Exhibit 6

Exhibit 7

Expert Report of Dr. ▮▮▮▮▮▮▮▮

Securities and Exchange Commission v.
Ripple Labs, Inc., Bradley Garlinghouse and Christian A. Larsen

Confidential

October 4, 2021
Updated January 25, 2022

Contents

1   Introduction

1.1   Assignment

I have been engaged by the Securities and Exchange Commission ("SEC"), through Integra FEC LLC ("Integra") to provide expert testimony in the matter of Securities and Exchange Commission v. Ripple Labs, Inc., Bradley Garlinghouse and Christian A. Larsen, pending in the United States District Court for the Southern District of New York. The SEC has retained me to independently analyze and opine on: (1) whether the distributed ledger system on which XRP token is transacted ("XRP Ledger") is a centralized or a decentralized system as of the date of this report, and (2) what would likely happen to the XRP Ledger if Ripple Labs Inc. ("Ripple") ceased functioning.

Before reaching those questions, SEC asked me to provide answers to certain background questions:

Prefatory Questions:

- *(*P1) Describe the basic operating principles of blockchain technology and explain how its consensus mechanisms work.

- *(*P2) Explain the XRP Ledger consensus mechanism, including the concept of Unique Node Lists ("UNLs").

The SEC then asked me to analyze and opine on the following questions:

Questions for Expert Opinion:

- *(*E1) To what extent is the XRP Ledger centralized or decentralized when compared to generally recognized blockchain protocols such as those used by Bitcoin and Ethereum?

- *(*E2) To what extent have Ripple's efforts been needed to support the proper functioning of the XRP Ledger?

- *(*E3) What risks to the XRP Ledger would or might materialize if Ripple "walked away" or "disappeared"?

1.2   Qualifications

I am a computer scientist with 18 years of specialization in fault-tolerant distributed systems, an area of computer science that is at the core of blockchain and decentralized systems. In particular, my core area of expertise are so-called "Byzantine" fault-tolerant ("BFT") distributed consensus protocols. *Byzantine* here refers to the ability of participants in a distributed system, to deviate from the algorithm prescribed to them (e.g., by being malicious, that is by acting to purposefully attempt to disrupt the functioning of the system). The consensus protocol that underlies the XRP Ledger aspires to be in the category of BFT consensus protocols.

I hold a ▮▮▮▮▮ ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮ from the ▮▮▮▮▮▮ ▮▮▮▮▮▮▮▮▮▮ (1996-2001) and a ▮▮▮▮▮▮▮▮▮▮▮▮▮ degree from ▮▮▮▮▮▮▮▮▮▮ in distributed systems (2003-2008). My PhD thesis entitled ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮

██, dealt with BFT distributed consensus protocols. Before Bitcoin, BFT consensus was only a rather niche area of research. ██

██

███████████████████████████████████

After my PhD, I was a Postdoctoral researcher at ████████████████████████████████ After that, in the period from 2010 to 2014, I worked in academia. ████████████████████████████████

██

██

██

██

██

████████████████████████████████████

I am an author of many research papers and patents which are often cited by other researchers. ██

██

██

██

████████████████████████████████

██

██

█████████████████████████

I respectfully ask you to refer to my enclosed CV for additional details.

I have been retained through Integra FEC, a forensic data analytics and litigation consulting firm. I am compensated by the SEC via Integra at the rate of \$700 per hour. My compensation is not dependent on me reaching any specific opinion. Members of Integra's team also performed work in connection with this report and are compensated at a rate ranging from \$235 to \$520 per hour.

1.3   Documents Relied Upon

For the analysis of the XRP Ledger protocol, I relied on two papers authored by current and former Ripple employees, the official documentation of the XRP Ledger, as well as on reviewing the code of the XRP Ledger server. These sources are listed in detail in Section 4.1.

Furthermore, the "References" section of this report contains a list of other documents and data sources I relied upon in completing the analysis in this report, including a body of scientific research related to the definition of decentralized systems.

Where appropriate, the data sources are given inline in the text, as a web link, footnote or a citation.[1]

2   Summary of Findings

I reviewed the scientific literature on decentralized systems, with which I was familiar, to establish a methodology for evaluating the extent of decentralization of distributed systems.

- I first adopt the basic definition of a decentralized system, as defined by Troncoso et al. [21], which defines decentralized systems as a subset of distributed systems where multiple authorities (parties) control different system components and no authority is fully trusted by all.

- I then refine this basic definition, with the support of the scientific literature, to identify four main aspects of decentralization: Resilience, Inclusiveness, In-Protocol Incentives, and Governance. I define each of these aspects of decentralization in Section 3.1.

I proceed to explain the inner workings and to evaluate the decentralization levels of the Bitcoin (Sec. 3.2) and Ethereum (Sec. 3.3) blockchains, respectively. I thereby answer Prefatory Question P1 and prepare the ground for answering Expert Question E1 (as defined in Sec. 1.1).

I then turn to analysis and explanation of the XRP Ledger protocol in Section 4, in particular to its concept of Unique Node Lists (UNLs), thereby answering Prefatory Question P2. In my analysis of the XRP Ledger I rely solely on the material which I consider endorsed by Ripple and/or its employees, as listed in Section 4.1.

Finally, in Section 5, I give my expert opinion, answering questions E1, E2 and E3, as stipulated in Section 1.1. Below, I give an overview of these findings.

I answer Question E1 in Section 5.1, where I evaluated the decentralization of the XRP Ledger (i.e., its Resilience, Inclusiveness, In-Protocol Incentives, and Governance aspects) and compared it to the decentralization of the Bitcoin (itself evaluated in Sec. 3.2.3) and Ethereum (Sec. 3.3.1) blockchains. An overview of this comparison is given in Table 1.

In summary, the XRP Ledger has low Resilience as it takes corrupting only a single party to be able to compromise key properties of the system.[2] In fact, as a result of its low Resilience, the XRP Ledger does not satisfy the basic definition of a decentralized system [21], and is, therefore, in my opinion, centralized.

The centralization here stems from the following facts pertaining to the XRP Ledger software, which I will detail later in this report:

1. Participants required for the proper operation of the system (nodes) are "curated" by Ripple for inclusion into a special list, called the dUNL, which is to be understood as a *default Unique Node List*.

---

[1]Beyond these sources, I further considered the following documents related to this case, none of which I relied on in forming my opinions set forth herein:

- "Submission to the Conference of State Bank Supervisors", submission by Ripple Labs Inc. Bates number RPLI_SEC 0086553.
- Case 1:20-cv-10832-AT Document 46 Filed 02/18/21, 79 pages.
- Case 1:20-cv-10832-AT Document 45 Filed 02/15/21, 9 pages.
- Case 1:20-cv-10832-AT Document 43 Filed 01/29/21, 93 pages.

[2]The number of parties that need to be corrupted to subvert key properties of a distributed system is also sometimes called the Nakamoto coefficient.

Decentralization aspect	Ideal Decentralized System	Bitcoin Blockchain	Ethereum Blockchain (with Proof-of-Work)	XRP Ledger
Nakamoto coefficient (Resilience)	always greater than 1, the higher the better	≥ 4	≥ 3	1
Inclusiveness	yes	yes	yes	no
In-Protocol Incentives	yes	yes	yes	no
Governance (public face)	no	no	yes	yes
Governance (tokens allocated at genesis)	0, the lower the better	0%	61.5% (about 10% owner controlled) of today's supply	100% (all owner controlled)

Table 1: Comparison of the XRP Ledger to the Bitcoin and Ethereum blockchains for key aspects of decentralization defined in the decentralization evaluation methodology of Section 3.1.

2. As of the latest release of the XRP Ledger software, referred to as "rippled v1.7.3", Ripple controls the web domain which hosts the service that provides the dUNL to the XRP Ledger participants. Namely, this dUNL provisioning service is deployed at the address `http://vl.ripple.com`.

3. Participants in the XRP Ledger, who use unmodified code of rippled v1.7.3, periodically refresh their locally referenced UNL, which serves as a local list of "trusted participants", by copying the contents provided by the dUNL provisioning service, i.e., the dUNL controlled by Ripple and disseminated at `http://vl.ripple.com`.

4. The design of the XRP Ledger requires, for correct operation of the protocol, a very large overlap (intersection) across UNLs that individual participants use.

5. Therefore, Ripple's dUNL provisioning service needs to be trusted for correct operation of the system.

   Otherwise, in the case of an untrusted dUNL provisioning service, it could provide participants with UNLs that do not have sufficient overlap, compromising key properties of the XRP Ledger. This makes it possible for a single authority, namely, Ripple as the dUNL publisher, to subvert key properties of the system. This makes the XRP Ledger, by definition of Troncoso et al. [21], and in my opinion, centralized.

This issue of a centralized dUNL publisher, alone, is in my opinion sufficient to render the XRP Ledger centralized. Nevertheless, I conducted an even more detailed evaluation of the XRP Ledger through the prism of other decentralization aspects. These are summarized below:

- I identified another Resilience vulnerability which makes it possible for a single party to subvert key properties of the system, independent of the centralized dUNL publisher issue. This is detailed later in the report (Appendix B).

- The XRP Ledger does not satisfy Inclusiveness, which, in short, refers to a system which provides equal opportunities to participants (see Section 3.1, for detailed definition). While the XRP Ledger allows any participant to join the system, it treats its participants unequally. This inequality stems,

again, from the existence of a Ripple-curated dUNL, which is, in turn, required for the XRP Ledger to function properly.

- Unlike other compared blockchains, the XRP Ledger does not have In-Protocol Incentives, which are defined, in short, as the existence of software-defined incentives for participants to join the system and which contribute to the decentralization of a blockchain (see Sec. 3.1). In contrast, the XRP Ledger solely relies on out-of-protocol actions of existing participants to incentivize new participants to join the XRP Ledger.

- Finally, the XRP Ledger scores poorly in the Governance aspect. For instance, while an ideal decentralized system should have no public face (representative) and should have not pre-allocated tokens at system's inception, the XRP Ledger sits at the opposite end of the spectrum, having pre-allocated all its tokens to people and organizations which serve or have served as its public face.

To answer the next question, Question E2 from Section 5.2, regarding the role of Ripple's efforts in supporting the proper functioning of the XRP Ledger, I first analyzed the situation as of the time of writing of this report, assuming no further changes to current rippled v1.7.3 code, as the answer depends on the software code. Given the nature of the question, I also analyzed some historical aspects of the system, namely the fraction of validators in the dUNL which Ripple and organizations that received funding from Ripple used to control.

My findings show that, today, Ripple's efforts are needed to maintain components of the XRP Ledger secure from internal and external attacks. These efforts relate primarily to publishing a dUNL, at `https://vl.ripple.com`, in a secure way so that a potential attacker (i.e., a malicious adversary, also called a Byzantine [13] attacker) cannot take control over the dUNL publishing service.

In addition, Ripple needs to ensure that the dUNL is curated and populated only with attested validators, since even a single Byzantine validator, combined with an unreliable network, may subvert key properties of the XRP Ledger— as detailed in Appendix B. For this same reason, Ripple needs to maintain security over the 6 validators it itself controls out of 41 validators contained in the dUNL as of October 4, 2021.

Ripple used to control a larger fraction of validators listed in the dUNL. I give a historical overview of this fraction at the end of Section 5.2. Throughout a large majority of the history of the XRP Ledger, Ripple controlled more than 20% of validators in the dUNL. Moreover, its level of control was actually at 100% of validators in the dUNL for much of its history. This is relevant because, as discussed below in more details, when an organization controls more than 20% validators in the dUNL, it becomes a single point of failure and needs to be trusted by other organizations that use the same dUNL.

Here, it is important to repeat and emphasize the result of my analysis related to Question E1. Even though Ripple today controls less than 20% of validators, it is still a single point of failure that needs to be trusted by all participants who use the only dUNL to which the rippled v1.7.3 software defaults, and which is controlled by Ripple and disseminated at `http://vl.ripple.com`.

Finally, in answering Question E3 (see Sec. 5.3), I consider the risks that might arise in the hypothetical case of Ripple's disappearance and the effects it might have on the XRP Ledger.

If Ripple disappears, it may be impossible to continue securely publishing the dUNL on the web address that Ripple currently controls (`http://vl.ripple.com`). For example, if the registration of the `ripple.com` domain expires, the attacker could register the domain on the attacker's name, take over control of the

7

domain and publish non-intersecting dUNLs hence subverting key properties of the system. If participants decide to ignore the dUNL to avoid such an attack, they would need to make changes to the XRP Ledger consensus software, or consent on UNLs through human agreement.

Finally, in the case where Ripple disappears but the dUNL somehow continues to be published correctly at `http://vl.ripple.com`, there are still potential risks. Namely, even assuming the complete absence of malicious attacks, the correct functioning of the XRP Ledger as a system requires 80% of validators within the dUNL to operate correctly and without faults or disappearance from the system. With 41 validators in the dUNL, this means that the XRP Ledger will halt if 9 or more validators (i.e., over 20% of 41 validators) stop functioning. With Ripple controlling 6 out of these 41, it may seem that the XRP Ledger might continue to operate even without Ripple.

However, if Ripple disappears, other validators may disappear as well. For example, 9 universities which have received funding from Ripple under the umbrella of the University Blockchain Research Initiative (`https://ubri.ripple.com/`) operate validators listed in the dUNL. If Ripple disappeared, the funding would eventually stop too, and the universities may realistically stop operating validators, in particular since the XRP Ledger offers no In-Protocol Incentives.[3] Disappearance of only 3 out of these 9 validators operated by universities, combined with the disappearance of 6 validators operated by Ripple would be sufficient for the XRP Ledger network to halt. In addition to the 9 universities, at least 4 companies that received funding from Ripple also operate validators listed in the dUNL. Operation of these validators could also be compromised if Ripple disappears.

3   Background

In this section, we[4] describe the methodology for evaluating the decentralization of a given blockchain system (Section 3.1) and the necessary technical background behind the Bitcoin (Section 3.2) and Ethereum (Section 3.3) blockchains. This background is needed in order to answer question E1 as stipulated in the "Assignment" section (Section 1.1).

3.1   Methodology for Evaluating Decentralization in Distributed Systems

Decentralized *blockchain* systems are a subset (i.e., a special case) of *decentralized* systems, which are in turn a subset of *distributed* systems.

In computer science literature, a *distributed system* is loosely defined as *a collection of independent computers that appear to its users as a single coherent system [20]*.

In turn, *decentralized systems* can be defined as *a subset of distributed systems where multiple authorities control different components and no authority is fully trusted by all [21]*.

For instance, popular cloud and social networks like Google, Facebook or Twitter, are examples of distributed systems. However, these systems are not decentralized, as each of them is controlled by a single authority (company). Note that it is not sufficient for a system to simply have its components controlled by

---

[3]As discussed in Section 5.3, this argument could be extended to commercial companies, business partners of Ripple, which operate validators listed in the dUNL.

[4]Conforming to the style of scientific writing I have been used to, I sometimes use "we" instead of "I".

multiple authorities, to be classified as decentralized — the absence of a single trusted authority is needed, meaning that any component in a decentralized system could be *Byzantine*.

Byzantine [13] here refers to the ability of a participant or a component in a distributed system to deviate from the algorithm prescribed to them. This includes any behavior, including acting to purposefully attempt to disrupt the functioning of the system (in this case we talk about *attacks*). Byzantine behavior in literature is also sometimes also called, e.g., *adversarial*, *malicious*, or *arbitrary*. In this report, we sometimes use these notions for better readability. Moreover, we use the notion of *adversary*, to denote an authority, or group of authorities, that can orchestrate behavior of individual Byzantine components to mount attacks on the system.

As we will argue later in detail, one example of a decentralized system is the Bitcoin blockchain, in which no single authority, even if Byzantine, can subvert the correct functioning of the system.

Beyond the above basic definition of a decentralized system, computer science literature considers multiple *aspects* of decentralization in an attempt to refine and characterize its nuances, as well as the differences among decentralized systems (see e.g., [17] for a recent survey). We summarize these into the following *decentralization aspects* which we will later use to evaluate the decentralization of the Bitcoin blockchain, the Ethereum blockchain and the XRP Ledger.

1. **Resilience** of a system refers to its ability to withstand Byzantine behavior of components of the system.

    Resilience itself may apply to different properties of the system, namely *safety* and *liveness* [12, 1].

    Informally, a safety property of a system stipulates that "bad things" do not happen. An example of such a safety property in the context of blockchains is *double-spend* resistance [16] which, in short, requires the system to prevent an adversary from spending the same amount of money twice.

    In turn, a liveness property stipulates that "good things" do eventually happen. An important liveness property of a blockchain system is *censorship* resistance [9] which, in short, requires the system to prevent the adversary from excluding (censoring) payment transactions. Another important liveness property of a system is not to stop making progress in its operation altogether. For instance, if a blockchain halts and stops processing transactions, it fails to satisfy liveness.

    We define the censorship and double-spend resistance properties more precisely later, in Section 3.2.

    In this context, the scientific literature and engineering practice is typically interested in the minimum number of authorities that the adversary needs to compromise to subvert a key property of the system, such as safety or liveness. In the context of blockchains this number is sometimes referred to as the *Nakamoto coefficient*[5] [19, 23]. Intuitively, the higher the Nakamoto coefficient, the higher the level of decentralization. As per the definition of a decentralized system we adopted [21], if this number is 1 — i.e., if a single participating authority can compromise a key property of the system — the system cannot be deemed decentralized.

2. **Inclusiveness** of the system refers to the ability of the system to welcome new participants in a way which provides them with equal opportunities compared to existing participants [22]. In short, a decentralized system provides *Equal Opportunities* if it [22]:

---

[5]Honoring Bitcoin's pseudonymous inventor, Satoshi Nakamoto. Citation [23] is an example of a scientific paper that explicitly mentions the Nakamoto coefficient.

(a) allows any participant Alice to have an equal role in the system as any other (new or existing) participant Bob, provided Alice makes the same investment in system resources as Bob, and

(b) the system does not prevent Alice from making such an investment.

Then, a decentralized system is defined as Inclusive if and only if it satisfies Equal Opportunities [22].

Inclusiveness is a refinement of a well-known classification of blockchain systems into *permissioned* and *permissionless* systems (see e.g., [15]). In short, in permissionless systems, participants self-elect into the system, whereas permissioned systems rely on an external selection process to be admitted into the system, where *authority to choose [participants] typically resides with an institutional or organizational process [15]*. In other words, permissionless systems are *open membership* systems, whereas permissioned systems are *closed membership* systems. Therefore, as a general principle, permissionless systems are to be considered more decentralized than permissioned systems. Moreover, permissioned systems are never Inclusive, while permissionless systems may or may not be Inclusive.

For example, some permissionless systems, including the XRP Ledger, allow anyone to participate but in a way that prefers some participants over the others. This makes them permissionless but not inclusive. In the XRP Ledger, nodes that participate in the system but which are included into the dUNL have a different role than the nodes which may elect to participate in the system but are excluded from the dUNL, violating Equal Opportunities.

Related to Inclusiveness, there are other approaches to refining the notion of permissionless systems in the scientific literature, which aim to capture the equality of participants within the system, taking into account the size of their investment. For instance, Karakostas et al. [10] define *egalitarianism* in a rather technically involved way aiming at capturing the proportionality of rewards of participants in blockchains compared to their investment. In a related approach, Fanti et al. [7] define *equitability*, which quantifies how much a participant can amplify her token holdings compared to her initial investment. As both notions of equitability and egalitarianism are based on participants' rewards, i.e., In-Protocol Incentives, they cannot be applied to the XRP Ledger, as the XRP Ledger does not have any rewards for participants in the system, unlike the Bitcoin and Ethereum blockchains.

