims 11 and 36 and also Claims
22 12 and 37.

23 So in the first half of the sentence, this was
24 done by controlling circuits to inquiries of decreased
25 number of active servers. It corresponds to Claim 11,

1 which reads that the system of Claim 10 in which the
2 system is configured to modulate a power load level by
3 asserting one or more actions from a group of actions
4 consisting of --

5 (Reporter clarification.)

6 THE WITNESS: Consisting of increasing or
7 decreasing a maximum number of mining processes that are
8 engaged in mining transactions.

9 In Claim 36, it's about the master of Claim 35
10 in which modulating comprises modulating the power load
11 level by increasing or decreasing a maximum number of
12 mining processes, they are engaged in mining
13 transactions.

14 The second half of this sentence, which is about
15 including in response to variable gas protections --

16 BY MR. ZHU:

17 Q. Yeah, it -- it's okay. We don't need the second
18 part. Just, you know, let's focus on the first part for
19 a little bit.

20 So in your understanding, does this mean the
21 optional controller can selectively shut down some of the
22 mining processors?

23 A. When you define "shut down" as increasing or
24 decreasing the number of active servers, which will
25 correspond to the language in the claim terms, then it

1 should be the case, in my opinion.

2 Q. Do you think the optional controller can do
3 anything else other than shutting down some processors?

4 A. So again, the term "shut down" in some context,
5 is different from making some servers inactive.

6 Shut down means completely off. Sometimes we
7 can stop a car, but we are not going to shut down the
8 car. So these are two different concepts.

9 Q. Are you suggesting there are ways to inactivate
10 the server without shutting the server down?

11 A. So it also depends on the specific context that
12 we are discussing. Here, I was referring, for example,
13 about driving a car, but in the context over here about
14 controlling the circuits, then it's about increasing or
15 decreasing a number of active servers.

16 Here, you are using the term of "shut down," so
17 I want to be specific about what "shut down" means.

18 Q. What other ways are there to increase or
19 decrease the number of active servers?

20 A. Well, it's basically changing the number of
21 servers that are being active or active in operating or
22 running the computation.

23 Q. Sorry. I'm just trying to understand, how do
24 you realize that?

25 How do you increase -- for example, how do you

1 increase the number of active servers?

2 A. Well, you can turn off and on some of those, or
3 just minimum running at a maximum speed.

4 Q. That's my understanding, as well. Is this also
5 how the optional controller practiced Claim 10?

6 A. I'm trying to understand what you mean by
7 "lease."

8 Q. The --

9 A. Are you talking about controlling the circuits
10 to increase or decrease a number of patent servers?

11 Q. That's right. Yeah.

12 A. My understanding from Claim 10 is, basically,
13 about increasing or decreasing mining activities of
14 mining processing, and this is one way to adjust that,
15 you know, by increasing or decreasing mining activity.
16 So I think the answer is yes.

17 Q. Sorry. I think this sentence said, "This was
18 done by controlling circuits to increase or decrease
19 number of active servers."

20 Is this how the optional controller practices
21 Claim 10?

22 MR. THOMPSON: Objection. Mischaracterizes.

23 THE WITNESS: I'm trying to understand your
24 question. I mean, are you asking how this controller is
25 practicing claim patent or --

1 //

2 BY MR. ZHU:

3 Q. Yeah.

4 A. -- how it was decreasing or increasing the
5 active servers as related to the mining processes?

6 Q. So it -- I think there are different ways to
7 increase or decrease mining activities, right?

8 A. Yes. There could be a few options.

9 Q. Okay. Yeah. Can you give me examples of how
10 the optional controller can do that?

11 A. Well, as described in this particular sentence,
12 it -- one option, as described here, is to increase or
13 decrease the number of active servers. And the key issue
14 is being active and inactive.

15 Q. Does turning off and on --

16 (Reporter clarification.)