Finally, some authors recognize *operational decentralization* as an important aspect [17] that is related to Inclusiveness. Intuitively, operational decentralization aims at capturing special hardware requirements for participation in the system — the less specialized the hardware requirements, the higher the decentralization. For instance, a system which requires large amounts of storage (e.g., hard disk space) to participate in blockchain A would be deemed more centralized than blockchain B which requires less storage space [17].

3. **In-protocol Incentives** is the decentralization aspect which refers to whether the system has rewards for protocol participants, paid out to protocol participants within the protocol itself. Such payments are typically in the protocol's *native token*, e.g., "BTC" on the Bitcoin blokchain. In-protocol incentives are an important aspect of decentralized systems [17]. Troncoso et al. [21] argue that the development of adequate incentives is necessary to build a successful decentralized system.

In general, In-protocol Incentives test if the system is genuinely open to new participants. On the one hand, a permissionless system that provides incentives for participants will attract new participants,

particularly if it is Inclusive.

On the other hand, a permissionless system that does not provide In-Protocol Incentives is only seemingly open, as new participants have less or no economic rationale to join the system. Such a system may resort to out-of-protocol incentives, in which case incentives are not governed by system software, but typically by people. Out-of-protocol incentives may involve existing participants establishing business and contractual relations with new participants to motivate them to join the system. This approach resembles and is more common in permissioned networks [2].

In the context of incentives, wealth distribution across token stakeholders is also considered an aspect of decentralization [17]. If the tokens of a system are held widely among many holders, the system is more likely to be considered more decentralized. If there is concentration of ownership, the system is more likely to be considered more centralized.

4. **Governance** of the system refers to the level of power, if any, of human stakeholders to influence and change key rules in the system, e.g., through software updates.

Several parameters for evaluating decentralization of governance power have been proposed or discussed in the literature. These include:

(a) *governance of the infrastructure* [8], or *improvement control* [17], often involving the number of developers contributing to a system codebase and the number of people contributing to the discussion around a system's design [3],

(b) *existence of a public face* [8], which can be defined as a personality and/or institution that is widely recognized as a spokesperson or a representative of the system.

(c) *owner control*, measured by examining the total tokens accumulated by the stakeholders in the early adoption period [17].

Finally, some authors [17] consider additional aspects of decentralization, including the decentralization at the *network layer*, i.e., pertaining to the decentralization of the network that underlies a distributed system, and the decentralization at the *application layer*, which includes, e.g., the diversity of wallets and applications that permit users to interface with the assets on the blockchain. Decentralization at the network layer requires that no single authority can control all the participants of a decentralized system at the network and infrastructure layers. For instance, a system which is controlled (administered) by multiple organizations that all host their participating nodes on a single cloud provider (e.g., Amazon Web Services) is not to be considered decentralized, as the cloud provider itself could be seen as a single trusted authority.

To maintain emphasis on the core distributed systems aspects, in this report we acknowledge these decentralization aspects that go beyond the core of a system, namely network and application layer decentralization, yet we opt to focus on decentralization aspects of systems proper.

3.2   Bitcoin Blockchain

Bitcoin is an open-source peer-to-peer computer network (also known as the "blockchain") for generating and transferring (transacting) electronic coins (denoted by BTC) among users of the blockchain. BTC is the *native coin* of the Bitcoin blockchain — this means that BTC does not represent any concept outside

11

the Bitcoin blockchain and that participants in the system are rewarded only in BTC. In the following, we denote by "Bitcoin" the Bitcoin blockchain, i.e., the peer-to-peer computer network and its software, and by "bitcoin", or "BTC", its native electronic coin.

Bitcoin was conceived [16] as an electronic cash network to allow online payments to be sent directly from one party to another without going through a financial institution or any other trusted middleman. This was not possible prior to Bitcoin as all electronic payments required trusted intermediaries, unlike physical, in-person, cash or barter transactions. Namely, prior to Bitcoin, electronic payments over the internet were sent only using trusted intermediaries such as PayPal, credit card processor companies (e.g., AMEX, VISA, MasterCard) or through traditional banking payment systems in which banks act as trusted payment intermediaries.

At a high-level, in Bitcoin, a user Alice wishing to send 1 BTC to another user Bob, uses her private cryptographic key to digitally sign a transaction to transfer 1 BTC from an *address A*, that Alice controls, to *address B* supplied to Alice by user Bob. Alice's private cryptographic key is like a very long password known only to Alice, which is cryptographically tied to *address A*.

Knowledge of the private key allows Alice to have control over address A and over the BTC digitally represented at that address. As a fundamental principle, whoever controls the private keys corresponding to a given address, controls bitcoin pertaining to that address.

The main challenge in such a system arises when users are not trusted by other users. This lack of trust is inherent to a system without trusted intermediaries. Namely, Alice could attempt to *double-spend* her BTC.

Consider the following example of a double-spend attempt. Alice signs transaction $tx_{Alice-to-Bob}$ in which she transfers 1 BTC from address A she controls, to Bob's address B. However, she also signs a conflicting transaction $tx_{Alice-to-Alice}$ in which she sends 1 BTC from address A to another address A' that Alice also controls.

Which of these conflicting transactions should be actually taken into account is the main technical problem Bitcoin solves. In the process called *consensus*, peers in the Bitcoin network, without trusting each other, agree on the global order of all transactions in the system thanks to a set of predetermined parameters (programmed into the software that created the Bitcoin network) that govern how to reach consensus.

In our example, all peers in the Bitcoin network would agree on the relative order between the two conflicting transactions $tx_{Alice-to-Bob}$ and $tx_{Alice-to-Alice}$. The first transaction in that order would be considered valid, whereas the other would be discarded. Or, the order could be the other way around — the point is that the consensus mechanism for recording transactions on the Bitcoin blockchain (explained in detail later) provides a mechanism for participants in the network, who may not even know each other and do not trust each other, to nevertheless agree to validate the exact same sequence of transactions.

Besides preventing double-spends, another important property Bitcoin provides is censorship-resistance. In short, censorship-resistance guarantees a correctly-behaving user Alice to have her transactions eventually included in the blockchain (while possibly having Alice pay a *transaction fee* for this service). In other words, censorship-resistance guarantees that transactions will not be excluded from the Bitcoin blockchain due to actions of a Byzantine adversary or due to peers disappearing from the system.

In the following, we explain the Bitcoin consensus mechanism, first describing consensus preliminaries (Section 3.2.1) followed by explaining its validation mechanism (Sec. 3.2.2).

3.2.1   Bitcoin Blockchain Consensus — Preliminaries

For efficiency reasons, Bitcoin processes transactions in blocks, which are groups of transactions together with protocol metadata. Blocks have a maximum block size. Effectively, the Bitcoin consensus mechanism establishes a global order on those blocks forming a *chain* of blocks (i.e., a "blockchain"). Consequently, Bitcoin establishes global order on the transactions contained in those blocks.

Bitcoin software defines a so-called *genesis* block, the first block in the chain, to which the latter blocks are appended. Bitcoin genesis block contains a link to the "real" (physical) world, with the headline of the cover page of *The Times* (British daily national newspaper) from January 3rd, 2009 reading *"Chancellor on Brink of Second Bailout for Banks"* being written into the Bitcoin genesis block. This link to the real world, beyond possibly conveying a motivation for the existence of Bitcoin, is important because it proves that the creator of the Bitcoin network, Satoshi Nakamoto, could not have run the code before that day to generate blocks which would be considered valid by the Bitcoin blockchain.

At the beginning of the Bitcoin blockchain's history there were really no bitcoin to transact, as none had been brought to existence (i.e, *minted* or *mined*) yet. To bring bitcoin into existence, Bitcoin software defines a *block reward*, which is at the same time an incentive for participants to participate in Bitcoin consensus. Bitcoin rewards every participant who successfully adds a block to the blockchain with a fixed reward, which halves every 210,000 blocks. The period of 210,000 blocks corresponds roughly to 4 years, as Bitcoin block production time is set to self-adjust to an expected 10 minutes between consecutive blocks. For the first 210,000 blocks, the block reward was 50 BTC per block. With maximum bitcoin supply, as stipulated by Bitcoin code, being 21 million BTC, 50% of all bitcoin have been mined in the first 210,000 blocks.[6] With block reward halving to 25 BTC, from block 210,001 to block 420,000, an additional 25% of bitcoin total supply have been minted in that period, and so on, with the current Bitcoin block reward conveniently conveying which percentage of the total supply has been minted within the current 4-year window. Currently, more than 12 years after the genesis block, the Bitcoin network has produced over 700,000 blocks with the current block reward being 6.25 BTC.[7]

Once a block reward brings bitcoin into existence, bitcoin can be transacted. For instance, assume Alice won the block reward at block number 100,000. Then, starting from the next block 100,001, Alice can transact those bitcoin and send them to other participants.

A participant in the Bitcoin network is an entity that runs a *full node*. Such a participant is sometimes also called a *peer* or a *validator*. Each Bitcoin full node keeps the entire history of the blockchain, validates new blocks and (optionally) participates in creating new blocks. Bitcoin's maximum block size and a relatively conservative time period interval of 10 minutes between the blocks imply that the blockchain does not grow too fast compared to advances in computer hardware.

Today, the size of the Bitcoin blockchain is about 400 GB of data,[8] which means that a full node can be easily run on low-cost hardware, with a mid-sized hard-disk and internet connection, basically by anyone.[9] Moreover, users can entirely opt-out from running full nodes, by maintaining only *client* wallets,

---

[6]See, for example, an illustration on `https://static.coindesk.com/wp-content/uploads/2020/03/bitcoin-supply-and-subsidy-775x500.png`.

[7]The reward may be fractional, as each bitcoin is divisible into 100 million smaller units, usually called satoshis. As an illustration of the value of Bitcoin block reward incentives, awarded on average every 10 minutes, the market price of the 6.25 BTC block reward today is, roughly, about $300,000 USD.

[8]`https://blockchair.com/bitcoin/charts/blockchain-size`.

[9]Bitcoin full node can be run on hardware which today costs about $200 USD, see `https://getumbrel.com`.

which protect their private keys and send Bitcoin transactions to others' (full) nodes. Finally, full nodes are incentivized to invest more into hardware and computing equipment, if they wish to have a higher probability of obtaining block rewards in the context of Bitcoin consensus, as explained next.

3.2.2   Bitcoin Consensus Validation

Bitcoin consensus proceeds as follows [16]:

1. New proposed transactions are broadcast to all nodes.

2. Each node collects new transactions into a block. A node cryptographically links the new block to its predecessor (parent) block. These parent links define the position of the new block in the blockchain and its path all the way to the genesis block. In short, a node chooses the predecessor block for the new block to be the one which has the *longest chain*[10] of blocks on its path to the genesis block, out of all blocks known to a node. In principle, a Bitcoin node only considers as valid only those transactions contained in the longest chain.[11]

3. In the process often called *mining*, or *Proof-of-Work* [16], each node repeatedly tries to find a final piece of information, called a *nonce*, which when embedded into the new block, will make other nodes accept and declare the new block as *valid*.

   This is the **key point** in the otherwise relatively straightforward Bitcoin consensus. This part of Bitcoin consensus relies on the widely-established cryptographic primitive called *cryptographic hash function*, or simply a *hash function*. A hash function $H()$ is a deterministic function which takes as input data of any length, e.g., a Bitcoin block, or a picture of a cat, or a YouTube video, and outputs a fixed length string of bytes, which uniquely represents the original input data. A cryptographic hash function has a few "magical" properties which Bitcoin makes use of, in particular that one cannot predict the output of a hash function by changing slightly the input, nor can it construct the otherwise unknown input which gives the desired output.

   So how does the hash function help establish block validity?

   The Bitcoin consensus validation mechanism requires a hash of a valid block to start with a specific number of zeros (0s) when represented as a bit string, that is a sequence of 0s and 1s. However, since the output of a hash function cannot effectively be predicted, a block hash with one specific nonce appears basically as a random string of 0s and 1s. Therefore, nodes need to try many nonces in order to be lucky and construct the required final data for the block such that the hash of the block will start with many 0s, as required by the validation code.

   The actual required number of leading zeros is self-adjusted by the Bitcoin blockchain during its lifetime, based on the Bitcoin code and the frequency of mined blocks, to maintain an expected block time of 10 minutes between the blocks.

   In summary, finding a nonce which makes the block valid is effectively a very simple but computationally intensive guessing game in which a node repeatedly tries different nonces, applies them to the rest of

---

[10]In fact, it is the chain which requires most work, which is most often the longest chain. For simplicity of narrative, we talk about "longest chain."

[11]Some blocks may potentially end up on branches off the longest chain. These blocks are called *orphaned* and transactions in such blocks are invalid and not taken into account.

the block, applies the hash function and sees if the output hash has the required number of leading zeros.

4. When a node finds a nonce and completes the Proof-of-Work, it broadcasts the block to all other nodes.

5. Other nodes run the *validation step* and accept the block only if: *(i)* all transactions in it are valid and do not contain already spent bitcoin, and *(ii)* the hash of the block starts with the required number of 0s.

   Unlike the mining step (Step 3) which is computationally very expensive to compute, and is typically completed only by nodes with high computing power, this validation step (Step 5) is very simple and inexpensive to compute even on low-cost hardware.

To summarize, Bitcoin Proof-of-Work (Step 3 above) consists of a miner node performing repeatedly the following substeps: a) changing the nonce, b) applying the hash function, c) seeing if the output starts with the required number of 0s, and going back to substep a) if it does not. In recent months, the Bitcoin network as a whole is estimated to have performed anywhere between 68 EH/s (exahashes per second) on June 28, 2021 and 190 EH/s (on May 9, 2021).[12] An exahash per second is one quintillion (a billion billion) hashes per second, a very large number of operations.

3.2.3   Evaluating Bitcoin Decentralization

In this section we evaluate Bitcoin consensus as described in the previous section, in the context of the decentralization methodology introduced earlier in Section 3.1. This will help us answer question E1 for expert opinion as stated in Section 1.1.

Resilience.   As discussed in Section 3.1, Resilience of a decentralized system can be measured with respect to different properties.

   We look at two major possible issues: the double-spending issue and the censorship of transactions issue.

   To mount these attacks effectively on the Bitcoin network, the adversary needs to control more than 50% of the network computing power. This would allow the adversary to simply ignore blocks produced by the rest of the network and produce the dominant longest chain, which would then, by Step 2 of the Bitcoin consensus protocol (Sec. 3.2.2), be the effective history of transactions. In the case of censorship attacks - this new history could simply be empty of transactions, or could specifically exclude the transactions of certain participants the adversary wishes to censor. This is known as a 51% attack for Bitcoin and requires a majority of the hash power of the network.

   Whereas it is difficult to precisely calculate the Nakamoto coefficient (number of different authorities required to mount the attack) for Bitcoin, this resilience can be conservatively estimated. Namely, Bitcoin nodes often group into so-called *mining pools* to spread out their earnings from block rewards more evenly over time. While individual nodes are often not directly under the control of a mining pool operator authority and could leave the mining pool if they detected that they were participating in an attack, for a *very conservative* estimate of Resilience one can assume that a mining pool fully controls all the nodes inside the pool. With

---

[12]https://www.coinwarz.com/mining/bitcoin/hashrate-chart.

this in mind, at the time of writing this report, more than 50% of Bitcoin mining power is controlled by 4 mining pools.[13] Therefore, the conservative estimate of the Nakamoto coefficient for Bitcoin is 4.

Finally, it is worth noting, in the context of later comparison to the XRP Ledger and the impact of Ripple's hypothetical disappearance (Sec. 5.3), that in the absence of Byzantine participants, the Bitcoin network is resilient to any number of participants disappearing from the system. This was effectively tested in the Bitcoin network recently, when the computing power in the Bitcoin network dropped by about 65% between May 9, 2021 (190 EH/s) and June 28, 2021 (68 EH/s), as we already discussed. This had little effect on the Bitcoin network, except that, for some time between periodic network self-adjustments, block production took more than 10 minutes on average.

Inclusiveness.   Bitcoin is a permissionless system which provides Equal Opportunities, because:

- Bitcoin allows any two participants, new or old, that make the same investment into system resources (computing power) to play the same role in the system.[14]

- Furthermore, the nature of Proof-of-Work consensus does not prevent any participant from making such an investment into system resources. In particular, assuming a free market for computing power, existing participants cannot prevent new participants from entering the system.

  With innovation in computing and the seemingly unstoppable growth of computing power available to humans, often modeled by Moore's Law (see e.g., [14]), the computing power of the existing participants actually decays in time compared to the computing power available outside the system, which is free to join the Bitcoin network.

Consequently, as it provides Equal Opportunities, Bitcoin is Inclusive.

Bitcoin also allows a large degree of operational decentralization, as its full node requirements are relatively modest with the only notable full node hardware requirement being a hard disk capable of storing 400 GBs of blockchain data for the full blockchain history (see also Sec. 3.2.1).

In-protocol Incentives.   Bitcoin provides incentives to nodes to participate in the system. Besides block rewards which we discussed in Sec. 3.2.1, Bitcoin also awards block miners with *per-transaction fees*.

Incentives provide a rational and transparent economic reason for new participants to join a decentralized system. Combined with Inclusiveness, which means that the system welcomes new participants, such incentives contribute to the rise of new participants promoting decentralization.

Finally, as indicated in the Bitcoin whitepaper [16], the economic incentives of Bitcoin make safety attacks towards compromising Resilience less likely than if the In-Protocol Incentives did not exist. If certain nodes control a large amount of computing power in Bitcoin they have an economic dilemma between using that power to attack the system or using that power to behave correctly and earn block rewards and transaction fees. This intuitively contributes to increasing the Nakamoto coefficient (Resilience measure) and consequently increasing the decentralization level of the network, in the presence of economically rational participants.

---

[13]As we observed at `https://taproot.watch/miners` and `https://btc.com/stats/pool`.

[14]Note that participants that do not make the same investment into system resources, do not necessarily have the same power in the system. For instance those that invest more into computing power can expect higher rewards from the system (e.g., more frequent block rewards).

Governance.   Concerning code improvement proposals, anyone can propose a change to the Bitcoin open-source software via Bitcoin Improvement Proposals (BIPs).[15] In practice, relatively few "core" developers (developers of the Bitcoin Core reference node software) propose and implement changes. Major changes to software are relatively rare, with no BIP containing a backwards incompatible change to Bitcoin consensus (also known as a hard-fork) ever having been deployed in the software. For changes that implement more strict consensus validation rules, i.e., which reduce the space of valid blocks and are backwards compatible (soft-fork), consensus among core developers is required, together with approval of miners through on-chain voting.

That said, as Bitcoin is open-source software, anyone can make any change to the software. A number of such backwards incompatible changes to Bitcoin code have resulted in Bitcoin network forks and, effectively, separate blockchain networks.[16]

The Bitcoin network does not have a single individual or company acting as its public face [8]. This fact contributes to its decentralization. The absence of a public face is primarily due to the fact that its creator(s) acted under the pseudonym *Satoshi Nakamoto*, who disappeared from the public discourse more than 10 years ago.

Regarding owner control, Bitcoin did not have a hidden owner accumulation phase. The first transaction in the Bitcoin network happened in block #170, seemingly between Satoshi Nakamoto and a cryptographer Hal Finney, on January 12, 2009, 9 days after The Times newspaper timestamp contained in the genesis block.[17] The first block following the genesis block was mined, probably by Satoshi Nakamoto, 6 days after the genesis block,[18] on January 9, 2009.[19]

3.3   Ethereum Blockchain

Ethereum was announced in a post on the online Bitcoin forum, *bitcointalk*, in early 2014 by Vitalik Buterin [4], with the post designating Buterin as the inventor of Ethereum. The post mentions the other 6 members of the original Ethereum team.

Compared to Bitcoin, the main novelty of Ethereum was the introduction of the capability to code more complex and more general applications on top of a decentralized consensus. As Buterin stated in the Ethereum announcement post [4]: *"Up until this point, the most innovation in advanced applications such as domain and identity registration, user-issued currencies, smart property, smart contracts, and decentralized exchange has been highly fragmented, and implementing any of these technologies has required creating an entire meta-protocol layer or even a specialized blockchain."* Ethereum provides a platform for the development of such applications, one on which different applications can co-exist. In the Ethereum parlance, these applications are called "smart-contracts."

In the same forum post, a pre-sale of Ethereum's native token, called ether or ETH, was announced.

---

[15]https://github.com/bitcoin/bips

[16]Examples include Bitcoin Cash and Bitcoin Gold.

[17]Sources that discuss this include https://thehunt.btcorigins.com/moments/the-first-transaction/ and https://themoneymongers.com/first-bitcoin-transaction/. I verified myself, by examining the Bitcoin transaction history, that the first transaction between two addresses indeed happened in block #170, see https://www.blockchain.com/btc/block/170.

[18]https://www.blockchain.com/btc/block/1.

[19]As it is widely believed, Satoshi Nakamoto may have mined a sizeable number of bitcoin in the early days of the network following the genesis, as an early participant. The exact number is practically impossible to support with hard evidence. However, we do have hard evidence, in the very Bitcoin transaction history, that an overwhelming majority of those early bitcoin that could be attributed to Satoshi Nakamoto were never transacted on the network.

The Ethereum genesis block defined roughly 72 million ETH (see `https://etherscan.io/stat/supply`), out of which about 60 million ETH tokens were sold in a crowdsale process called an initial coin offering (ICO) which ran in the summer of 2014. In the Ethereum ICO, people transferred their bitcoin (31,529 BTC in total, see e.g., `https://icoprice.com/ethereum/`) to the Bitcoin network address controlled by the Ethereum team and were allocated in return roughly 60 million ETH in the Ethereum genesis block, which appeared about a year later, in late July 2015. The difference of 12 million ETH was allocated in the genesis block for funding further development of the network.

Within the network, the native token ETH on the Ethereum network is used to pay for the computation performed by the applications (smart contracts) that run on top of the Ethereum network. This is called "gas." The Ethereum network does not have a hard cap on ETH supply.

3.3.1   Ethereum Consensus and its Decentralization

Since its inception, Ethereum has been using a variant of Bitcoin's Proof-of-Work for consensus. The two consensus protocols differ in subtle technical details, notably with respect to the approach of rewarding miners who mine blocks which do not end up on the "longest chain." Besides this difference, Ethereum uses a shorter time interval between blocks (about 15 seconds). At a high-level, the two consensus protocols can be considered very similar.

That said, practically since its inception, Ethereum has been planning to switch to an alternative consensus model called Proof-of-Stake, with the first software updates to the Ethereum network in this direction taking place recently. As the decentralization level of a distributed system fundamentally depends on its underlying consensus protocol, we evaluate the decentralization of the Ethereum network assuming its current consensus protocol, i.e., the one based on Proof-of-Work. After this, we briefly reflect on the potential impact of a Proof-of-Stake consensus to Ethereum decentralization.

Resilience.   With Proof-of-Work as its underlying consensus mechanism, the reasoning about Ethereum Resilience shares similarities to that of Bitcoin. At the time of writing of this report, more than 50% of Ethereum mining power is controlled by 3 mining pools, making the conservative estimate of the Nakamoto coefficient for Ethereum equal to 3.[20]

Inclusiveness.   With Proof-of-Work as the underlying consensus, Ethereum is a permissionless system which satisfies Equal Opportunities, which makes it Inclusive.

When it comes to operational decentralization, storing the full history of the entire state on Ethereum network has relatively high storage requirements of over 5 TB for an *archive* node which cannot be run on current commodity (i.e., widely available) hardware. However, the Ethereum network allows the pruning of old states with nodes maintaining the current state of the network (*full nodes*) requiring less than 1 TB of storage, which is still amenable to commodity hardware.[21]

In-protocol Incentives.   Ethereum provides block rewards to Proof-of-Work miners similarly to Bitcoin. It also provides rewards to miners who mine blocks which do not end up on the longest chain.[22] It also

---

[20]`https://etherscan.io/stat/miner?range=1&blocktype=blocks` and `https://etherchain.org/miner`.

[21]`https://ethereum.org/sk/developers/docs/nodes-and-clients/#recommended-specifications`

[22]These are so-called "uncle" blocks, which include some of the blocks which Bitcoin would considered as "orphaned."

incentivizes miners by awarding them per-transaction fees. These incentives provide a rationale for new participants to join the network and contribute to decentralization.

Governance. Different research papers have analyzed the process of Ethereum improvement proposals (EIPs) and compared it to that of Bitcoin [3, 17]. The two communities are in this sense largely similar, with decentralization measures somewhat in favor of Bitcoin [3, 17].

Ethereum routinely deploys backwards incompatible updates (hard-forks). One of them was a reaction to a hacker exploit which affected several millions of ETH in June 2016, changing network rules to effectively refund the affected tokens.[23] This aspect of Ethereum governance remains controversial and has led to an alternative blockchain network (an Ethereum network fork) in which this refund did not take place.[24]

Other notable differences of Ethereum with respect to Bitcoin pertaining to the Governance aspect are the following: 1) several reputable sources (e.g., [11] and [6]) consider the inventor of Ethereum, Vitalik Buterin, to be its public face and 2) Ethereum development was funded using the proceeds of the ICO. Furthermore, the initial token distribution (owner control) of Ethereum is considerably different from that of Bitcoin, with 72 million ETH being pre-allocated in its genesis block (to crowdfunders and the development team), as we already discussed.

Impact of Proof-of-Stake on Decentralization. Proof-of-Stake and Proof-of-Work consensus protocols have fundamentally different implications on the decentralization of the network. In short, in Proof-of-Stake, "miners" do not expend electrical energy for mining but vote with their monetary power proportional to the size of their investments in the native token, i.e., ETH in this case. This implies considerably different economical dynamics compared to Proof-of-Work [7] and may outright lead to violation of Equal Opportunities and, consequently, Inclusiveness [22]. This may in turn lead to increased centralization of the network. Detailed analysis of the impact of Proof-of-Stake on decentralization seems, however, outside the scope of this report as that change has not yet occurred, and is available elsewhere [22]. In the context of this report, we evaluate the Ethereum network with its current consensus mechanism, i.e., Proof-of-Work.

4   XRP Ledger Description (Answer to Prefatory Question P2)

In this section, we describe the key technical aspects behind the XRP Ledger. In particular, we explain the concept of validation and consensus in the XRP Ledger and the concept of *Unique Node Lists* (UNL) in the XRP Ledger. We thereby answer Prefatory Question (P2), as stated in Section 1.1.

4.1   Validation, Consensus and Unique Node Lists (UNLs)

For clarity, in this section (Sec. 4.1), my personal comments and remarks are clearly marked as "(MV: ⟨text of a comment/remark⟩)." The rest of the description contained in this section is taken solely from the material which I consider endorsed by Ripple and/or its employees:

---

[23]See, e.g., [24], as well as https://www.coindesk.com/understanding-dao-hack-journalists, https://eng.ambcrypto.com/ethereum-co-founder-vitalik-buterin-delves-into-infamous-dao-hack/, or https://www.gemini.com/cryptopedia/the-dao-hack-makerdao.

[24]Ethereum Classic.

1. Brad Chase and Ethan MacBrough. "Analysis of the XRP Ledger Consensus Protocol", arXiv:1802.07242v1, 20 Feb 2018. [5].

   Chase and MacBrough are, respectively, current and former employees of Ripple.

2. Official XRP Ledger documentation, available at `https://xrpl.org/docs.html`.

3. Blockchain daemon implementing XRP Ledger in C++ (i.e., XRP Ledger, or rippled reference implementation), available at `https://github.com/ripple/rippled`, and in particular its latest release at the time of writing of this report, i.e., release 1.7.3 of 27 August 2021, as available at `https://github.com/ripple/rippled/tree/release`. We refer to this software as "rippled v1.7.3."

4. Original whitepaper by David Schwartz, Noah Youngs and Arthur Britto. "The Ripple Protocol Consensus Algorithm", available at `https://ripple.com/files/ripple_consensus_whitepaper.pdf` [18]. Since this document is marked as of "historical interest" only, this material is used only where explicitly designated and in the context which is still valid today.

4.1.1   Validators and UNLs

The XRP Ledger is a distributed blockchain system, with XRP as its native token. The XRP Ledger faces the same challenges as other digital assets in preventing double-spending and ensuring network-wide consensus [5].

XRP Ledger *nodes*, also called *rippled servers*, maintain (some amount of) a globally ordered history of *ledgers*, which in turn contain transactions. Each ledger is numbered with a *ledger index* and builds on a previous ledger whose index is one less, going all the way back to a starting point called the genesis ledger. (MV: A ledger can simply be viewed as a block. Basically, a "ledger" is to XRP Ledger what block is to Bitcoin.) Ledgers are cryptographically linked to their parent (predecessor) ledgers using a cryptographic hash function.[25] (MV: However, the number of leading zeros in a hash of a ledger is irrelevant, unlike in Bitcoin.)

XRP Ledger nodes can be configured in several modes and roles[26]. This includes the role of a *validator*, designating a rippled server which participates in the consensus protocol, called the XRP Ledger Consensus Protocol.

Each validator *Alice* in the XRP Ledger must have a *validator list*, or a *Unique Node List*, denoted by UNL_{Alice}. UNL_{Alice} represents the list of other validators *Alice* listens to as part of the XRP Ledger Consensus Protocol [5]. (MV: Messages sent to *Alice* by validators other than those in her UNL have no effect on the state of node *Alice* in the XRP Ledger Consensus Protocol and are effectively ignored by *Alice*.)

Each validator identifies itself with a unique cryptographic key pair that must be carefully managed. (MV: A validator is in fact identified by other validators by its public key part of the unique cryptographic key pair. A validator must keep the private part of its cryptographic key pair secret.)

The XRP Ledger reference implementation, rippled, provides a list of "curated default" [18] UNLs (dUNLs) to all validators (MV: containing public keys of a curated list of validators).

The only dUNL configured in rippled v1.7.3, in lines 55 and 56 of the file   `https://github.com/ripple/rippled/blob/1.7.3/cfg/validators-example.txt`, is the one published at a *validator list site*

---

[25]See `https://xrpl.org/ledger-header.html`.
[26]See `https://xrpl.org/rippled-server-modes.html`.

located at `https://vl.ripple.com`. (MV: **This implies that the rippled software makes it such that a validator defaults to the dUNL that is controlled and published by Ripple Labs, Inc.** Other UNL publishers, including ███ a company financially related to Ripple, are listed only as examples in the commented out section of the mentioned *validators-example.txt* configuration file, in lines 27-31. However, rippled v1.7.3 software defaults exclusively to the dUNL published by Ripple. In other words, when a new validator wishes to enter into the XRP Ledger, the rippled software it downloads defaults to installing a UNL list that was selected by Ripple.)

According to `https://github.com/ripple/rippled/blob/1.7.3/src/ripple/app/misc/ValidatorSite.h`, the software fetches the latest published recommended validator lists from the validator list site at *regular intervals.*

In addition to actually installing the default UNL list for new servers and making them periodically fetch the latest validator list, Ripple strongly recommends[27], for production servers, using the file `https://github.com/ripple/rippled/blob/1.7.3/cfg/validators-example.txt` for validator list sites (MV: i.e., the one which defaults solely to `https://vl.ripple.com`).

4.1.2   Consensus and Validation

The XRP Ledger Consensus Protocol is described as a Byzantine fault-tolerant (BFT) protocol, which "must operate in the presence of faulty or malicious participants [validators]." This can include "not responding to messages, sending incorrect messages, and even sending different messages to different parties" [5]. In general, the XRP Ledger Consensus Protocol aims to tolerate Byzantine validators, so long as they are no more than 20% of the total number of validators in any single UNL.

The goal of the XRP Ledger Consensus Protocol is to provide consensus properties across different validators. Roughly speaking, these properties are related to double-spending prevention and censorship resistance. Formally, safety properties relevant to the XRP Ledger Consensus Protocol are *Agreement* and *Linearizability* [5], which essentially mandate that correct validators fully validate transactions in the same global order (hence preventing double spending). Liveness, or *Censorship-Resistance* as stated in [5], mandates that if a correct client (i.e., user that might or might not run a validator) broadcasts a transaction to all validators, then all correct validators eventually fully validate that transaction.

The XRP Ledger Consensus Protocol starts with clients submitting proposed transactions to one or more validators in the network, who in turn broadcast the transaction to the rest of the network. The XRP Ledger Consensus Protocol consists of three primary steps [5]: *Deliberation*, *Validation* and *Preferred Branch.*[28]

In these steps, validators exchange messages with each other. As we already mentioned, in the XRP Ledger Consensus Protocol a validator takes into account only messages sent to it by validators in its UNL. If a validator is unable to receive messages from more than 80% of the validators in its UNL, the protocol eventually halts and is unable to guarantee liveness.

For two validators to agree on the same global order of transactions, their UNLs must intersect (or overlap). Chase and MacBrough provide, in Section 4 of [5], analysis of the required UNL intersection across different validators, in order to guarantee safety and liveness. The analysis in [5] shows that to ensure safety **the XRP Ledger Consensus Protocol requires the intersection between any 2 UNLs to be over**

---

[27]See `https://xrpl.org/run-rippled-as-a-validator.html`.
[28]These protocols steps are fairly involved and we describe them in detail in Appendix B.

60% (page 15, [5]). This is regardless of the underlying network behavior and assuming standard XRP Ledger Consensus Protocol assumptions that the potential adversary can control up to 20% of validators in the intersection of any two UNLs.

Further analysis done by Chase and MacBrough in [5], shows that, **under certain circumstances, a much higher intersection between any two UNLs is needed for the correct operation of the XRP Ledger Consensus Protocol**.

In particular, they show [5] that **if a communication network can be unreliable** (in short, network is *unreliable* if it can drop or delay messages sent between otherwise correctly functioning validators), **the XRP Ledger Consensus Protocol requires over 90% intersection between any two UNLs to provide safety** (see page 18, [5]) **and a 100% intersection across UNLs to provide liveness** (i.e., to guarantee censorship-resistance and that the network does not eventually halt) even if no validator is Byzantine (see Example 9, page 19, [5]).

We postpone the details of this argument, due to its technicalities, to Appendix B, where **we also extend the analysis of [5] to show that the XRP Ledger Consensus Protocol does not guarantee liveness even if the UNL overlap is 100%, in the case of an unreliable network with a single Byzantine validator**. The consideration of this argument is, however, optional and is not necessary for our expert opinion which is presented in the next section.

5   Expert Opinion

In this section I give my expert opinion, answering the "Questions for Expert Opinion" E1, E2 and E3, listed in Section 1.1.

5.1   Question E1: To what extent is XRP Ledger centralized or decentralized compared to Bitcoin and Ethereum?

To answer this question we first evaluate the decentralization of the XRP Ledger using the methodology of Section 3.1.

5.1.1   Evaluating Decentralization of the XRP Ledger

Resilience.   The main attack vector through which a single party can violate key properties of the XRP Ledger is the following one:

If the publisher of a default UNL (dUNL) on `https://vl.ripple.com` is corrupted (Byzantine) it can serve a different UNL to different validators, without the necessary intersection among UNLs. Please refer to Section 4.1.2 for different intersection requirements which range between 60% and 100% intersection between any 2 UNLs, depending on the assumed underlying network conditions and the relevant XRP Ledger property (safety or liveness).

As a simple example, **a corrupted dUNL publisher may serve totally different UNLs (i.e., 0% intersection) to different validators, preventing the correct operation of XRP Ledger**.

For this reason, **the Nakamoto coefficient for the XRP Ledger is 1**. This implies that the XRP Ledger fails to satisfy the basic definition of a decentralized system as there is a single party which needs to

be fully trusted by all [21]. Therefore, in my opinion, the **XRP Ledger is centralized**.

In addition, even if the publisher of dUNL is correct and acts in a proper manner, as per our analysis of Appendix B, a single Byzantine member listed in the dUNL, combined with an unreliable network, can violate liveness of the XRP Ledger Consensus Protocol even when all other validators are correct and all use a dUNL with 100% overlap.

We again note that this last observation is not necessary for our opinion that the XRP Ledger is a centralized system. It simply strengthens the argument.

Inclusiveness. By allowing anyone to join the network as a validator, the XRP Ledger qualifies as a permissionless blockchain (in the sense that it allows anyone to participate).

However, the **XRP Ledger is not Inclusive** because it does not provide equal opportunities for validators to become listed in a dUNL.

Another way to look at this is that the very existence of a dUNL is a root cause of inequality in the system. If the system would not specify any dUNL, this inequality would disappear. This would however jeopardize Resilience further, as XRP Ledger safety and liveness with honest validators, critically depends on the large intersection across UNLs that validators use.

Being permissionless without satisfying Equal Opportunities does not make a system truly permissionless. The XRP Ledger is essentially an "open" system which anyone can join, but where a few participants hand-picked by Ripple have special status (which stems from their inclusion in a dUNL), and the other participants merely follow the commands of these special participants.

In-Protocol Incentives. The **XRP Ledger provides no In-Protocol Incentives** to participants, old or new.

Assuming economically rational participants, financial incentives for new participants to join the system may therefore come only externally to the system (out-of-protocol incentives), arguably through activities of entities that already have a financial interest in the system.

Business and financial relationships between Ripple and other participants that run XRP Ledger validators listed in the dUNL published by Ripple give reasonable evidence and examples of such out-of-protocol incentives.

For instance, 9 out of 41 validators in the dUNL that Ripple publishes belong to universities that are part of the University Blockchain Research Initiative (UBRI) (`https://ubri.ripple.com/`). The universities from UBRI that are on Ripple's dUNL are: IIT Bombay, Korea University, University of Nicosia, University College London, University of North Carolina, Australian National University, UC Berkeley, and University of Waterloo. Ripple has funded these universities through UBRI.

Additionally, 3 validators listed in the dUNL published by Ripple are operated by companies funded by Ripple or Ripple-affiliated entities as their main sources of funding according to Crunchbase, the leading data source for investments in the technology sector. These include ▬▬▬ XRPL Labs[30] and Towo labs[31], the latter two being funded by Xpring, a Ripple initiative that invests in projects related to the XRP Ledger.[32]

---

[29]`https://www.crunchbase.com/organization/`▬▬`technologies/investor_financials`
[30]`https://www.crunchbase.com/organization/xrpl-labs/company_financials`
[31]`https://www.crunchbase.com/organization/towo-labs/company_financials`
[32]`https://www.crunchbase.com/organization/xpring`

In addition, one other company (███████ was funded by an investment round led by Ripple and had a Ripple senior executive as one of its board members.[33]

To summarize, unlike with the Bitcoin or Ethereum blockchains, which offer rewards in the form of digital tokens to those that engage in the blockchain validation process, the XRP Ledger provides no such incentives or rewards, which means that validators do not come organically to the XRP Ledger.

Governance.   According to statistics available at `https://github.com/ripple/rippled/graphs/contributors`, the overwhelming majority of code commits and lines of code comes from the developers who are or have been affiliated with or funded by Ripple Labs, Inc. or predecessor companies.

XRP Ledger has a public face in Ripple Labs, Inc.