17 BY MR. ZHU:

18 Q. The servers meet that limitation?

19 A. Turning on and off, as long as they can increase
20 or decrease the number of active servers, then -- if you
21 think that turning on and off will adjust the number of
22 active servers, then, yes, you will be able to consider
23 them as part of the control functions.

24 Q. Does adjusting the clock rate of the mining
25 servers meet the limitation?

1 A. That's an interesting question that I have not
2 yet considered before, so I would like a few minutes to
3 formulate my opinions.

4 Q. Sure.

5 A. So can you repeat the question here?

6 Are we referring to the controller in Claim 11
7 or are we taking about language in Claim 10?

8 Q. Let's start with Claim 11.

9 A. Okay. So in Claim 11, the claim language, it's
10 about increasing or decreasing of maximum number of
11 mining processors. So I don't think adjusting clock rate
12 is part of the claim language.

13 Q. What about Claim 10?

14 A. So in Claim 10, it does not exclude the
15 possibility of adjusting the clock rate. Although, I
16 would say the mining processer discussed in this
17 particular patent would recommend the capability to
18 control the hash rate by changing the clock voltage or
19 the clock rate of the processer.

20 Q. Do you know if the optional controller can
21 adjust the clock rate?

22 A. So here are two different controllers that we
23 are discussing. One is the controller associated with
24 the mining processer that could adjust the clock rate,
25 call voltage, and changing hashing, et cetera. The other

1 one is the controller that we are discussing here to
2 regulate the maximum number of mining processors that are
3 engaged in the mining transactions.

4 Although the term "controller" was used in many
5 places, we do need to be specific about what functions
6 are being controlled and what they are controlling for.

7 Q. Let's talk about this optional controller in the
8 sentence.

9 A. This optional controller here in this particular
10 sentence, as recited in the sentence that I just read,
11 this was done by controlling circuits to increase or
12 decrease the number of active servers, including in
13 response to variable gas production rates.

14 Q. Do you know if these -- this optional controller
15 can also address clock rate?

16 A. That information was not written to me, so I
17 cannot comment on that.

18 Q. So, you know, assuming they cannot address a
19 clock rate, can those optional controllers still meet
20 Claim 10?

21 A. Yes, I believe so. Because this optional
22 controller satisfies Claim 11, and Claim 11 is a
23 dependent claim of Claim 10.

24 Q. I see.

25 So by shutting down or turning off, you know, a

1 subset of miner processors, that could also satisfy Claim
2 10; is that right?

3 A. Again, I will be very cautious about the term
4 called shutting down. It's similar to the way we drive a
5 car. Shutting down a car means the car is fully stopped,
6 turning off the engine. But stopping a car in front of a
7 stop sign is just stopping there.

8 Q. Okay.

9 A. So some parts will be still running. For
10 example, the fans that we discussed just now, do we need
11 to keep the fans running? I don't know whether they are
12 operating in their way or not in the optional data
13 systems, but they could make the server inactive. And
14 inactive, in my opinion, is different from being
15 completely shut off.

16 Q. Okay. Let's change to a different word.

17 To inactivate or activate a subset of servers,
18 you know, does that still meet Claim 10?

19 A. I think so. Because that satisfies Claim 11 by
20 increasing or decreasing a maximum number of mining
21 processors that are engaged in the mining transactions.
22 But again, we also need to be careful here about maximum
23 number because that doesn't mean that, once all the
24 processors are on, they are all in full capacity,
25 although, we try to be.

1 Q. Okay. Let's take a look at Claim 8.

2 A. Claim 8?

3 Q. Yeah.

4 So Claim 8 requires the system of Claim 1 in
5 which the generator and a bunch of mining devices are
6 located adjacent to the facility. Do you think Claim 1
7 requires that the generator and blockchain devices are
8 located adjacent to the facility?

9 A. This particular limitation of located adjacent
10 to the facility was not recited in Claim 1. That was in
11 Claim 8.