Regarding owner control (of initial tokens), the information is not available from the genesis ledger of the XRP Ledger as due to a bug ("mishap in the XRP Ledger history"[34]), ledgers 1 through 32569 were lost. According to the information about XRP Sales available at `https://xrpl.org/xrp.html`, "The XRP Ledger was built over 2011 – early 2012 by Jed McCaleb, Arthur Britto and David Schwartz. In September 2012, Jed and Arthur, along with Chris Larsen, formed Ripple (the company, called OpenCoin Inc. at the time) and decided to gift 80 billion XRP to Ripple in exchange for Ripple developing on the XRP Ledger." The maximum supply of XRP is 100 billion. The rest of 20 billion early XRP were, according to multiple public sources,[35] distributed among founders.

Therefore, we can conclude that 100% of the initial/total supply was under *owner control*, comprising Ripple Labs (i.e., its predecessor companies) and its founders. This clearly goes against decentralization, particularly when combined with absence of In-Protocol Incentives, as it limits the economic rationale for new participants to organically join the system.

5.1.2   Answer to Question E1: Comparison to Bitcoin and Ethereum

The XRP Ledger is centralized compared to Bitcoin and even Ethereum. Even if we evaluate the XRP Ledger outside the context of Bitcoin and Ethereum, it cannot be deemed decentralized and hence is centralized.

In short, unlike Bitcoin and Ethereum, the XRP Ledger is centralized as it takes corrupting only a single party to be able to compromise key properties of the system. Also, when considering the other decentralization aspects analyzed, the XRP Ledger evaluates worse and is more centralized than Bitcoin and Ethereum.

The summary of key decentralization aspects according to our analysis from Section 3.2.3 (Bitcoin), Section 3.3.1 (Ethereum) and Section 5.1.1 (XRP Ledger) is shown below, repeating for convenience Table 1 from Section 2.

---

[33]See `https://livenet.xrpl.org/validators/nHBidG3pZK11zQD6kpNDoAhDxH6WLGui6ZxSbUx7LSqLHsgzMPec` and `https://ripple.com/insights/our-investment-in-`███████

[34]See https://xrpl.org/intro-to-consensus.html.

[35]See, for example, `https://blog.bitmex.com/the-ripple-story/`.

Decentralization aspect	Ideal Decentralized System	Bitcoin Blockchain	Ethereum Blockchain (with Proof-of-Work)	XRP Ledger
Nakamoto coefficient (Resilience)	always greater than 1, the higher the better	≥ 4	≥ 3	1
Inclusiveness	yes	yes	yes	no
In-Protocol Incentives	yes	yes	yes	no
Governance (public face)	no	no	yes	yes
Governance (tokens allocated at genesis)	0, the lower the better	0%	61.5% (about 10% owner controlled) of today's supply	100% (all owner controlled)

Table 1: Comparison of the XRP Ledger to the Bitcoin and Ethereum blockchains for key aspects of decentralization defined in the decentralization evaluation methodology of Section 3.1.

5.2   Question E2: To what extent have Ripple's efforts been needed to support the proper functioning of the XRP Ledger?

Ripple's effort needed *today* to support the proper functioning of the XRP Ledger, based on the current rippled software, includes:

1. Publishing a dUNL at `https://vl.ripple.com`. This includes maintaining security and ownership of ripple.com domain so an adversary cannot control a dUNL.

   This also includes making efforts to carefully change the published dUNL, even in the absence of actions of a malicious adversary. In a known incident that occurred in November 2018, which was also the topic of the May 26, 2021 deposition of David Schwartz in front of this court (pages 222-226 and Exhibit 44 therein), the XRP Ledger was stalled from making forward progress when one UNL expired and a new one was published.

   As indicated by an xrpchat online forum post which appeared later, in October 2020, from a user who appears to be Ripple's employee Nik Bougalis[36], following this November 2018 incident he *"personally restarted several validators,"* and *"the team at Ripple invested a significant amount of time troubleshooting the issue and proposed several improvements,"* illustrating the amount of human and in particular Ripple employees' effort needed to rectify the network halt in a case where changes in the published dUNL are not handled well.

2. Because of possible attacks on the network, that could result in safety or liveness violations, including the attack we describe in Appendix B, so long as it publishes a dUNL, Ripple needs to continue to curate and attest validators that it includes in a dUNL.

3. As of October 4, 2021, Ripple appears to directly control 6 out of 41 validators in the published dUNL. Due to possible Byzantine attacks, including the one we describe in Appendix B, Ripple needs to maintain security over these validators and ensure they behave honestly.

---

[36]See `https://www.xrpchat.com/topic/28872-the-network-is-down/?do=findComment&comment=850670`.
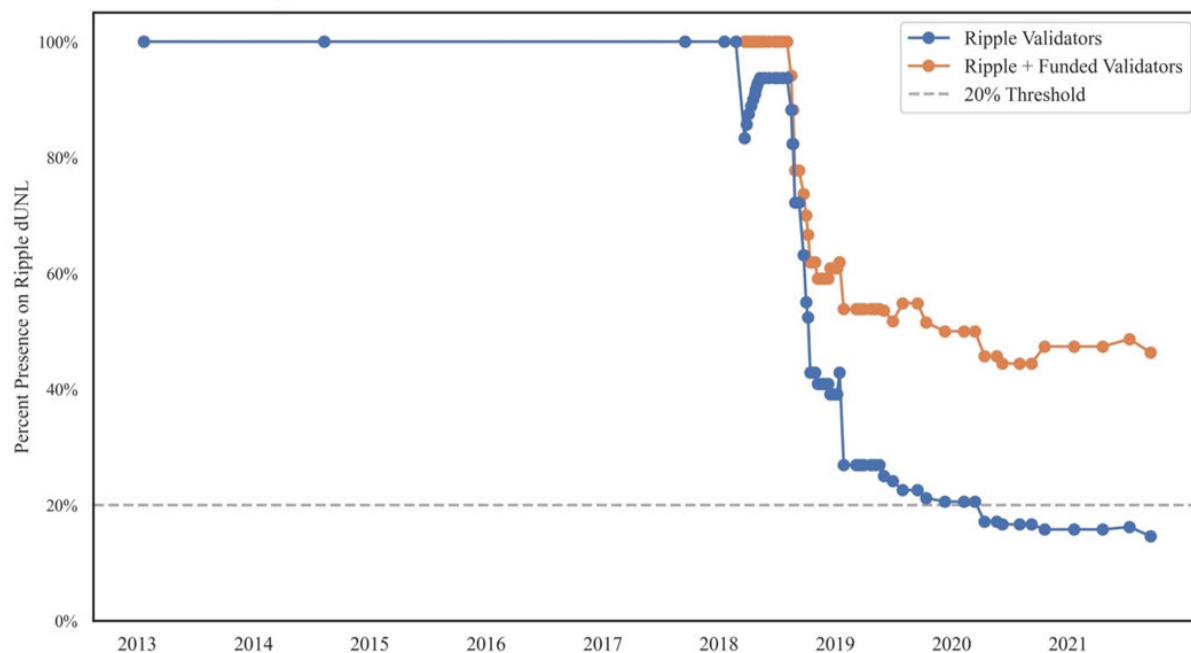
Figure 1: Ripple validators and validators operated by entities funded by Ripple, given as a fraction of the dUNL membership over time.

With modifications of software, points 1 and 2 above can, in principle, be done by an entity different from Ripple. Nevertheless, the XRP Ledger would still be centralized as this entity would still need to be fully trusted in the sense of the arguments pointed out in items 1 and 2.

In relation to point 3 above, it is worth noting that Ripple used to control a larger fraction of validators listed in the dUNL it publishes compared to the fraction it controls today. This fraction was even 100% for over half of the XRP Ledger history.

Figure 1 gives the change in time of the fraction of validators in the Ripple's dUNL belonging to Ripple as well as that of the fraction of validators belonging to Ripple or entities funded by Ripple.[37] These entities and their relation to Ripple are discussed in more detail in the next section, Section 5.3.

5.3   Question E3: What risks to the XRP Ledger would or might materialize if Ripple "walked away" or "disappeared"?

Like the previous question, we will answer this question assuming no software changes (i.e., assuming rippled v1.7.3). In short, if Ripple would disappear, serious risks related to the correct operation of the XRP Ledger network may arise.

We consider two cases: A) Ripple disappears and the network is still able to agree on the contents of the

---

[37]The main source for the data depicted in Figure 1 is obtained from `https://github.com/ripple/vl`, which contains validator public keys of every historical dUNL and the current dUNL. Validator ownership is classified using their respective domains found on `https://livenet.xrpl.org/validators/{publickeyofvalidator}`. Domains ownership was confirmed using the validator registry `https://xrpcharts.ripple.com/#/validators` and through `https://xrpscan.com/{public_key}`, or Google search of the public keys.

dUNL as currently published on `https://vl.ripple.com`, and B) Ripple disappears and leaves the network without a common UNL — that is, UNLs used by validators in the network change over time.

Consider the first case, case A:

- In the case where more than 20% of validators in the dUNL disappear, the network would not be operational. The current dUNL (as of October 4, 2021) contains 41 validators (data obtained from `https://xrpcharts.ripple.com/#/validators`).

  Hence, the network would cease to be operational if nine validators disappeared. Six validators are controlled by Ripple, i.e., they are shown to be resolving at a Ripple domain `validator.ripple.com`. In addition, many validators belong to entities which are funded by or have business relationships with Ripple, as we discussed in Section 5.1.1 (in the part regarding incentives).

  For instance, 9 out of 41 validators belong to universities part of the University Blockchain Research Initiative (`https://ubri.ripple.com/`). Ripple has funded these universities. If Ripple disappears, there is a risk that universities might cease to operate validators in absence of further funding. Three of such validators disappearing, in addition to Ripple's six, are sufficient for the network under the current dUNL to cease to be operational.

  Similar arguments can be made about the validators run by entities other than universities which have received significant funding from Ripple.

  For completeness, the list of validators controlled by Ripple and entities funded by Ripple, as well as the list of all 41 validators contained in the current dUNL are given in Appendix A.

- In addition, there is a separate risk that a validator in the common dUNL becomes compromised and Byzantine, enabling it to mount attacks against the network, such as the attack on liveness described in Appendix B.

  If Ripple is not there to evict such a validator from the dUNL, validators need to come up with different UNLs. This essentially reduces to the case B we consider next.

Consider now the second case, case B. In absence of the common UNL, network validators need to choose UNLs either by themselves, or based on some out-of-band communication with other validators.

If they choose UNLs themselves, they risk not getting a sufficient intersection among UNLs, jeopardizing the core properties of the XRP Ledger, safety and liveness. There is a high risk of state and ledger history forks in such a situation.

If they rely on out-of-band communication (i.e., outside the rippled software) with other validators and possibly entities external to the XRP Ledger to agree on a UNL, this could be done using software other than the XRP Ledger, or using human effort and communication. Using software other than XRP Ledger would basically imply another consensus (agreement) protocol, and could be viewed then as a change in XRP Ledger (rippled) software. The other option would be using human effort and communication to ensure agreement on sufficient intersection among UNLs (e.g., by relying on communication among human operators of individual validators). This defeats the very purpose for the existence of a software system that aims to implement distributed consensus.

6   Conclusions

In the context of the prefatory questions, I have been asked to explain the operation of consensus and validation in blockchain systems and, in particular, on the XRP Ledger. I have explained the concept of Proof-of-Work based consensus, used in Bitcoin, which is not based on validator identities, but rather relies on provable expenditure of a real-world resource (energy), and how it leads to a decentralized system.

In contrast, the consensus used in the XRP Ledger is based on a very different approach which puts validator identities at the core of the system.

In the case of the XRP Ledger this approach is technically executed in a manner contrary to decentralization principles, with a central authority controlled by Ripple given a task of publishing what can be seen as a special list of privileged validators.

With this in mind, it is easy to see that the answer to the expert opinion I was asked to provide—whether the XRP Ledger is a decentralized or centralized system—is that the XRP Ledger does not satisfy a basic definition of a decentralized system. To be decentralized, participants need not trust any single party. For the XRP Ledger, participants need to trust at least one other party, which is currently Ripple as the publisher of the dUNL to which the XRP Ledger software defaults.

To evaluate XRP Ledger characteristics related to decentralization in more depth, and to answer expert questions I have been asked to opine on, I surveyed scientific literature. The scientific treatment of the notion of decentralization has advanced in recent years to give a precise minimal definition of a decentralized system, as well as a more refined, general taxonomy of decentralized systems.

Summarizing this literature, I identified four decentralization aspects (Resilience, Inclusiveness, In-Protocol Incentives, and Governance) as, in my opinion, the most relevant ones. I based the methodology for evaluating the decentralization of distributed systems around those aspects, and I have evaluated Bitcoin, Ethereum and XRP Ledger through their lens.

XRP Ledger scores poorly in these aspects compared to Bitcoin and to Ethereum, which itself evaluates as more centralized than Bitcoin. The Resilience of the XRP Ledger is poor as it requires trusting a single party. It further is not Inclusive, as it makes distinctions among participants and does not provide them with equal opportunities. It has no In-Protocol Incentives, leaving the incentivization of new participants towards increasing the system size in the hands of entities that already have financial interest in the system, such as Ripple Labs Inc. Finally, its Governance related measures are poor.

In answering further questions for my expert opinion, I have identified the efforts required by Ripple towards the proper functioning of the XRP Ledger, as well as identified the risks that may arise in the case of Ripple's hypothetical disappearance. In short, in this case, serious risks related to the correct operation of the XRP Ledger network may arise.

The opinions expressed in this report are based on my review and analysis of the documents that I have reviewed. I reserve the right to supplement my report and analysis based on any new evidence brought to my attention.
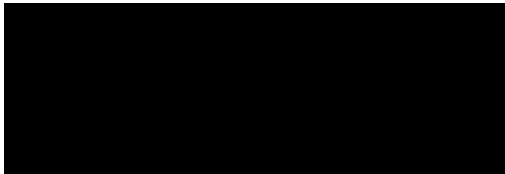
References

[1] B. Alpern and F. B. Schneider. Recognizing safety and liveness. *Distributed Comput.*, 2(3):117–126, 1987.

[2] ██
██
████████████████████████████████████ ███████████████ █
██
██████████████████████████████████████

[3] S. Azouvi, M. Maller, and S. Meiklejohn. Egalitarian society or benevolent dictatorship: The state of cryptocurrency governance. In A. Zohar, I. Eyal, V. Teague, J. Clark, A. Bracciali, F. Pintore, and M. Sala, editors, *Financial Cryptography and Data Security - FC 2018 International Workshops, BITCOIN, VOTING, and WTSC, Nieuwpoort, Curaçao, March 2, 2018, Revised Selected Papers*, volume 10958 of *Lecture Notes in Computer Science*, pages 127–143. Springer, 2018.

[4] V. Buterin. [ANN] Ethereum: Welcome to the beginning. `https://bitcointalk.org/index.php?topic=428589.0`, 2014.

[5] B. Chase and E. MacBrough. Analysis of the XRP ledger consensus protocol. *CoRR*, abs/1802.07242, 2018.

[6] Encyclopaedia Britannica. 20 under 40: Young shapers of the future (business and entrepreneurship). `https://www.britannica.com/list/20-under-40-shapers-of-the-future-in-business-and-entrepreneurship`, 2021.

[7] G. C. Fanti, L. Kogan, S. Oh, K. Ruan, P. Viswanath, and G. Wang. Compounding of wealth in proof-of-stake cryptocurrencies. In I. Goldberg and T. Moore, editors, *Financial Cryptography and Data Security - 23rd International Conference, FC 2019, Frigate Bay, St. Kitts and Nevis, February 18-22, 2019, Revised Selected Papers*, volume 11598 of *Lecture Notes in Computer Science*, pages 42–61. Springer, 2019.

[8] P. D. Filippi and B. Loveluck. The invisible politics of bitcoin: Governance crisis of a decentralized infrastructure. *Internet Policy Review*, 5(4), 2016.

[9] A. E. Gencer, S. Basu, I. Eyal, R. van Renesse, and E. G. Sirer. Decentralization in bitcoin and ethereum networks. In S. Meiklejohn and K. Sako, editors, *Financial Cryptography and Data Security - 22nd International Conference, FC 2018, Nieuwpoort, Curaçao, February 26 - March 2, 2018, Revised Selected Papers*, volume 10957 of *Lecture Notes in Computer Science*, pages 439–457. Springer, 2018.

[10] D. Karakostas, A. Kiayias, C. Nasikas, and D. Zidros. Cryptocurrency egalitarianism:a quantitative approach. In *International Conference on Blockchain Economics, Security and Protocols (Tokenomics 2019)*, 2019.

[11] A. J. Kolber. Not-so-smart blockchain contracts and artificial responsibility. *Stanford Technology Law Review*, 198, 2018.

[12] L. Lamport. Proving the correctness of multiprocess programs. *IEEE Trans. Software Eng.*, 3(2):125–143, 1977.

[13] L. Lamport, R. E. Shostak, and M. C. Pease. The byzantine generals problem. *ACM Trans. Program. Lang. Syst.*, 4(3):382–401, 1982.

[14] C. E. Leiserson, N. C. Thompson, J. S. Emer, B. C. Kuszmaul, B. W. Lampson, D. Sanchez, and T. B. Schardl. There’s plenty of room at the top: What will drive computer performance after moore’s law? *Science*, 368(6495):eaam9744, 2020.

[15] A. Miller. *Permissioned and Permissionless Blockchains*, pages 193–204. 2019.

[16] S. Nakamoto. Bitcoin: A peer-to-peer electronic cash system. `https://bitcoin.org/bitcoin.pdf`, 2008.

[17] A. R. Sai, J. Buckley, B. Fitzgerald, and A. LeGear. Taxonomy of centralization in public blockchain systems: A systematic literature review. *Information Processing and Management*, 58(4), July 2021.

[18] D. Schwartz, N. Youngs, and A. Britto. The ripple protocol consensus algorithm. `https://ripple.com/files/ripple_consensus_whitepaper.pdf`.

[19] B. Srinivasan. Quantifying decentralization. Blockstack Summit 2017, `https://www.youtube.com/watch?v=4UXT5YVJwB4`, 2017.

[20] A. S. Tanenbaum and M. van Steen. *Distributed systems - principles and paradigms, 2nd Edition.* Pearson Education, 2007.

[21] C. Troncoso, M. Isaakidis, G. Danezis, and H. Halpin. Systematizing decentralization and privacy: Lessons from 15 years of research and deployments. *Proc. Priv. Enhancing Technol.*, 2017(4):404–426, 2017.

[22] ███

[23] Q. Lin, C. Li, X. Zhao, and X. Chen. Measuring decentralization in bitcoin and ethereum using multiple metrics and granularities. In *2021 IEEE 37th International Conference on Data Engineering Workshops (ICDEW)*, pages 80–87, 2021.

[24] C. L. Reyes, N. G. Packin, and B. Edwards. Distributed governance. *William & Mary Law Review Online*, 59(1). `https://scholarship.law.wm.edu/cgi/viewcontent.cgi?article=1003&context=wmlronline`.

[25] I. Amores-Sesar, C. Cachin, and J. Micic. Security analysis of ripple consensus. In Q. Bramas, R. Oshman, and P. Romano, editors, *24th International Conference on Principles of Distributed Systems, OPODIS 2020, December 14-16, 2020, Strasbourg, France (Virtual Conference)*, volume 184 of *LIPIcs*, pages 10:1–10:16. Schloss Dagstuhl - Leibniz-Zentrum für Informatik, 2020.

A   Lists and Statistics of Validators Included in the dUNL published by Ripple, as of July 16, 2021

In this Appendix, we give lists and statistics related to validators included in the dUNL published by Ripple at `https://vl.ripple.com` (referred to as Ripple's dUNL), as of July 16, 2021 update.

Figure 2 gives the list of 19 validators belonging to entities funded by Ripple, whereas Figure 3 gives the list of all 41 validators.

Table: Validators Belonging to Entities Funded by Ripple

Entity	Domain	Connection to Ripple
Ripple	validator.ripple.com	Validator belongs to Ripple
Ripple	validator.ripple.com	
Ripple	validator.ripple.com	
Ripple	validator.ripple.com	
Ripple	validator.ripple.com	
Ripple	validator.ripple.com	
Australian National University	xrp-col.anu.edu.au	Received funding through Ripple's University Blockchain Research Initiative[1]
IIT Bombay	isrdc.in	
Korea University	blockchain.korea.ac.kr	
UC Berkeley	shadow.haas.berkeley.edu	
University College London	students.cs.ucl.ac.uk	
University of Kansas	ripple.ittc.ku.edu	
University of Nicosia	xrp.unic.ac.cy	
University of North Carolina	ripple.kenan-flagler.unc.edu	
University of Waterloo	ripplevalidator.uwaterloo.ca	
Bitso	bitso.com	Ripple led an investment round and has a Senior Executive on Bitso's Board[2]
Coil	coil.com	Ripple (via Xpring) provided initial funding of 1 billion XRP ($265 million)[3]
Towo Labs	towolabs.com	Ripple (via Xpring) is lead investor[4]
XRPL Labs	validator.xrpl-labs.com	Ripple (via Xpring) is listed as sole investor[5]

[1] `https://ubri.ripple.com/`
[2] `https://ripple.com/insights/our-investment-in-`▮▮▮▮
[3] See `https://www.crunchbase.com/organization/`▮▮▮`technologies/investor_financials` and `https://cointelegraph.com/news/ripples-xpring-gives-265-mil-in-xrp-to-content-platform-`▮▮
[4] See `https://ripple.com/insights/investing-in-towo-labs/` and `https://www.crunchbase.com/organization/towo-labs/company_financials`
[5] See `https://ripple.com/insights/doubling-down-on-xrpl-labs/` and `https://www.crunchbase.com/organization/xrpl-labs/company_financials`

Figure 2: The list of 19 validators listed in the Ripple's dUNL, belonging to Ripple or entities funded by Ripple.

Table: List of 41 Validators as of July 16, 2021 dUNL Update

Entity	Domain	Public Key
Alloy Networks	alloy.ee	
AT TOKYO	www.attokyo.com	
Australian National Univ.	xrp-col.anu.edu.au	
Bahnhof	www.bahnhof.se	
Bithomp	bithomp.com	
Bitrue	www.bitrue.com	
Bitso	bitso.com	
Blockdaemon	arrington-xrp-capital.blockdaemon.com	
Cabbit Technology	cabbit.tech	
Eminence	verum.eminence.im	
Coil	coil.com	
Coinfield	xrp.coinfield.com	
Data443	data443.com	
Individual	digifin.uk	
Flagship Solutions Group	flagshipsolutionsgroup.com	
FTSO.eu	xrpvalidator.ftso.eu	
Gatehub	validator.gatehub.net	
IIT Bombay	isrdc.in	
Individual	jon-nilsen.no	
Kompany	brex.io	
Korea University	blockchain.korea.ac.kr	
NTT Data	ripple.ntt.com	
Peer Island	peerisland.com	
Ripple	validator.ripple.com	
Ripple	validator.ripple.com	
Ripple	validator.ripple.com	
Ripple	validator.ripple.com	
Ripple	validator.ripple.com	
Ripple	validator.ripple.com	
rippleitin	rippleitin.nz	
Telindus	ripple.telinduscloud.lu	
Towo Labs	towolabs.com	
UC Berkeley	shadow.haas.berkeley.edu	
University College London	students.cs.ucl.ac.uk	
University of Kansas	ripple.ittc.ku.edu	
University of Nicosia	xrp.unic.ac.cy	
University of North Carol.	ripple.kenan-flagler.unc.edu	
University of Waterloo	ripplevalidator.uwaterloo.ca	
Worldlink	validator1.worldlink-us.com	
XRP Scan	aloha.xrpscan.com	
XRPL Labs	validator.xrpl-labs.com	

Figure 3: The list of all 41 validators in the Ripple's dUNL.

B   Details of the XRP Ledger Consensus Protocol, Including Vulnerability to Single Byzantine Validator with Completely (100%) Overlapping UNLs

In the rest of this appendix, we use the following definitions.

- A validator is called *correct*, if it operates without outages and follows the unmodified XRP Ledger Consensus Protocol protocol.

- A validator is called *Byzantine*, if its local copy of the XRP Ledger Consensus Protocol protocol is modified such that the validator deviates from the XRP Ledger Consensus Protocol protocol.

- The network is called *unreliable*, if it can drop or delay messages exchanged among correct validators.

- UNLs are said to *overlap completely*, or have *100% overlap*, if all UNLs of all correct validators are identical.

In the following, we provide details and in-depth analysis of the XRP Ledger Consensus Protocol. In particular, we:

1. Give the details behind XRP Ledger Consensus Protocol necessary for the in-depth analysis (Section B.1).

2. Summarize the analysis of liveness done by Chase and MacBrough in [5] (Section B.2).

3. Present our analysis, which shows that XRP Ledger Consensus Protocol fails to guarantee liveness, even with 100% overlap across all UNLs, if one validator in the said UNL can be Byzantine and if the network is unreliable (Section B.3).

B.1   Details of the XRP Ledger Consensus Protocol

The XRP Ledger Consensus Protocol consists of 3 main steps: *Deliberation*, *Validation* and *Preferred Branch* [5].

1. **Deliberation.** In this step, a validator *Alice iteratively* proposes a transaction set to include in the current ledger (i.e., block of transactions), based on transaction proposals received from other nodes in her UNL.

   When "enough" validators in validator's UNL propose the same transaction set, a validator generates the next ledger L, applies L to the current state, issues a *validation message* for L, exits deliberation, and proceeds to the Validation step.

   The notion of "enough" validators here depends on a particular subphase of the deliberation step and can be 50%, 65%, 70% or 95% of validators [5].

   The exact percentages mentioned above are to a large extent irrelevant as the correct execution of the protocol does not depend on the outcome of the deliberation step. Namely, as stated in the paper by Chase and MacBrough [5] on page 16: *"...deliberation can terminate with an arbitrary result.*

34

In practice, this may require a significantly degraded network, but is nonetheless a real risk. From a theoretical perspective, deliberation is therefore completely irrelevant; it is purely an optimization . . . and it could be removed without fundamentally changing the protocol."

For illustration, Example 5 of [5] shows an example scenario where UNLs overlap completely (i.e., at 100%) and all validators are correct.In that example, due to an unreliable network, one group of validators can exit deliberation by validating ledger L and the other group of validators ledger L' different from L, at the same ledger index. We refer to this scenario, to which we will come back later, as *Network Split in Deliberation.*

In conclusion, under an unreliable network, at the end of the deliberation step, correct validators may well end up validating different ledgers and, in particular, end up in Network Split in Deliberation.

2. **Validation.** In this step a validator simply listens for validation messages coming from other validators from its local UNL. If a correct validator sees a *quorum* of validation messages for a ledger L, then it *fully validates* L.

   A quorum in XRP Ledger Consensus Protocol is defined as at least 80% of the nodes in a validator's UNL.[38]

   Once this happens, that ledger L and its ancestors are deemed fully validated and its state is authoritative and irrevocable.

3. **Preferred Branch.** In times of unreliable network or Byzantine failures of validators, it may happen that some correct validators fail to receive a quorum of validation messages for any individual ledger to fully validate.

   In short, a correct validator may see validation messages for two or more *conflicting ledgers*, which lie on different branches in the block history. In the case of conflicting ledgers, *Preferred Branch* is the step of the XRP Ledger Consensus Protocol which determines which of the ledgers and the corresponding branch of ledgers, the correct validator should switch to and consideras the "right" one.

   The details of the Preferred Branch are a fairly involved part of the XRP Ledger Consensus Protocol— we omit the details for the sake of clarity. What is important for the rest of this report is that a validator cannot switch the preferred branch from the one on which ledger L is, if that validator gets more than 50% of validations messages from the nodes in its UNL for some *descendant* of L [5].

   Here, a descendant of ledger L is recursively defined as: 1) either ledger L itself, or 2) another ledger which has L or some of L's descendants as a parent.

B.2   Liveness Analysis by Chase and MacBrough [5]

The analysis in Example 9 of [5], further shows that the XRP Ledger Consensus Protocol, under an unreliable network which causes Network Split in Deliberation, **fails to guarantee liveness (Censorship-Resistance) even with no Byzantine validators, unless the overlap of UNLs is 100%**.

Example 9 of [5] is illustrated below, in Figure 4, which is taken directly from [5].

This example considers:

---

[38]See `https://github.com/ripple/rippled/blob/release/src/ripple/consensus/ConsensusParms.h`, lines 73-74, in addition to [5].
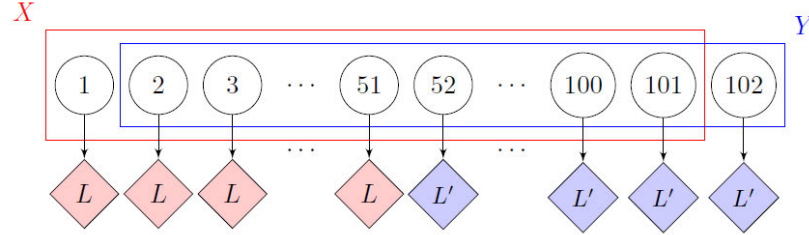
Figure 6: Example of stuck network with 99% UNL overlap and no Byzantine faults.

Example 9.

Consider a network of 102 peers drawin in figure 6. There are two UNLs, the red $X = \{\mathcal{P}_1, \mathcal{P}_2, \ldots, \mathcal{P}_{101}\}$ and blue $Y = \{\mathcal{P}_2, \mathcal{P}_3, \ldots, \mathcal{P}_{102}\}$. Peers $1 - 51$ use X and peers $52 - 102$ use Y. There are two ledgers, L and L'. The nodes listening to X all validate a descendant of L, while the nodes listening to Y all validate a descendant of L'. Since $51 > 0.5|X|$ nodes in X validate a descendant of L. Thus according to the preferred branch protocol all, the nodes listening to X cannot switch branch to L'. Similarly, since $51 > 0.5|Y|$ nodes in Y all validate a descendant of L, the nodes listening to Y cannot switch branch to L'. The network cannot ever rejoin without manual intervention.

Figure 4: Example 9 and Figure 6 from [5].

1. 102 validators experiencing Network Split in Deliberation;

2. Validators $1 \ldots 51$ use UNL X and send validation for descendant of ledger L;

3. Validators $51 \ldots 102$ use UNL Y and send validation for descendant of ledger L';

4. UNL X contains validators $1 \ldots 101$, in total 101 validators;

5. UNL Y contains validators $2 \ldots 102$, in total 101 validators;

6. No validator gets a quorum of validations for the same ledger (80% of 101) and no validator fully validates any ledger;

7. The Preferred Branch step is meant to help with this situation, by allowing validators to "switch branch."

8. Nodes $1 \ldots 51$ (which use UNL X), cannot "switch branch" to L' as they get more than 50% of validations (51 out of 101) for a descendant of L;

9. Nodes $52 \ldots 102$ (which use UNL Y), cannot "switch branch" to L as they get more than 50% of validations (51 out of 101) for a descendant of L';

10. "The network cannot ever join without manual intervention" [5], i.e., it halts.

36
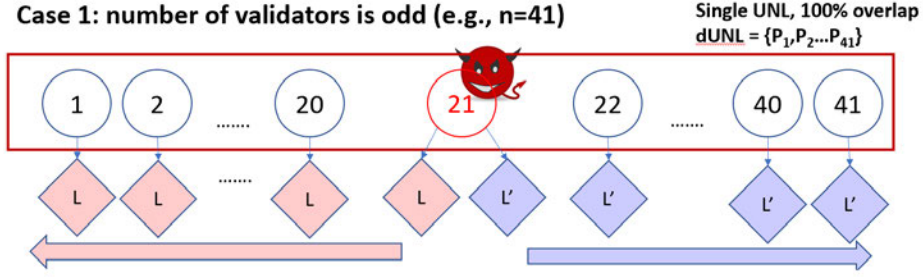
Figure 5: Attack by a single Byzantine validator with 100% UNL overlap.

B.3   Liveness Violation with 100% UNL Overlap and Single Byzantine Validator

Beyond their Example 9 illustrated in the previous section, Chase and MacBrough further argue (Theorem 11, [5]) that XRP Ledger Consensus Protocol guarantees liveness in case UNL overlap is 100%.

This is incorrect, as their analysis assumes "Byzantine accountability", i.e., limitations in potential misbehavior of Byzantine nodes which disallows a simple and standard attack by Byzantine validators in which Byzantine validators provide different information to different correct validators.

Refuting this claim of Chase and MacBrouh, we show that the XRP Ledger Consensus Protocol fails to guarantee liveness, even with 100% overlap across all UNLs, if one validator in the common UNL can be Byzantine (malicious) and if the network is unreliable.[39]

Consider the following example, which resembles Example 9 of [5] we depicted in Appendix B.2.

In this example there is a single UNL (100% overlap), and one Byzantine validator. The example uses 41 validators, as this is currently the actual number of validators in the dUNL in the XRP Ledger network, since July 16, 2021. The example is illustrated in Figure 5, only slightly modifies the Example 9 of [5] and goes as follows:

1. 41 validators experiencing Network Split in Deliberation;

2. Validators $1 \ldots 20$ send validation for descendant of ledger L;

3. Validators $22 \ldots 41$ send validation for descendant of ledger L';

4. Validator 21 is Byzantine, it sends validation for descendant of L to validators $1 \ldots 20$ and validation for descendant of L' to validators $22 \ldots 41$.

5. There is a single UNL, dUNL, containing all 41 validators.

6. No validator gets a quorum of validations for the same ledger (80% of 41) and no validator fully validates any ledger;

7. The Preferred Branch step is meant to help with this situation, by allowing validators to "switch branch."

---

[39]Our argument is similar to, but in its essence different from, the one presented by Amores-Sesar et al. [25] to which a short rebuttal was written by Ripple's employee Ethan Macbrough, as seen in the Twitter thread at `https://twitter.com/cczurich/status/1334153938241720322` and replies therein.

8. Nodes $1 \ldots 20$ cannot "switch branch" to L' as they get more than 50% of validations (21 out of 41) for descendant of L;

9. Nodes $22 \ldots 41$ cannot "switch branch" to L as they get more than 50% of validations (21 out of 41) for descendant of L';

10. "The network cannot ever join without manual intervention", i.e., it halts.

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

SECURITIES AND EXCHANGE
COMMISSION,

Plaintiff

v

20 Civ. 10832

RIPPLE LABS, INC., BRADLEY
GARLINGHOUSE, AND
CHRISTIAN A. LARSEN,

Defendants

SUPPLEMENTENTAL EXPERT REPORT OF

Ph.D.

FEBRUARY 28, 2022

CONTENTS

I.   Background and Assignment

1. I have been retained by the Securities and Exchange Commission ("SEC") to provide expert opinions in the matter captioned above. I previously submitted an expert report on October 4, 2021 which was amended on October 6, 2021 ("▮▮▮ Report") in which I performed an empirical analysis of XRP's price movements and assessed whether certain news and public statements of actions related to Ripple Labs, Inc. ("Ripple") impacted XRP prices. My qualifications, publications, and prior testimonies are described in the ▮▮▮ Report.

2. Dr. Allen Ferrell submitted a report on October 4, 2021 ("Ferrell Report"). I was asked by the SEC to respond to certain opinions in that report, and I submitted a rebuttal report on November 12, 2021 ("▮▮▮ Rebuttal Report").

3. As rebuttals to the ▮▮▮ Report, M. Laurentius Marais, Ph.D. and Daniel R. Fischel submitted separate expert reports on behalf of Ripple on November 12, 2021 (the "Marais Report" and "Fischel Report," respectively). However, neither Dr. Marais nor Prof. Fischel conducted any independent empirical analysis of XRP price data. None of the analyses or conclusions in the Marais Report or the Fischel Report have caused me to change any of the opinions I have offered in this matter.

4. Since submitting the ▮▮▮ Rebuttal Report, I have been asked by the SEC to provide additional quantification of the economic significance of the impact that certain news related to Ripple had on XRP prices.

5. My opinions are based on my knowledge and expertise gained during my professional career, my academic training and research, and the data I have analyzed in this engagement. In forming my opinions in this matter, I have considered certain documents provided to me. Those documents and materials I relied upon for the ▮▮▮ Report were identified in Appendix B to that report and any additional documents or materials relied upon the ▮▮▮ Rebuttal Report were identified in Appendix A to that report. A list of additional documents I have relied upon in forming the opinions presented in this supplemental report is attached as Appendix A.

6. The opinions stated in this report are based on the evidence that has been provided to me to date. I reserve the right to modify or supplement my conclusions as additional information is made available to me, or as I perform further analysis. ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮ $600 for my time in this matter. Staff at The Brattle Group have assisted me by performing work at my direction. My opinions are my own, and neither The Brattle Group's nor my compensation are dependent on my opinions or the outcome of this matter.

II. Summary of Opinions

7. The ▮▮ Report demonstrates that XRP prices reacted to certain news and public statements related to Ripple.[1] In what follows I will quantify the economic significance of those XRP price reactions.

8. For the purposes of the analysis presented below, I begin with the 113 events on 105 unique days represented by the Select Categories analysis in the ▮▮ Report.[2] To be conservative, I remove from that set 5 instances of Digital Asset Trading Platform Listings which I could not definitively attribute to the efforts of Ripple Labs based on the set of news I analyzed.[3] The final set of events I study below thus numbers 108 events on 100 unique days. I will refer to these as the "Ripple Events" and the "Event Days," respectively.

9. My findings are as follows:

   - **But-for the news and public statements related to Ripple to which XRP prices reacted in a statistically significant way, the USD price per XRP token would have rarely exceeded $0.02.** Figure 1 below presents the results for the Constant Mean Return Model (Model 1), described in the ▮▮ Report,[4] when the statistically significant abnormal returns associated with Ripple Events are removed from the price history of XRP and a counterfactual price history is constructed (i.e., a price history of XRP "but-for" the statistically significant price reactions to the Ripple Events).

     As shown in the first column of Figure 1, from May 5, 2014 (the first news day I evaluate) through October 28, 2020 (the last news day I evaluate),[5] the average actual XRP price was $0.2136, while the 95th percentile actual price was $0.7003.[6] However, as shown in the second column of Figure 1, when the abnormal returns associated with the 23 statistically significant Ripple Events[7] are removed from this history of 2,369 days, the resulting counterfactual XRP price would be just $0.0044 on average and the 95th percentile counterfactual price would be just $0.0121. Put differently, but-for the news related to Ripple on just 23 days, the XRP price

---

[1]   ▮▮ Report, ¶ 12a.

[2]   The Select Categories combines events from the Milestone, Trading Platform Listings, Customer & Product, Acquisitions & Investments, and Ripple Commercial Initiatives categories. See ▮▮ Report, ¶ 98.

[3]   ▮▮ Report, Figure 16. Including these 5 additional listing events would make the results presented herein stronger.

[4]   ▮▮ Report, ¶¶ 39 and 43.

[5]   See Brattle Workpapers.

[6]   This means that the actual price of XRP was less than $0.7003 for 95% of the time between May 5, 2014 and October 28, 2020, inclusive, and exceeded $0.7003 for only 5% of the time during this period.

[7]   Among the 100 Event Days, 23 are associated with significant positive XRP returns. See Brattle Workpapers.

would have rarely surpassed about a penny, and it would never have reached the actual high of $3.38.