12 Q. So in Claim 1, can the blockchain mining devices
13 and generator are located far away from the facility?

14 A. Based on Claim 1, that's a possibility. But
15 from a person of ordinary skill in the art, I do not see
16 any economic or financial motivation to put these two
17 kinds of systems far away from each other.

18 Q. Okay. Let's take a look at Claim 22. Claim 22
19 I think requires a combustible gas disposal device.
20 What's your understanding of the term "gas disposal
21 device."

22 A. My understanding of this term here, it's a
23 particular device to deal with the combustible gas.

24 Q. Can you give me a specific example of such a
25 device?

1 A. This was not as previously stated in the claims,
2 so I would need a few minutes to look at specifications
3 before responding.

4 Q. Of course.

5 A. So I think this was discussed in column 3.
6 Column 3, I think line 53, if I look -- 1, 2 -- no,
7 sorry, column 3, line 63. So this is line 63. It reads
8 that the combustible gas disposal or storage device
9 comprises one or more of a frail, a vent to the
10 atmosphere, or an incinerator or burner.

11 Q. I see.

12 In your opinion, does the hash generator contain
13 such a device?

14 A. Based on my review of Mr. Barbour's declaration,
15 I don't have an impression that Upstream's hash hut or
16 hash generator includes such a particular component. But
17 I would request a few minutes to double-check
18 Mr. Barbour's declaration.

19 Q. Sure.

20 A. So I did not find this particular information in
21 Mr. Barbour's declaration. Because of the information
22 presented to me, I cannot make a comment whether the
23 Upstream Data systems include such a particular device or
24 component or not because information is unavailable to
25 me.

1 Q. I see.

2 So the '372 patent talks about a backup source
3 of either a field or electricity, correct?

4 A. Can you be specific which column and which line?

5 Q. I'm looking at column 19, line 2.

6 A. Column 19, line 2. Backup source of fewer or
7 electricity in this case, one or more --

8 (Reporter clarification.)

9 THE WITNESS: Yeah. So a backup source of fuel
10 or electricity, in this case, one or more of propane tank
11 underground fuel supply line and gas outlet line from
12 production for storage tank may be connected, make up
13 shortfall in fuel or electricity, respectively, required
14 to supply the blockchain mining device with the power
15 load label.

16 BY MR. ZHU:

17 Q. So does this backup fuel source provide
18 increased reliability?

19 A. I need to refer to the text before this
20 sentence --

21 Q. Sure.

22 A. -- in responding.

23 So is your question about the purpose of these
24 backup fuels and backup sources?

25 Q. Uh-huh.

1 A. Yes. I think, as described in this particular
2 paragraph, in some cases, the power load enable may be
3 set in relation to a daily maximum relation rate of
4 natural gas with shortfall made up by a backup source of
5 fuel or electricity.

6 The controller may be set to limit the power
7 load level to about a power level produceable by the
8 generator when the production rate is at a daily minimum
9 production rate. In some cases, the power level is set
10 to be limited at least while the production rate is about
11 the daily minimum production rate or for another --

12 (Reporter clarification.)

13 THE WITNESS: -- or for another suitable time
14 period.

15 The power load level may be set to at, below, or
16 above the maximum power level produceable by the
17 generator when the production rate is at a daily maximum
18 production rate.

19 A backup source of fuel or electricity, in this
20 case, one or more propane tanks and the ground fuel
21 supply line --

22 (Reporter clarification.)

23 THE WITNESS: -- and gas outlet line from
24 production storage tank may be connected, makeup shelf
25 force in fuel or electricity, respectively, required to

1 supply the blockchain mining device with the power load
2 level.

3 So I think the answer is that, by providing
4 these backup sources, it provides feasibilities to the
5 mining activities. But also, as stated in these
6 particular paragraph, in such an example, when the gas is
7 eliminated but backup fuel use may be increased, plus
8 operating cost may raise relative to the daily load
9 embodiment -- embodiments where power load level was set
10 in relation to the daily minimum production rate because
11 of the requirement for backup fuel or electricity source.

12 So I hope that answers your question.

13 BY MR. ZHU:

14 Q. Yeah. For sure. I -- my -- my question is
15 really just a yes or no.

16 A. Well, I tried to be comprehensive, and --

17 Q. Yeah, yeah, yeah. Sure.

18 So does the backup fuel source provide increased
19 reliability?

20 A. I would say flexibility as well as --

21 Q. Sorry. What's that term?

22 A. Flexibility.

23 Well, flexibility, that's my opinion. Because
24 this would enable the increase of blockchain mining
25 activity as needed, but that involve a higher cost, as

1 stated in this paragraph, due to the use of backup fuel
2 or electricity source.

3 Q. So does the S9 miners -- does the S9 miner have
4 a power on or power off switch?

5 A. I guess I would need to refer to Mr. Barbour's
6 declaration to learn more about S9 miner, based on my
7 understanding. But in theory, any device can be turned
8 on or off, any electronic devices, as long as the power
9 supply is cut off.

10 But I guess your question is whether there is
11 such a manual switch to turn it on or off. I'm not aware
12 of that directly from Mr. Barbour's declaration.

13 Q. So what happens when you cut off power while the
14 S9 miner is running?

15 Do you lose the Bitcoin you mined so far?

16 A. It depends on the stage of the computation
17 algorithm and the status of communication with the
18 blockchain database. So it depends on many factors. I
19 will not make the single conclusion just based on when
20 you turn it off.

21 Q. Let's see. So if -- if the mining is
22 unfinished, right -- for example, I mined half a Bitcoin
23 at the point you cut off the power. Who -- who's going
24 to handle -- who's going to keep handling the mining?

25 A. I'm not sure if I fully understand your

1 question. Can you repeat it?

2 Q. Yeah, yeah, yeah. For sure.

3 Let's see. So -- so do you think mining is
4 required -- well, first of all, let me ask you a concept.
5 What is proof of work?

6 A. Yeah. So that's one of the validation process,
7 basically, as part of the communication with the
8 blockchain database. And you may have heard about
9 another concept --

10 (Reporter clarification.)

11 THE WITNESS: -- called proof of sync, POS,
12 process, as well. So these are different kind of message
13 to communicate with the blockchain database in blockchain
14 mining systems.

15 BY MR. ZHU:

16 Q. I see.

17 So if you turn off all the miners in the
18 blockchain database -- sorry -- in the blockchain
19 network, does the system just collapse?

20 A. I need to understand what you mean by all the
21 miners and all the --

22 Q. Yeah.

23 A. -- and -- and it's hard for me to understand
24 your hypotheticals without specific information.

25 Q. For sure.

1 So as we're speaking now, there are millions of
2 computers mining Bitcoins, right?

3 So let's say power goes down for all of them.
4 Does the blockchain -- does the blockchain system just
5 collapse?

6 Can you still do transactions over the
7 blockchain system?

8 A. If the power is off, I assume you mean the
9 network connection is also off. Are you assuming the
10 network is still active and you can still communicate
11 with the network database, just the mining circuitry and
12 the chips are not active?

13 Q. That's right. The latter.

14 A. So if the chips are not active, are you saying
15 that the previous algorithms and previous efforts were
16 already communicated with the blockchain database or they
17 were not communicated with the blockchain data?

18 Because --

19 Q. They were not communicated before they were shut
20 down?

21 A. So it all goes back to a specific process of the
22 mining -- blockchain mining systems.

23 Is it being communicated with the network
24 continuously or it's not communicated with the network at
25 all prior to being shut down.

1 Q. Let's say it communicated with the network
2 before the shutdown.

3 A. So as you know, this is an algorithm, typically,
4 being run on these chips, and there's a consistent
5 communication with the database. If the information and
6 the data we see in transit to the blockchain database,
7 then some of the information will be preserved there
8 before the device become inactive.