FIGURE 1: ACTUAL VS. COUNTERFACTUAL XRP PRICE COMPARISON

	Actual XRP Prices	Counterfactual XRP Prices
Average Price	$0.2136	$0.0044
Standard Deviation	$0.3104	$0.0042
5th Percentile	$0.0048	$0.0003
10th Percentile	$0.0054	$0.0004
25th Percentile	$0.0068	$0.0007
Median	$0.1848	$0.0038
75th Percentile	$0.3018	$0.0067
90th Percentile	$0.4754	$0.0091
95th Percentile	$0.7003	$0.0121
Maximum	$3.3800	$0.0279

Note: Counterfactual prices calculated by removing abnormal returns related to 23 Ripple Event Days.

- **Purchasing XRP before the release of the news and public statements related to Ripple on the 100 Event Days would have resulted in greater investment returns than purchasing at other times.** As shown in Figure 7 below, buying XRP at the closing price the day before the 100 Event Days and then selling 28 days later would have generated an average return on investment of 63.1%, compared to just 7.5% if Event Days are not included.

III. But-For the Ripple Events, XRP Prices Would Have Rarely Exceeded $0.02

10. The ███ Report establishes that XRP prices react to certain news and public statements related to Ripple.[8] Put another way, we can interpret statistically significant abnormal returns following the Event Days as attributable to those public statements.[9] As such, the best estimate of the but-for,

---

[8]   ███ Report, ¶ 12a.

[9]   See, *also*, John Y. Campbell, Andrew W. Lo, and A. Craig MacKinlay, "The Econometrics of Financial Markets," 2nd Edition, 1996, p. 151 ("To appraise the event's impact we require a measure of the abnormal return.") and p. 157 ("We interpret

counterfactual XRP price is found by replacing the *actual* returns in those instances with the *expected* returns. Doing so tells us what XRP prices would have been but-for the news about Ripple on Event Days associated with significant abnormal returns.[10]

11. For example, on May 16, 2017, Ripple announced its intention to escrow 55 billion XRP tokens.[11] The XRP price closed that day at $0.3499, compared to the prior day's close of $0.2707, representing a one-day return of about 25.7%.[12] According to the Constant Mean Return Model (Model 1), the expected return for this day was just 1.8%.[13] This means the abnormal (or unexpected) return was 23.9% on May 16, 2017.[14] This abnormal return is statistically significant at the 5% level.[15] The counterfactual closing price for May 16, 2017 – that is, the XRP price but-for Ripple's announcement – would be just $0.2756 (the prior day's price plus the *expected* 1.8% return).[16] Subsequent XRP prices would therefore be lower, since all future returns would be applied beginning from this new price.

12. In order to construct a full counterfactual price series, I adopt the following methodology. Considering each of the 100 Event Days, if the one-day abnormal return is statistically significant at the 5% one-sided level and positive, I replace the actual return with the expected return.[17] If the two-day cumulative abnormal return is similarly positive and significant (and the one-day return is not significantly negative), I replace the actual return for those two days with their respective expected returns. Finally, if the three-day cumulative abnormal return is similarly positive and significant (and neither the one-day nor the two-day is significantly negative), I replace the actual return for those three days with their expected returns.[18] If none of those (cumulative) abnormal returns is significant and positive, or if any is

---

the abnormal return over the event window as a measure of the impact of the event on the value of the firm (or its equity).").

[10] This is precisely the analysis which Prof. Fischel endorses. Without conducting any analysis of XRP prices, Prof. Fischel questions the extent to which XRP holders profited from the events studied in the ▮▮▮ Report, even assuming the abnormal returns related to those events are the results of Ripple's efforts. Fischel Report, ¶ 18.

[11] Brad Garlinghouse, "Ripple to Place 55 Billion XRP in Escrow to Ensure Certainty of Total XRP Supply," ripple.com insights, May 16, 2017, accessed 10/4/2021, https://ripple.com/insights/ripple-to-place-55-billion-xrp-in-escrow-to-ensure-certainty-into-total-xrp-supply/.

[12] The investment return is found as $0.2926 = 0.3499 / 0.2707 - 1$. Following common practice, the modeled return in my analysis is found as $0.25664 = \ln(0.3499) - \ln(0.2707)$. See Brattle Workpapers.

[13] $0.01787 = 0.1422/0.01398 - 1$. See Brattle Workpapers.

[14] This is found as $0.23876 = 0.25664 - 0.017874$.

[15] See ▮▮▮ Report, FN 1 and Section V.E and Brattle Workpapers.

[16] This is found as $0.2756 = \exp(\ln(0.2707) + 0.017874)$.

[17] For ease of exposition, I focus only on the parametric evaluation of statistical significance, as discussed in the ▮▮▮ Report. See ▮▮▮ Report, ¶ 62.

[18] ▮▮▮ Report, ¶ 61.

significant and negative, I do not adjust the returns. I do this for each of the twenty regression models detailed in the ▆▆▆▆ Report.[19]

13. Following this procedure, I adjust returns of about two dozen events (23 events) out of about 2,400 days. Prof. Fischel argues that "at face value" two dozen events cannot amount to much of economic significance.[20]

14. I also consider the implications of just examining the one day abnormal return and not giving any credit to significant abnormal returns for longer horizons. This leads me to adjust just 14 returns associated with 14 events.[21] This is a very conservative approach to the extent it takes the XRP price longer than a day to reflect new information.

15. Having removed the significant abnormal returns I then recalculate the XRP price history. The result for Model 1 is presented below in Figure 2. In this case, I adjust returns associated with just 23 of the 100 unique Event Days.[22] The results are striking, and demonstrate the economic significance of these 23 events. The counterfactual price almost cannot be seen on Figure 2 when compared to the actual price. This analysis shows that approximately two dozen events are, in fact, economically significant.

---

[19]   ▆▆▆▆ Report, Figure 7.

[20]   Fischel Report, ¶ 20 ("In other words, taken at face value, the findings of Dr. Metz's event study methodology do not demonstrate that XRP holders profit solely or primarily from the efforts of Ripple.").

[21]   See Brattle Workpapers.

[22]   Recall that in some cases I may adjust just one day's return, sometimes two, and sometimes three depending on the indications of statistical significance of those (cumulative) abnormal returns.

FIGURE 2: ACTUAL VS. COUNTERFACTUAL XRP PRICES
2014 - 2020

16. Figure 3 summarizes the results across all twenty models. The maximum 95th percentile counterfactual price is just $0.0242, meaning that XRP prices would have only rarely exceeded about two cents but-for the news or public statements related to Ripple Labs. Recall that the actual 95th percentile price over this period was $0.7003, almost 30 times greater.

FIGURE 3: COUNTERFACTUAL XRP PRICE SUMMARY

	No. of Significant Events	Average	Standard Deviation	5th	10th	25th	Median	75th	90th	95th	Maximum
							Percentile Price				
Actual Price	0	$0 2136	$0.3104	$0.0048	$0.0054	$0.0068	$0.1848	$0.3018	$0.4754	$0.7003	$3.3800
Counterfactuals											
Model 1	23	$0.0044	$0.0042	$0.0003	$0 0004	$0.0007	$0.0038	$0.0067	$0.0091	$0.0121	$0.0279
Model 2	22	$0.0059	$0.0060	$0.0006	$0 0008	$0.0017	$0.0044	$0.0078	$0.0134	$0.0161	$0.0598
Model 3	24	$0.0034	$0.0033	$0.0002	$0 0003	$0.0005	$0.0029	$0.0052	$0.0071	$0.0091	$0.0219
Model 4	20	$0.0058	$0.0054	$0.0007	$0 0010	$0.0017	$0.0044	$0.0077	$0.0130	$0.0159	$0.0478
Model 5	23	$0.0048	$0.0043	$0.0005	$0 0006	$0.0010	$0.0042	$0.0072	$0.0100	$0.0130	$0.0279
Model 6	20	$0.0067	$0.0065	$0.0013	$0 0016	$0.0025	$0.0048	$0.0083	$0.0143	$0.0170	$0.0704
Model 7	21	$0.0061	$0.0055	$0.0009	$0 0011	$0.0018	$0.0048	$0.0080	$0.0140	$0.0167	$0.0453
Model 8	19	$0.0080	$0.0082	$0.0017	$0 0021	$0.0032	$0.0051	$0.0087	$0.0184	$0.0229	$0.0880
Model 9	24	$0.0037	$0.0033	$0.0004	$0 0005	$0.0008	$0.0033	$0.0056	$0.0078	$0.0102	$0.0219
Model 10	21	$0.0060	$0.0055	$0.0011	$0 0013	$0.0021	$0.0046	$0.0079	$0.0129	$0.0158	$0.0534
Model 11	24	$0.0039	$0.0040	$0.0002	$0 0002	$0.0004	$0.0035	$0.0056	$0.0080	$0.0109	$0.0279
Model 12	23	$0.0053	$0.0056	$0.0005	$0 0007	$0.0014	$0.0044	$0.0074	$0.0110	$0.0143	$0.0576
Model 13	24	$0.0039	$0.0040	$0.0002	$0 0002	$0.0004	$0.0034	$0.0056	$0.0080	$0.0108	$0.0279
Model 14	22	$0.0049	$0.0045	$0.0005	$0 0006	$0.0012	$0.0042	$0.0072	$0.0104	$0.0134	$0.0332
Model 15	22	$0.0044	$0.0039	$0.0005	$0 0006	$0.0010	$0.0042	$0.0061	$0.0083	$0.0112	$0.0279
Model 16	21	$0.0077	$0.0092	$0.0019	$0 0023	$0.0033	$0.0052	$0.0085	$0.0142	$0.0207	$0.1156
Model 17	20	$0.0067	$0.0057	$0.0013	$0 0016	$0.0026	$0.0050	$0.0083	$0.0145	$0.0175	$0.0505
Model 18	20	$0.0091	$0.0106	$0.0024	$0 0028	$0.0041	$0.0054	$0.0100	$0.0189	$0.0242	$0.1290
Model 19	24	$0.0045	$0.0041	$0.0005	$0 0006	$0.0010	$0.0041	$0.0066	$0.0088	$0.0116	$0.0279
Model 20	24	$0.0049	$0.0044	$0.0007	$0 0009	$0.0014	$0.0041	$0.0069	$0.0102	$0.0133	$0.0332

17. If I limit my attention only to significant one-day abnormal returns (and thus ignore the extent to which prices might have adjusted after the closing of the Event Day) I continue to see the substantial impact that news or public statements about Ripple Labs has had on XRP prices. Figure 4, below, compares actual XRP prices with the counterfactual price according to Model 1. In this case, I am removing the abnormal returns of just 14 days out of 2,369. The counterfactual price is still substantially lower than actual XRP prices, never exceeding $0.3276.

FIGURE 4: ACTUAL VS. COUNTERFACTUAL XRP PRICES (ONE-DAY APPLICATION)
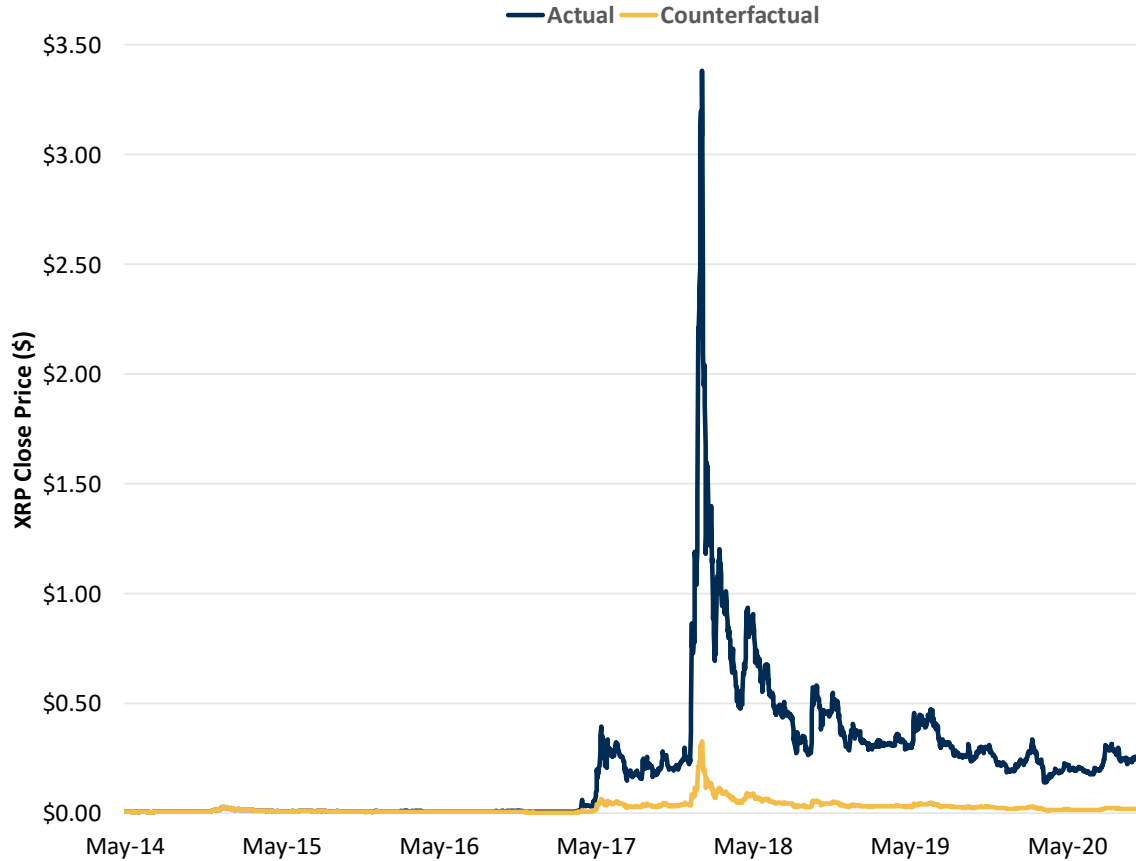
18. Figure 5 summarizes the results of this conservative, one-day application across all twenty models. The maximum 95th percentile counterfactual price is just $0.1271 (compared to the actual 95th percentile price of $0.7003), meaning that removing the abnormal returns in the hours following announcements on just 14 days, XRP prices would have only rarely exceeded about twelve cents.

FIGURE 5: COUNTERFACTUAL XRP PRICE SUMMARY (ONE-DAY APPLICATION)

	No. of Significant Events	Average	Standard Deviation	Percentile Price							
				5th	10th	25th	Median	75th	90th	95th	Maximum
Actual Price	0	$0.2136	$0 3104	$0.0048	$0.0054	$0.0068	$0.1848	$0.3018	$0.4754	$0.7003	$3.3800
Counterfactuals											
Model 1	14	$0.0244	$0 0289	$0.0038	$0.0044	$0.0056	$0.0165	$0.0321	$0.0477	$0.0679	$0.3276
Model 2	15	$0.0284	$0 0377	$0.0038	$0.0044	$0.0056	$0.0167	$0.0375	$0.0571	$0.0846	$0.4340
Model 3	15	$0.0234	$0 0273	$0.0037	$0.0045	$0.0059	$0.0161	$0.0306	$0.0453	$0.0642	$0.3101
Model 4	14	$0.0294	$0 0359	$0.0037	$0.0045	$0.0059	$0.0199	$0.0396	$0.0587	$0.0834	$0.4027
Model 5	13	$0.0293	$0 0357	$0.0040	$0.0047	$0.0061	$0.0218	$0.0383	$0.0577	$0.0839	$0.4047
Model 6	12	$0.0373	$0 0474	$0.0040	$0.0047	$0.0061	$0.0283	$0.0499	$0.0754	$0.1100	$0.5309
Model 7	13	$0.0339	$0 0422	$0.0041	$0.0047	$0.0061	$0.0256	$0.0450	$0.0677	$0.0984	$0.4748
Model 8	12	$0.0400	$0 0509	$0.0041	$0.0047	$0.0061	$0.0307	$0.0539	$0.0810	$0.1178	$0.5684
Model 9	14	$0.0272	$0 0326	$0.0038	$0.0046	$0.0059	$0.0202	$0.0356	$0.0531	$0.0765	$0.3694
Model 10	13	$0.0333	$0 0413	$0.0038	$0 0046	$0 0059	$0.0248	$0.0449	$0.0665	$0.0957	$0.4620
Model 11	14	$0.0236	$0 0278	$0.0037	$0 0044	$0 0056	$0.0161	$0.0309	$0.0459	$0.0654	$0.3156
Model 12	15	$0.0288	$0 0392	$0.0033	$0 0042	$0 0056	$0.0172	$0.0374	$0.0555	$0.0885	$0.4540
Model 13	15	$0.0228	$0 0265	$0.0036	$0 0044	$0 0058	$0.0158	$0.0296	$0.0439	$0.0624	$0.3013
Model 14	15	$0.0279	$0 0343	$0.0033	$0 0043	$0 0058	$0.0190	$0.0371	$0.0554	$0.0801	$0.3868
Model 15	13	$0.0285	$0 0347	$0.0040	$0 0047	$0 0061	$0.0212	$0.0372	$0.0561	$0.0816	$0.3937
Model 16	13	$0.0357	$0 0459	$0.0036	$0 0044	$0 0061	$0.0274	$0.0477	$0.0728	$0.1069	$0.5159
Model 17	13	$0.0343	$0 0432	$0.0041	$0 0047	$0 0061	$0.0249	$0.0458	$0.0692	$0.1006	$0.4856
Model 18	13	$0.0419	$0 0550	$0.0039	$0 0046	$0 0061	$0.0318	$0.0567	$0.0867	$0.1271	$0.6133
Model 19	15	$0.0262	$0 0312	$0.0038	$0 0045	$0 0058	$0.0189	$0.0343	$0.0509	$0.0734	$0.3542
Model 20	16	$0.0292	$0 0361	$0.0033	$0 0042	$0 0055	$0.0214	$0.0386	$0.0580	$0.0841	$0.4061

19. These results clearly demonstrate the substantial impact that even a few significant returns relating to news and public announcements about Ripple have had in the history of XRP prices.

IV. Investment Returns around Ripple Events are Substantially Greater than Otherwise

20. To further address the economic significance of the Ripple Events on XRP prices, I answer the following questions: what would the average return be if an investor bought at closing prices before each of the 100 Event Days, and how would that compare to the average return if she did not?

21. To answer those questions we must specify the holding period of that investment. I consider periods of 1, 3, 7, and 28 days. When comparing the average return for the 100 Event Days to the average return for all other days, the latter may still reflect some benefit from Ripple Events as the holding period will sometimes include an Event Day. To truly isolate the influence of Ripple Events on investment returns, I also calculate the average return considering holding periods which do not contain any Event Days.

22. The results are presented below in Figure 6. For example, an investor investing on the Event Day (i.e., purchasing at the closing price of the day before) would earn an average 28-day return of 63.1% compared to an average return of 21.3% earned when investing on any other days. Excluding those 28 day holding periods which include Event Days, the average return falls to just 7.5%.