9 Q. I see.

10 A. If we agree on this fact or this particular
11 mechanics, then -- then I don't believe everything will
12 be lost. And that's why you see some of the blockchain
13 mining devices will be turned on and off.

14 Q. And when it turns back up, is it going to resume
15 the present -- the programs that saved up to the
16 blockchain network?

17 A. Well, that all depends on how you turn it on. A
18 simple analogic style computer, when you turn it back
19 just to be sleeping and quickly turn it on, you can still
20 resume a lot of applications. But when there's a power
21 outage, sometimes you lose all the data.

22 So it all depends on how the system is to
23 control this on-off case. And that's why just now, it's
24 a shut down, I tend to be very cautious.

25 You may have heard about some cases that

1 someone's personal computer lost all the data because of
2 a power outage, because they also damaged the hard disk
3 and other components of the system. But not all the
4 cases like that. Some laptops might have a battery, they
5 still operate with power outage. And some computer still
6 resume some of the backup information, they can perform
7 the computation.

8 So it all depends on the hardware and software
9 setting of these blockchain mining processors, devices,
10 and systems.

11 Q. I see. Thank you.

12 Let's turn to your declaration, at paragraph
13 173.

14 I see three elements in this paragraph, right?
15 Let's take a look at the second one, where it says, "The
16 independent claims recite multiple, for instances, not
17 one, blockchain mining devices that allow the modulation
18 of the load applied to the generator to improve the cost
19 effectiveness of budget mining" --

20 (Reporter clarification.)

21 BY MR. ZHU:

22 Q. -- "and overall power generation and
23 reliability."

24 So -- so how does the fact that there are
25 multiple blockchain mining devices allow the modulation?

1 So if there is only one blockchain mining device, does
2 that not allow the modulation for the load?

3 A. Well, I guess if we refer to the same sentence
4 as you just read -- Nicole, please, are you asking a
5 question?

6 No. Okay.

7 So as you can see from this particular sentence,
8 it reads that independent claims recite multiple, not
9 only one. So that's something that includes the one
10 case.

11 Seems we are 6:00 p.m. Can I request an another
12 break if it's okay?

13 Q. Oh, for sure. Yeah, yeah, yeah. It's 6:01.
14 Let's come back at 6:11.

15 A. Thank you.

16 Q. Thank you.

17 (A recess was held from 6:01 p.m. to 6:12 p.m.)

18 BY MR. ZHU:

19 Q. All right. Welcome back, Dr. You.

20 Can you take a look at paragraph 174 of your
21 declaration?

22 A. Yes.

23 Q. The first sentence says, "Of course the petition
24 misrepresents the independent claims used so far, as it
25 contends that the claims system and method need not be

1 approximate to the hydrocarbon facility that is the
2 source of the claim continuous combustible gas."

3 Do you still stand by that statement?

4 A. Yes, I still stand by the statement.

5 Q. So do you think Claim 1 requires that the system
6 be located adjacent to the hydrocarbon facility?

7 A. Well, the language in Claim 1 does not expressly
8 state the distance. But as I mentioned just now in my
9 response, I don't see any reason that they should be
10 quite far away from each other, from an expert
11 perspective.

12 Q. Okay. Can you take a look at paragraph 90? I'm
13 looking at the last sentence. "Yet, in the absence of a
14 counterparty, for instances, e.g., the pipeline or
15 electric grid, venting or flaring were the only stranded
16 gas disposal methods recognized in the art."

17 What's your basis for this statement?

18 A. I just turned to this paragraph, so I have to --

19 Q. Yeah, yeah, yeah. For sure.

20 A. So can you, please, repeat your question?

21 Q. Sure.

22 So the last sentence of this paragraph read,
23 "Yet in the absence of a counterparty, for instance,
24 e.g., a pipeline or electric grid, venting or flaring
25 were the only stranded gas disposal methods recognized in

1 the art."

2 My question was, what's your basis for this
3 statement?

4 A. Oh, the basis of the statement?

5 Q. Yeah.

6 A. Yeah, I don't -- I think this was typical
7 discussion that we had in the field. If you think about
8 the possibility of, you know, disposal, as stated in the
9 patent language -- I think I just --

10 (Reporter clarification.)

11 THE WITNESS: Yeah. So that goes better to the
12 disposal methods that we discussed just now. I do need
13 to come back to this particular section.

14 BY MR. ZHU:

15 Q. Let me ask a different question.

16 Earlier, we discussed that in oil and gas
17 fields, there were existing generators, right?

18 A. Yes.

19 Q. And those existing generators were using natural
20 gas, right?

21 A. Well, they could use natural gas. Some may use
22 diesel, propane, as we discussed earlier. They could use
23 some sort of fuels, as well. They don't have to use the
24 hydrocarbon produced from the facility.

25 Q. I see.

1 And were they using those generated power to
2 power the drilling operation itself?

3 A. I think prior art has mentioned some of those
4 cases, that generators could provide some energy required
5 for the oil and gas production activities.

6 Q. I see.

7 So is that another way to address stranded gas
8 disposal?

9 A. Well, I guess in that case, if you want to run a
10 generator with the stranded gas, we do need some
11 pipeline, as we see just now in the photo. If you don't
12 connect a gas generator using a pipeline, I don't
13 understand how you will be able to connect a generator to
14 the gas source.

15 Q. Were you saying there was no existing generator
16 using natural gas before?

17 A. Oh, no. What I was saying is this particular
18 sentence, right? In the absence of a counterparty, such
19 as a pipeline or electric grid. And again, you're not
20 asking for electric grid. You're asking for a
21 possibility. Say, can we use a generator to constrain
22 the stranded gas and provide energy to the oil and gas
23 field. Is that right?

24 Q. Are you aware of people actually doing that?

25 A. Yes. I'm aware of that, and my understanding is

1 that, for that to happen, we do need some kind of
2 pipeline to connect gas source with a generator.

3 Q. Oh, I see what you're saying.

4 You're saying the pipeline is a counterparty in
5 the sentence; is that correct?

6 A. Well, it's a plan B in this case that we do need
7 a pipeline to connect with the gas.

8 Q. I see.

9 So in the absence of a pipeline -- oh, I see
10 what you're saying.

11 But the pipeline here in this sentence, does it
12 refer to a long distance pipeline or does it also include
13 a short distance pipeline?

14 A. I don't think the term "pipeline" here has any
15 definition, right? It, basically, means in the absence
16 of a pipeline or electric grid.

17 Q. I see.

18 A. And in this case, venting or fraying, which does
19 not require some sort of pipeline to connect generator
20 with the gas source, will be the only option.

21 Q. That makes sense.

22 Is it your opinion that there was a long-felt
23 and unmet need?

24 A. Can you repeat your question?

25 Q. Yeah, yeah, yeah.

1 So if you look at the previous paragraph,
2 paragraph 89, in your declaration --

3 A. Yes.

4 Q. -- there was a section title saying "Long-felt,
5 Unmet Need."

6 A. Yes.

7 Q. What do you mean by that?

8 A. Oh, what do I mean by this long-felt unmet need?

9 Q. Yes.

10 A. I see.

11 Please give me a minute so that I can refer to
12 my declaration here.

13 So there are a few unmet needs in industry
14 before the patent date. And as I discuss in the
15 beginning of paragraph 89, one of them, which is widely
16 recognized and long --

17 MR. THOMPSON: Let the record reflect that
18 Dr. You's video feed looks to have gone dead.

19 THE REPORTER: Would you like to go off the
20 record?

21 MR. THOMPSON: No. I should, probably --
22 because there's a question pending, I want to try to stay
23 on the record. He was in the middle of an answer, and I
24 don't know -- he might be able to hear us.