FIGURE 6: AVERAGE RETURN ON INVESTMENT COMPARISON
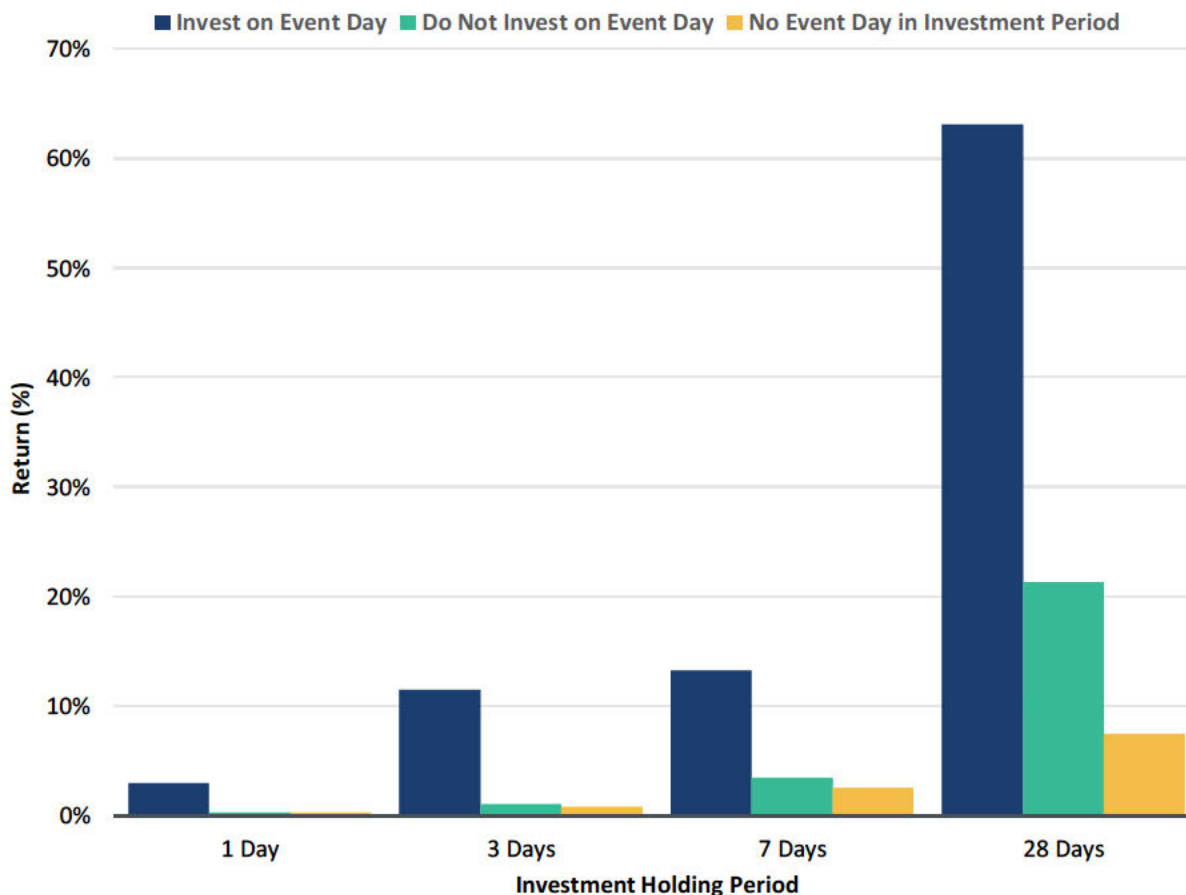
23. The data supporting Figure 6 are presented below in Figure 7.

FIGURE 7: AVERAGE RETURN ON INVESTMENT COMPARISON (DETAIL)

| | Holding Period | | | |
	1 Day	3 Days	7 Days	28 Days
Invest on Event Day	3.0%	11.5%	13.2%	63.1%
Do Not Invest on Event Day	0.3%	1.0%	3.5%	21.3%
No Event Day in Investment Period	0.3%	0.8%	2.6%	7.5%

24. An investor who timed investments in XRP around these Ripple Events would have earned substantially greater returns than an investor who did not. This, again, demonstrates the economic significance of the Ripple Events in the history of XRP prices.

APPENDIX A

Additional Documents Relied Upon

Expert Reports	**Date**
[1] Expert Report of Daniel R. Fischel.	November 12, 2021
[2] Expert Report of M. Laurentius Marais, PhD.	November 12, 2021

Exhibit 8
Filed Under Seal

1   UNITED STATES DISTRICT COURT

2   SOUTHERN DISTRICT OF NEW YORK

3

4   SECURITIES AND EXCHANGE   )
    COMMISSION,   )
5   )
                     Plaintiff,   )
6   ) Case No.
              vs.   ) 20-civ-10832(AT)(SN)
7   )
    RIPPLE LABS, INC., BRADLEY   )
8   GARLINGHOUSE, and CHRISTIAN A.   )
    LARSEN,   )
9   )
                     Defendants.   )
10 _____)

11

12   VIDEOTAPED DEPOSITION OF

13   ALAN SCHWARTZ

14   Friday, February 11, 2022

15

16

17

18

19

20

21

22

23
    Reported by:
24 JEFFREY BENZ, RMR, CRR
    STENOGRAPHIC REPORTER
25 JOB No. 220211JBE

1

1

2

3

4   VIDEOTAPED DEPOSITION of ALAN SCHWARTZ, taken by

5   Plaintiff, at the offices of Debevoise & Plimpton, 919

6   Third Avenue, New York, New York, on February 11, 2022

7   commencing at 9:13 a.m., before Jeffrey Benz, a

8   Certified Realtime Reporter, Registered Merit Reporter

9   and Notary Public within and for the State of New York.

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

2

```
 1  A P P E A R A N C E S:

 2


 3  FOR THE PLAINTIFF:

 4      SECURITIES AND EXCHANGE COMMISSION
        200 Vesey Street, Suite 400
 5      New York, New York  10281-1022
             BENJAMIN HANAUER, ESQ
 6           DAPHNA WAXMAN, ESQ.
        Telephone: 212.336.0153
 7      Email: hanauer@sec.gov
             waxmand@sec.gov
 8

 9  FOR DEFENDANT RIPPLE LABS:

10      KELLOGG, HANSEN, TODD, FIGEL & FREDERICK, P.L.L.C.
        1615 M Street, N.W.
11      Washington, D.C.  20036
        BY:   REID M. FIGEL, ESQ.
12            GAVAN GIDEON, ESQ.
              ROBERT L. MOORE, ESQ. (Remotely)
13            ELIANA M. PFEFFER, ESQ. (Remotely)
              JUSTIN B. BERG, ESQ. (Remotely)
14      Telephone: 202.326.7918
        Email: rfigel@kellogghansen.com
15            ggideon@kellogghansen.com
              rmoore@kellogghansen.com
16            epfeffer@kellogghansen.com
              jberg@kellogghansen.com
17
                    -and-
18
        DEBEVOISE & PLIMPTON LLP
19      919 Third Avenue
        New York, New York    10022
20      BY:   BENJAMIN LEB, ESQ. (Remotely)
        Telephone: 212.909.6089
21      Email: bjleb@debevoise.com

22

23

24

25
```

3

```
 1   A P P E A R A N C E S: (Ctd.)

 2


 3   FOR DEFENDANT BRADLEY GARLINGHOUSE:

 4        CLEARY GOTTLIEB STEEN & HAMILTON LLP
          2112 Pennsylvania Avenue, NW
 5        Washington, D.C.  20037
          BY:   JORGE A. BONILLA LOPEZ, ESQ. (Remotely)
 6        Telephone: 202.974.1517
          Email: jbonillalopez@cgsh.com
 7

 8   FOR DEFENDANT CHRISTIAN A. LARSEN:

 9        PAUL, WEISS, RIFKIND, WHARTON & GARRISON LLP
          1285 Avenue of the Americas
10        New York, New York   10019-6064
          BY:   SARAH J. PROSTKO, ESQ.  (Remotely)
11              CONNOR J. RITSCHARD, ESQ. (Remotely)
          Telephone: 212.373.2491
12        Email: sprostko@paulweiss.com
                 critschard@paulweiss.com
13

14   ALSO PRESENT:

15        ANA GUARDADO, Ripple Labs, Inc. (Remotely)

16        KYLE E. CHERMAK, Debevoise & Plimpton (Remotely)

17        JIM BAKER, Videographer

18

19

20

21

22

23

24

25
```

4

```
 1                          INDEX

 2   ALAN SCHWARTZ

 3        Examination by:                      Page

 4             MR. HANAUER                        6

 5

 6                        EXHIBITS

 7   NUMBER              DESCRIPTION            PAGE

 8   Exhibit 1   Expert Report of Alan           16
                 Schwartz, dated October 4,
 9               2021

10   Exhibit 4   Supreme Court's Decision in     63
                 Securities and Exchange
11               Commission v. W.J. Howey
                 Co., et al.
12
     Exhibit 5   Transcript of Howey             55
13               litigation

14   Exhibit 8   XRP Purchase Summary           120

15   Exhibit 9   ███████   Wholesale Order      125

16   Exhibit 10  Agreement between Ripple and   131
                 GSR Holdings Limited
17
     Exhibit 11  GSS Agreement                  142
18
     Exhibit 12  Copy of Azimo Agreement        148
19
     Exhibit 15  MoneyGram Agreement            156
20
     Exhibit 16  Loan Agreement                 158
21
     Exhibit 17  BF Custody Agreement           161
22
     Exhibit 18  Copy of Custody Agreement      166
23
     Exhibit 20  Joint Venture Agreement        177
24               Between Ripple and SBI

25   Exhibit 21  ████   Contract               178
```

5

09:12	1	THE VIDEOGRAPHER: Good morning. We're now
09:12	2	on the record. Today's date is February 11, 2022.
09:12	3	The time is 9:13 a.m. This is Disk 1 of the video
09:12	4	deposition of Alan Schwartz, in the matter of SEC
09:12	5	versus Ripple Labs, et al.
09:12	6	My name is Jim Brady. I'm the
09:12	7	videographer. Today's court reporter is Jeff Benz.
09:12	8	We're both with Gradillas Reporting.
09:12	9	Today's deposition is taking place at
09:12	10	Debevoise & Plimpton, 919 Third Avenue, New York,
09:12	11	New York.
09:12	12	The attorneys' appearances will appear on
09:12	13	the transcript. May I ask now that the court
09:12	14	reporter please swear in the witness.
09:13	15	ALAN SCHWARTZ,
09:13	16	called as a witness, having been first
09:13	17	duly sworn by Jeffrey Benz, a Notary
09:13	18	Public within and for the State of New
09:13	19	York, was examined and testified as
09:13	20	follows:
09:10	21	EXAMINATION BY MR. HANAUER:
09:13	22	Q. Good morning, sir. My name's Ben Hanauer.
09:13	23	I represent the SEC, who's the plaintiff in this
09:13	24	lawsuit.
09:13	25	Can you please state your name for the

6

09:13 1   record.

09:13 2   A.   Alan Schwartz.

09:13 3   Q.   And, Professor Schwartz, is there any

09:13 4   reason why you cannot give accurate testimony today?

09:13 5   A.   No.

09:13 6   Q.   How many preparation sessions did you do

09:13 7   for today's deposition?

09:13 8   A.   Four, I think. Three or four.

09:13 9   Q.   And when were they?

09:13 10   A.   Yesterday and Wednesday, and then a couple

09:13 11   of weeks ago we did a couple.

09:13 12   Q.   And when you say "we," who was present for

09:13 13   those preparation sessions?

09:13 14   A.   Mr. Figel, Mr. Gideon, and a gentleman

09:14 15   whose name I -- I never got Robert's last name.

09:14 16   There's another person, an employee of the firm, the

09:14 17   Kellogg Hansen firm.

09:14 18   Q.   And how long total did you spend preparing

09:14 19   for today's deposition?

09:14 20   A.   I would -- between 15 and 20 hours.

09:14 21   Q.   And in your preparation, did you review any

09:14 22   documents other than the ones cited in your

09:14 23   October 4, 2021, report?

09:14 24   A.   Yes, I did.

09:14 25   MR. FIGEL: Start -- say yes -- answer yes

7

```
09:14  1   or no.  Give me a chance -- there may be some

09:14  2   privilege issues, so if you just give a pause after

09:14  3   Mr. Hanauer's question, please.

09:14  4        Q.   And what did you review other than the

09:14  5   documents cited in your report?

09:14  6             MR. FIGEL:  I direct you not to answer that

09:14  7   question based on attorney work product.

09:14  8        Q.   Did you review any deposition transcripts?

09:14  9        A.   No.

09:14 10             MR. FIGEL:  Again, let me -- let me give

09:14 11   you the instruction --

09:14 12             THE WITNESS:  Okay.

09:14 13             MR. FIGEL:  -- but fine, start by answering

09:15 14   yes or no.

09:15 15        Q.   Have you ever been deposed or given

09:15 16   testimony in a lawsuit before?

09:15 17             MR. FIGEL:  You can answer.

09:15 18        A.   Yes.

09:15 19        Q.   How many times?

09:15 20        A.   Over the years -- hard to remember over the

09:15 21   years.  More than ten.

09:15 22        Q.   And I guess I should probably split that

09:15 23   up.  How many times have you been deposed in

09:15 24   connection with a lawsuit?

09:15 25        A.   Same answer.
```

8

09:15 1   Q.   Around 10?

09:15 2   A.   Or more, 10, 12, something like that.

09:15 3   Q.   And beyond those depositions, how many

09:15 4   times have you given testimony in a lawsuit?

09:15 5   A.   Does that include an arbitration?

09:15 6   Q.   Yes.

09:15 7   A.   Four or five.

09:15 8   Q.   Generally speaking, what were the cases

09:15 9   about that you've testified in?

09:16 10   A.   They were in a variety of areas. I've been

09:16 11   an expert in bankruptcy, corporate governance,

09:16 12   contracts, sales.

09:16 13   Q.   Have you ever offered expert testimony in a

09:16 14   case involving allegations of federal securities law

09:16 15   violations?

09:16 16   A.   No.

09:16 17   Q.   Have you ever testified as a fact witness?

09:16 18   A.   No.

09:16 19   Q.   How much of your professional time do you

09:16 20   spend working as a litigation expert or consultant on

09:16 21   one hand, as opposed to working as a law professor?

09:16 22   A.   Less than 5 percent, maybe less than

09:16 23   3 percent.

09:16 24   Q.   Has your expert testimony ever been

09:16 25   excluded for any reason?

9

09:17 1   A.   Yes.

09:17 2   Q.   Can you tell me about that, please.

09:17 3   A.   It was -- it's hard to -- once I was an

09:17 4 expert in a dispute between oil companies, and a part

09:17 5 of my report was excluded on the ground that there

09:17 6 was economic analysis in it and I hadn't qualified as

09:17 7 an economic expert.

09:17 8   Q.   And what case was that?

09:17 9   A.   Well, I can't remember the name, but it was

09:17 10 between two big oil companies, involving oil leases

09:17 11 in Prudhomme Bay.

09:17 12   Q.   Do you know what court that case was in?

09:17 13   A.   What case.

09:17 14   I think that was in Washington, D.C.

09:17 15   Q.   District -- federal court?

09:17 16   A.   District court in Washington, D.C.

09:17 17   Q.   Federal district court?

09:18 18   A.   Yes.

09:18 19   Q.   Has -- besides that occasion, has your

09:18 20 expert testimony ever been excluded for any other

09:18 21 reason?

09:18 22   A.   Not that I can recall.

09:18 23   Q.   Were you retained as an expert in a case

09:18 24 called Mason Capital versus Cayman Corp., in the

09:18 25 District of Connecticut?

10

09:18 1   A.   Yes.

09:18 2   Q.   And you testified at a trial that took

09:18 3 place in that case in October 2005?

09:18 4   A.   I don't remember the date, but I did

09:18 5 testify in a trial.

09:18 6   Q.   And one of the subjects of your testimony

09:18 7 in that case was about your beliefs about the meaning

09:18 8 of Connecticut's Business Combination Act?

09:18 9   A.   I don't specifically recall, but I wouldn't

09:18 10 object to that characterization.

09:18 11   Q.   And in that case, did the court grant the

09:18 12 opposing side's motion in limine to preclude that

09:18 13 portion of your testimony?

09:18 14   A.   I think it did.

09:19 15   Q.   And the reason the court excluded that

09:19 16 portion of your testimony was because the court found

09:19 17 the constructions of statutes is a judicial task and

09:19 18 not a proper subject of expert testimony?

09:19 19   A.   I don't particularly recall why the court

09:19 20 excluded my re-- that part of my report. I don't

09:19 21 recall what the judge said or whether the judge wrote

09:19 22 something down.

09:19 23   Q.   Any other instances where your testimony

09:19 24 was excluded?

09:19 25   A.   Not that I can recall.

11

09:19 1   Q.   Has a court ever expressed disagreement

09:19 2   with an opinion you expressed?

09:19 3   A.   I -- I'm not exactly sure how to answer

09:20 4   that question because I -- I expressed -- when I

09:20 5   testified, the court didn't always come out on the

09:20 6   side for which I was an expert.

09:20 7   Q.   So there are cases where you testified

09:20 8   where ultimately the other side prevailed in the

09:20 9   lawsuit?

09:20 10   A.   I think so.

09:20 11   Q.   You're a professor at the Yale Law School?

09:20 12   A.   That's correct.

09:20 13   Q.   Since when?

09:20 14   A.   1987.

09:20 15   Q.   And have you held any other employment

09:20 16   since 1987?

09:20 17   A.   I'm also a professor in the Yale School of

09:20 18   Management.

09:20 19   Q.   Any other employment over the past

09:20 20   30 years?

09:20 21   A.   No.

09:20 22   Q.   Are you a member -- sit on any corporate

09:20 23   boards?

09:20 24   A.   I have sat on corporate boards.

09:20 25   Q.   Which ones?

                                                                    12

```
09:20  1        A.   Rhone Industries.  Cliffs Natural
09:20  2   Resources, and Furniture Brands.
09:21  3        Q.   Are you still on any of those boards?
09:21  4        A.   No.
09:21  5        Q.   Why did you leave?
09:21  6        A.   I aged out.
09:21  7             Well, actually I ages out of Cliffs Natural
09:21  8   Resources and Furniture Brands.  We sold Rhone
09:21  9   Industries.
09:21 10        Q.   Understood.
09:21 11             And what's your date of birth, sir?
09:21 12        A.   ███████  1940.
09:21 13        Q.   Are you licensed to practice law?
09:21 14        A.   Not currently.
09:21 15        Q.   When were you last licensed to practice
09:21 16   law?
09:21 17        A.   Actually, I -- I'm going to give a little
09:21 18   bit of a complicated answer to that question.  I was
09:21 19   a member of the New York Bar.  I think that I let my
09:21 20   membership lapse.
09:21 21             I think if you're a professor at an
09:21 22   accredited Connecticut law school for a certain
09:21 23   period of time, you become a member of the
09:21 24   Connecticut Bar.
09:22 25        Q.   So when did your New York law license
```

13

09:22 1   lapse?

09:22 2   A.   I don't recall how long it takes for a

09:22 3   license to lapse, but I have not practiced law in

09:22 4   New York for a very long time.

09:22 5   Q.   Have you practiced law anywhere else?

09:22 6   A.   No.

09:22 7   Q.   Have you ever represented clients in court?

09:22 8   A.   No.

09:22 9   Well, I have when I was a practicing

09:22 10   attorney.

09:22 11   Q.   And when you say "a long time ago," is

09:22 12   there any way we can --

09:22 13   A.   I left the -- yes, I left practice in 1969.

09:22 14   Q.   And when you did practice, did you have

09:22 15   areas of expertise or specialization?

09:22 16   A.   I was a litigator.

09:22 17   Q.   You are an expert in contract law?

09:22 18   A.   I think so, yes.

09:22 19   Q.   Do you consider yourself an expert in the

09:22 20   federal securities laws?

09:22 21   A.   No.

09:23 22   Q.   Are you qualified to offer expert testimony

09:23 23   on how courts interpret the term, "investment

09:23 24   contract," in cases applying the federal securities

09:23 25   laws?