25 So I'd like to stay on the record if we can so

1 that -- Dr. You's video feed is stuck and he's in the
2 middle of an answer. So what I'd like to do is I'd like
3 everybody just to stay here. And Dr. You has now dropped
4 off, so -- and so he'll re-join here in a minute.

5 And then if we could, Nicole, just go ahead and
6 read the question and then the answer and -- and we'll
7 pick right up where we were. Does that make sense, Jay?

8 MR. ZHU: Oh, yeah. Sure. No -- well, that all
9 depends how long we wait, right? We're not going to be
10 here for two hours, but --

11 MR. THOMPSON: Okay. If you want to jump off
12 the record, we can jump off the record.

13 (A recess was held from 6:25 p.m. to 6:28 p.m.)

14 (Whereupon the previous question was read.)

15 THE WITNESS: I can resume from there if we are
16 ready.

17 Yeah. So a widely recognized and longstanding
18 problem of stranded gas was release of flare at oil and
19 gas production facilities.

20 And actually, this corresponds to the earlier
21 question that Mr. Zhu was asking in terms of the last
22 sentence of paragraph 19. In the absence of
23 counterparty, venting or flaring were the only strength
24 as disposal methods recognized in the art.

25 Here, it's specifically mentioned and refer to

1 the term that the measure we discuss earlier about using
2 generators to produce energy by turning the flare gas and
3 power energy for oil and gas production, that was also
4 recent.

5 So the unmet need, of course, has a specific
6 time frame here, but this is just some of the solutions
7 that we discuss, including the method discussed earlier.
8 And this particular invention is all about.

9 But in the last sentence of paragraph 19, I was
10 referring to a more earlier recognition in this field in
11 the art that venting or flaring were major disposal
12 methods.

13 BY MR. ZHU:

14 Q. I see.

15 So when you're saying is using an onsite
16 generator to use the gas was recent, how recent do you
17 mean?

18 A. Well, I guess there are some inventions, as I
19 see, that Dickensian -- for instance, the patent by
20 Dickensian so long impressed the idea you mentioned, and
21 I believe it was about -- I need to check the specific
22 year here. I don't have a specific number in front of
23 me, but I don't know if you can drop that particular
24 document, which is one of the patents Dickensian.

25 Q. So were you aware of, you know, on-site

1 generators well before Dickensian?

2 For example, let's say before the 20 -- before
3 2011, are you aware of people using on-site generators?

4 A. Yes. I think on-site generators were available
5 before 2011, but here we are talking about solving the
6 problem of stranded gas using on-site generators, and
7 that's a bit different concept about having an on-site
8 generator available on the oil and gas well.

9 Q. I see.

10 And the difference being some generators may run
11 on stranded gas, some generators may run on diesel?

12 Is that the distinction?

13 A. And could run for different fuel sources, and it
14 could also produce -- it could also meet different
15 demands. I mean, the Dickensian case, as we discuss
16 here, is that it will produce some energy that will be
17 used for the facility locally.

18 But still, in Dickensian's invention, they
19 mention that excess electricity will be sold to the power
20 grid or to other sources.

21 Q. I see.

22 So when you -- I guess in your declaration you
23 also discuss a little about Bounty, right?

24 Do you understand that Bounty talks about using
25 gas power to run a data center?

1 A. Yes. I believe there's one particular section
2 discussing about the 1989 patent, although I forgot what
3 year that one exactly is. If you could drop the
4 document, I will be able to refer to a particular year.

5 But my impression was that that particular
6 invention was also relatively recent, although they are
7 before this particular invention of 2017. But they were
8 relatively recent and still considered as a long failed
9 hardship.

10 Q. I see. I see what you're saying.

11 So do you think this long-felt unmet need was
12 solved by Dickenson or Bounty?

13 A. I need some time to refer to Bounty. For
14 Dickensian, I think they partially adjust this problem.
15 I will not say it's being solved because the solved
16 involved multiple components, depending on how you
17 address it. They are already existing methods to deal
18 with the stranded gas, as I describe it in the last
19 sentence of paragraph 19. Venting or fraying was some
20 possibilities.

21 Q. I see.

22 Well, you're aware of the Mags system, M-A-G-S,
23 system?

24 A. Yes. It was also discussed in the petition, and
25 I have the chance to review some of the information about

1 a Mags system.

2 Q. I see.

3 Do you think the Mags system can also address
4 this problem?

5 A. Again, I will need to review the specific
6 document. If you could drop the file so that I could
7 understand what -- or remember exactly what year this
8 is -- invention was presented.

9 My understanding is that the Mags system could
10 generate some energy for the gas or out of, you know,
11 other energy sources. But when you say solve the problem
12 entirely, it depends on the problem that we are talking
13 about and how we define it being solved.

14 Q. Okay. Let me rephrase the question.

15 Do you think the Mags system addresses this
16 problem?

17 A. So what problem are we discussing here?

18 Q. The problem how to utilize stranded gas.

19 A. So I will need to refer to the Mags system
20 documents. Would it be possible to request those
21 documents before I --

22 Q. For sure. For sure. Yeah, yeah, yeah.

23 So I just dropped into the chat Exhibit 1013.
24 Now it's not showing up.

25 Okay. Now it's showing up.

1 (Exhibit 1013 was marked for identification.)

2 THE WITNESS: So I'm now downloading this
3 document. Now I have this document, and trying to open
4 it up.

5 So I see in this document, it mentions the year
6 2015, so that was quite close to the invention date,
7 which is about 2017 of this case. Of course, it's before
8 2017. So this somehow reinforces my memory that this was
9 relatively recent discussion, although I don't have the
10 specific information about when this Mags system was
11 first invented.

12 BY MR. ZHU:

13 Q. For sure. I -- I guess my question is, does the
14 Mags system address, you know, the problem how to utilize
15 stranded gas?

16 A. So my understanding about this Mags system is
17 that it's a gas processing equipment unit. It could
18 potentially be used for the stranded gas case. But when
19 you're talking about solving a problem of dealing with
20 the strand gas while performing blockchain mining, I do
21 not believe Mags system will meet the needs.

22 But when you are talking about utilizing some of
23 the gas resources, the Mags system does describe some
24 methods to process the gas.

25 Q. I see.

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1 MR. ZHU: That would be all of my questions. I
2 turn over the witness.

3 MR. THOMPSON: No questions.

4 MR. ZHU: Okay.

5 MR. THOMPSON: Off the record.

6 THE REPORTER: Before we go off the record,
7 Mr. Thompson, do you want --

8 MR. THOMPSON: You may drop off.

9 THE WITNESS: Okay.

10 (Whereupon proceedings concluded at 6:39 p.m.)

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I, the undersigned, FENGQI YOU, Ph.D., do hereby
certify that I have read the foregoing deposition and
find it to be a true and accurate transcription of my
testimony, with the following corrections, if any:

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REPORTER'S CERTIFICATE

I, NICOLE HATLER, a Shorthand Reporter, State of California, do hereby certify:

That FENGQI YOU, Ph.D., in the foregoing deposition named, was present and by me sworn as a witness in the above-entitled action at the time and place therein specified;

That said deposition was taken before me at said time and place, and was taken down in shorthand by me, a Certified Shorthand Reporter of the State of California, and was thereafter transcribed into typewriting, and that the foregoing transcript constitutes a full, true and correct report of said deposition and of the proceedings that took place;

IN WITNESS WHEREOF, I have hereunder subscribed my hand this 7th day of July 2024.



NICOLE HATLER, CSR NO. 13730
State of California

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