                                                            14

09:23	1	MR. FIGEL: Objection. You can answer.
09:23	2	A. No, I'm not an expert in the federal
09:23	3	securities laws.
09:23	4	Q. And will you be offering any such opinions
09:23	5	in this case about how courts interpret the term,
09:23	6	"investment contract," under the federal securities
09:23	7	laws?
09:23	8	A. No.
09:23	9	Q. Are you offering an opinion that under the
09:23	10	federal securities laws, investment contracts are
09:23	11	limited to common law contracts?
09:23	12	MR. FIGEL: Objection.
09:23	13	A. No.
09:23	14	Q. Are you offering an opinion that investment
09:23	15	contracts under the federal securities laws cannot
09:23	16	contain representations beyond the four corners of
09:23	17	any common law contract?
09:23	18	A. No, I'm not offering an opinion.
09:24	19	Q. Are you offering an opinion whether any of
09:24	20	Ripple's offers or sales of XRP qualify for an
09:24	21	exemption from registration under the federal
09:24	22	securities laws?
09:24	23	A. No.
09:24	24	Q. Are you an expert in the field of
09:24	25	blockchain technologies?

15

09:24 1   A.   No.

09:24 2   Q.   Are you an expert in the field of digital

09:24 3   assets or cryptocurrencies?

09:24 4   A.   No.

09:24 5   Q.   Before this case, have you ever worked on a

09:24 6   case involving digital assets or cryptocurrencies?

09:24 7   A.   No.

09:24 8   Q.   And I believe I tendered Exhibit 1. It

09:24 9   should be sitting right in front of you.

09:24 10   A.   Yes.

09:24 11   MR. HANAUER: Do you want to share with --

09:25 12   oh, you did. Good. Thank you.

09:25 13   Q.   And Exhibit 1, that's the expert report you

09:25 14   submitted in this case, on October 4, 2021?

09:25 15   A.   Yes.

09:25 16   (Expert Report of Alan Schwartz, dated

09:25 17   October 4, 2021, was marked Exhibit AS-1 for

09:25 18   identification, as of this date.)

09:25 19   Q.   And on page 65 of the report, is that your

09:25 20   signature?

09:25 21   A.   Yes, it is.

09:25 22   Q.   Did anyone assist you in the preparation of

09:25 23   your report?

09:25 24   MR. FIGEL: Answer that question yes or no.

09:25 25   A.   Yes.

16

```
09:25   1          Q.    Who?

09:25   2          A.    Mr. Figel.

09:25   3          Q.    Anyone else?

09:25   4          A.    No.

09:25   5          Q.    Did you write the whole report?

09:25   6          A.    Yes.

09:25   7          Q.    Was anything in the report written by

09:25   8   Ripple's attorneys?

09:25   9          A.    No.

09:25  10          Q.    Did Ripple's attorneys direct you to write

09:25  11   anything?

09:26  12          A.    No.

09:26  13          Q.    Who prepared Exhibits C through F to your

09:26  14   report?

09:26  15          A.    I think employees of Mr. Figel's firm.

09:26  16          Q.    Do you know who?

09:26  17          A.    I think it was -- I think it is Robert --

09:26  18          Q.    Well, I don't want you to speculate.  Just

09:26  19   to the best of your knowledge, do you know who

09:26  20   prepared Exhibits C to F of your report?

09:26  21          A.    No.

09:26  22                MR. FIGEL:  Just so you know, it's not a

09:26  23   mystery, but I'm not allowed to testify.

09:26  24          Q.    Is there -- and -- just so I have that,

09:26  25   Mr. Figel is the only attorney who assisted you in
```

17

09:26 1 the preparation of your report?

09:26 2   A.   There were other attorneys on phone calls,

09:26 3 but Mr. Figel played the largest role.

09:26 4   Q.   Can you name any of the other attorneys?

09:26 5   A.   Gavan Gideon.

09:26 6   Q.   Anyone else?

09:26 7   A.   No.

09:27 8   Q.   Is there anything in your report that is

09:27 9 inaccurate?

09:27 10   A.   Not to my knowledge.

09:27 11   Q.   Just so we're clear for the record, when I

09:27 12 say "report," I'm referring to Exhibit 1.

09:27 13   A.   Yes.

09:27 14   Q.   Is there anything in your report that you

09:27 15 need to correct or supplement?

09:27 16   A.   Not -- not now.

09:27 17   Q.   Does your report contain -- well, do you

09:27 18 intend to supplement your report in the future?

09:27 19   A.   That would depend on events yet to occur.

09:27 20   Q.   Do you have any intention to at this time?

09:27 21   A.   No.

09:27 22   Q.   Does your report contain a complete

09:27 23 statement of all the opinions you will express in

09:27 24 this case?

09:27 25   A.   Yes.

18

09:27 1   MR. FIGEL: Objection.

09:27 2   You can answer.

09:27 3   A.   Yes.

09:27 4   Q.   Does your report contain all the bases and

09:27 5 reasons for the opinions you are offering?

09:27 6   MR. FIGEL: Objection.

09:28 7   A.   Yes.

09:28 8   Q.   Does your report identify all the facts and

09:28 9 data you considered in forming the opinions expressed

09:28 10 in your report?

09:28 11   A.   Yes.

09:28 12   Well, let me clarify.

09:28 13   I've had conversations about the nature of

09:28 14 crypto markets with various people, and I assume that

09:28 15 they -- they were informative for me, but they --

09:28 16 those conversations aren't in this report.

09:28 17   Q.   Did you rely on any of those conversations,

09:28 18 in forming -- well, strike that.

09:28 19   Did you consider any of those

09:28 20 conversations, in forming the opinions you're

09:28 21 expressing in this case?

09:28 22   A.   No.

09:28 23   Q.   Besides the contracts which you

09:29 24 specifically refer to in the report, are all of the

09:29 25 facts and data that you relied on listed in Exhibit B

                                                        19

09:29 1 to your report?

09:29 2   A.   Let me look at Exhibit B.

09:29 3   Yeah, that's the materials I considered.

09:29 4   Q.   And from Exhibit B, it looks like the only

09:29 5 document prepared by an attorney in this case that

09:29 6 you considered, was the SEC's amended complaint.

09:29 7   A.   That's correct.

09:29 8   Q.   Did you consider any of the SEC's

09:29 9 interrogatory responses?

09:30 10   A.   I considered them after this report was

09:30 11 written.

09:30 12   Q.   Which ones?

09:30 13   A.   I can't exactly remember. I visited --

09:30 14 what's the name of the document that the SEC

09:30 15 submitted in response? I read one document the SEC

09:30 16 prepared after I prepared this report.

09:30 17   Q.   So a single interrogatory response?

09:30 18   A.   Yeah, it was response to interrogatories.

09:30 19 That's -- I think it was.

09:30 20   Q.   Do those -- after reviewing those

09:30 21 interrogatory responses, does that in any way impact

09:30 22 the opinions you're offering in this case?

09:30 23   A.   No.

09:30 24   Q.   You considered the amended complaint in

09:30 25 this case in forming your opinions?

20

09:30 1   A.   The SEC's amended complaint?

09:30 2   Q.   Yes, sir.

09:30 3   A.   Yes.

09:30 4   Q.   Did you read the whole thing?

09:31 5   A.   Yes.

09:31 6   Q.   Are you offering the opinion that any

09:31 7   allegation in the complaint is untrue?

09:31 8   A.   No.

09:31 9   Q.   Do -- so -- you said that after you wrote

09:31 10   your report, you reviewed one of the SEC's

09:31 11   interrogatory responses. After you signed your

09:31 12   report, have you reviewed any other documents or

09:31 13   information that are relevant to the opinions

09:31 14   expressed in your report?

09:31 15   MR. FIGEL: You can answer if you

09:31 16   understand the question.

09:31 17   And don't identify what they are yet.

09:31 18   A.   Yes.

09:31 19   Q.   And what documents are those?

09:31 20   MR. FIGEL: You can answer, but don't

09:31 21   reveal any documents that you were shown in

09:31 22   connection with your preparation for your testimony.

09:32 23   A.   I looked at additional contracts of Ripple.

09:32 24   Q.   How many?

09:32 25   A.   Hundreds.

                                                                    21

09:32 1   Q.   And how would I be able to tell which

09:32 2   contracts you reviewed after signing your report?

09:32 3   A.   They wouldn't be -- they wouldn't be

09:32 4   referred to in my report.

09:32 5   Q.   Does your review -- are those documents

09:32 6   that you reviewed after signing your report in any

09:32 7   way relevant to your report?

09:32 8   A.   In any way, it's very broad. I reviewed

09:32 9   them to see whether there were any inconsistencies

09:32 10   between the -- those contracts and my report.

09:33 11   Q.   And how many -- you said there are hundreds

09:33 12   that you reviewed?

09:33 13   A.   Yeah. I think there were 1700 in total.

09:33 14   Q.   Well, there are 1700 listed in your report.

09:33 15   How many did you review after your report was signed?

09:33 16   A.   I can't remember. A lot.

09:33 17   Q.   More than a hundred?

09:33 18   A.   Yes.

09:33 19   Q.   More than 200?

09:33 20   A.   Probably.

09:33 21   Q.   More than 500?

09:33 22   A.   Yes. I -- yeah, more than -- yes.

09:33 23   Q.   And you reviewed the entirety of those

09:33 24   500-plus contracts?

09:33 25   A.   Yes.

22

09:33 1   Q.   Did you review more than 700 contracts?

09:33 2   A.   I -- I basically went through all of them,

09:33 3   in the binders that were submitted, that I had.

09:33 4   Q.   Who submitted binders to you?

09:33 5   A.   The Kellogg firm gave me binders and

09:33 6   informed me that those binders had Ripple contracts

09:34 7   in them, which they did.

09:34 8   Q.   Did they -- those binders have all 1700

09:34 9   contracts?

09:34 10   A.   I didn't -- I didn't count them.

09:34 11   Q.   What's your best approximation of the

09:34 12   number of contracts you reviewed after signing your

09:34 13   report?

09:34 14   A.   Over a thousand.

09:34 15   Q.   All 1700 contracts cited in your report?

09:34 16   A.   It would be hard, honestly, to say every

09:34 17   one, but a very large proportion.

09:34 18   Q.   Do you still have those contracts?

09:34 19   A.   I do.

09:34 20   Q.   Do the opinions in your report rely on any

09:34 21   assumptions?

09:34 22   MR. FIGEL: Objection.

09:34 23   A.   I would have to review my report, but I

09:34 24   don't think I made very many assumptions in it.

09:35 25   Q.   Did anyone ask you to make any assumptions,

                                                                    23

```
09:35  1 | in preparing your report?
09:35  2 |          MR. FIGEL:  Start with answering yes or no.
09:35  3 |          THE WITNESS:  What?
09:35  4 |          MR. FIGEL:  Start by answering yes or no.
09:35  5 |      A.   No.
09:35  6 |      Q.   Will you be offering any opinions in this
09:35  7 | case that are not contained in your report?
09:35  8 |      A.   No.
09:35  9 |      Q.   Will you be offering any opinions related
09:35 10 | to the conduct of either of the individual defendants
09:35 11 | in this case?
09:35 12 |      A.   No.
09:35 13 |      Q.   Will you be offering any opinion related to
09:35 14 | industry custom or practice?
09:35 15 |      A.   No.
09:35 16 |          MR. FIGEL:  Objection.  You can answer.
09:35 17 |      Q.   Will you be offering an opinion related to
09:35 18 | any of the defendants' affirmative defenses?
09:35 19 |      A.   No.
09:35 20 |      Q.   Will you be offering rebuttal testimony to
09:35 21 | any of the SEC's experts?
09:35 22 |      A.   No.
09:36 23 |      Q.   Have you read any of the other expert
09:36 24 | reports in this case?
09:36 25 |      A.   No.
```

24

```
09:36  1          Q.    How many hours did you work on this

09:36  2   engagement prior to completing your report?

09:36  3               So from the time you got -- you signed your

09:36  4   engagement to the time you signed your report.

09:36  5          A.    35 to 40 hours.

09:36  6          Q.    And that includes preparing your report?

09:36  7          A.    Yes.

09:36  8          Q.    And it includes reviewing all the contracts

09:36  9   cited in your report?

09:36 10               MR. FIGEL:  Objection.

09:36 11          Q.    The answer is yes?  I'm sorry.  You need to

09:36 12   give a verbal answer.

09:36 13          A.    Yes.

09:36 14          Q.    How much time did you spend reviewing the

09:37 15   contracts that you received after you signed the

09:37 16   report?

09:37 17          A.    Maybe eight to ten hours.

09:37 18          Q.    How much money have you billed so far for

09:37 19   this case?

09:37 20          A.    Approximately $50,000.

09:37 21          Q.    Your rate is $1,200 an hour?

09:37 22          A.    Yes.

09:37 23          Q.    Is that your standard billing rate?

09:37 24          A.    Yes.

09:37 25          Q.    Since when?
```

25

09:37 1   A.   Since the last two or three years.

09:37 2   Q.   Have you ever charged that much per hour in

09:37 3   another case?

09:37 4   A.   Yes.

09:37 5   Q.   Have you ever billed more as an expert

09:38 6   witness than in this case?

09:38 7   A.   No.

09:38 8   Q.   So in preparing your report, how many

09:38 9   contracts did you personally review?

09:38 10   A.   I think about 140 to 150.

09:38 11   Q.   And how long did that review and analysis

09:38 12   take?

09:38 13   A.   I can't really recall what proportion of

09:38 14   the time I spent was spent writing or thinking or

09:38 15   reading or -- I just can't really break it down.

09:38 16   Q.   So, the 35- to 40-hour number you gave me a

09:38 17   couple minutes ago, that included both reviewing and

09:39 18   analyzing contracts and drafting your report?

09:39 19   A.   Yes.

09:39 20   Q.   Does your report identify the specific

09:39 21   140 contracts that you reviewed?

09:39 22   A.   I think my report refers to 17 in specific

09:39 23   contracts.

09:39 24   Q.   And if I wanted to know the remaining

09:39 25   120-plus contracts that you personally reviewed in

26

09:39 1 preparing your report, how would I figure that out?

09:39 2   A.   Well, the -- the difficulty is all these

09:39 3 contracts are very much like each other, so a way to

09:39 4 go about that would be to see what was supplied to me

09:39 5 before the date of my report.

09:40 6   Q.   Okay. And unfortunately, I don't have that

09:40 7 information. So what I'm trying to get at is, is

09:40 8 there any record of the 17 or so contracts that you

09:40 9 personally -- or -- I'm sorry.

09:40 10   Is there any record of the 140 contracts

09:40 11 you reviewed to prepare your report?

09:40 12   A.   I think if you did email discovery, you

09:40 13 would see that there were emails which would say

09:40 14 things like, We're sending you X, or we're sending

09:40 15 you Y.

09:40 16   MR. FIGEL: I'm -- I'm sorry to interrupt.

09:40 17   I'm -- I'm allowing you to answer these

09:40 18 questions because he's interested, but be careful not

09:40 19 to reveal communications --

09:40 20   THE WITNESS: No.

09:40 21   MR. FIGEL: -- the substance of

09:40 22 communications with our firm and -- and you.

09:40 23   THE WITNESS: Okay.

09:40 24   Q.   So, I -- I just want to make sure I have

09:41 25 this right. So the 140 contracts you reviewed in

27

09:41 1 preparing your report, were those all emailed to you

09:41 2 by Ripple's counsel?

09:41 3   MR. FIGEL: You can answer yes or no.

09:41 4   A.   No.

09:41 5   Q.   Okay. So again, I'm just trying to figure

09:41 6 out which 140 contracts you -- you reviewed.

09:41 7   A.   Well, I -- I'm not trying to be evasive.

09:41 8 They sent me boxes with things in them that -- so

09:41 9 they weren't emailed.

09:41 10   Q.   So the 140 contracts you reviewed, were

09:41 11 those the only 140 contracts you got, or were they --

09:41 12 from Ripple's counsel, or were they part of a larger

09:41 13 set?

09:41 14   MR. FIGEL: Objection.

09:41 15   You can answer if you understand.

09:41 16   A.   They were obviously part of a larger set

09:41 17 because we have the full set.

09:42 18   Q.   Are you aware of any record showing the

09:42 19 specific 100 -- strike that.

09:42 20   Are you aware of any record that documents

09:42 21 the specific 140 contracts you personally reviewed

09:42 22 before signing your report?

09:42 23   A.   No.

09:42 24   Q.   Is there a way to figure that out?

09:42 25   A.   Yes.

28

```
09:42   1        Q.    How?

09:42   2        A.    Well, I could go through my office in

09:42   3   New Haven and see what I had there.  And I would

09:42   4   check when I got what, because there were, as I said,

09:42   5   messages.

09:42   6              And ultimately, I could come up with the

09:42   7   ones I looked at before October 4 and the ones I

09:42   8   looked at after.

09:42   9        Q.    You have to -- is there -- did you take

09:42  10   notes of any of that, or would you have to go

09:42  11   basically on memory, I reviewed this before signing

09:42  12   my report, or I reviewed it after signing my report?

09:42  13        A.    Well, as I said, I'm not trying to be

09:43  14   evasive.  I have two offices, one in New Haven and

09:43  15   one in New York.  I did most of the work on the

09:43  16   report in New Haven, but -- but since then, I've been

09:43  17   mainly working in New York.

09:43  18              So I could go through my -- my New Haven

09:43  19   office would probably have a lot of the stuff I did

09:43  20   before the report, and my New York office would have

09:43  21   a lot of other stuff.

09:43  22        Q.    Do you have any records reflecting which

09:43  23   140 contracts you reviewed prior to signing your

09:43  24   report?

09:43  25        A.    No.
```

29

09:43 1   Q.   Now, prior to signing your report, who

09:43 2 reviewed the other 1500-plus contracts cited in your

09:43 3 report?

09:43 4   A.   I don't know.

09:43 5   Q.   And prior to -- did you -- signing your

09:44 6 report, did you have any firsthand knowledge of the

09:44 7 contents of the contracts you did not review?

09:44 8   A.   No.

09:44 9   Q.   Did you give direction to anybody regarding

09:44 10 the 1500 plus contracts that you did not review?

09:44 11   A.   Yes.

09:44 12   Q.   Who did -- first of all, who did you give

09:44 13 direction to?

09:44 14   A.   By who --

09:44 15   MR. FIGEL: You can answer. Give names.

09:44 16   A.   To Mr. Figel, to Mr. Gideon, and to --

09:44 17 what's Robert's last name?

09:44 18   MR. FIGEL: Can I answer?

09:44 19   Moore, M-O-O-R-E.

09:44 20   A.   Right. To Mr. Moore.

09:44 21   Q.   And do you know if they were the ones

09:44 22 reviewing the contracts?

09:44 23   A.   Do I personally know? No.

09:44 24   Q.   And what direction did you give them?

09:45 25   A.   I directed -- I directed them to look for

                                                          30

09:45 1   representative contracts in the categories that I

09:45 2   thought were germane.

09:45 3   Q.   And are those the categories identified in

09:45 4   your report?

09:45 5   A.   They are.

09:45 6   Q.   And did this occur -- this direction you

09:45 7   gave to counsel to categorize the contracts, was this

09:45 8   before or after you had reviewed the 140 contracts?

09:45 9   A.   Before.

09:45 10   Q.   Had you reviewed any contracts at the time

09:45 11   you gave counsel that direction?

09:45 12   A.   I think I re-- I reviewed a small number.

09:45 13   Q.   Like how many?

09:45 14   A.   I -- I can't recall how many.

09:46 15   Q.   Who came up with the categories?

09:46 16   A.   Me.

09:46 17   Q.   And how did you come up with those

09:46 18   categories before you had finished reviewing the

09:46 19   140 contracts?

09:46 20   A.   I had some understanding of Ripple's

09:46 21   business model, which led me to think that they had

09:46 22   contracts in these various categories.

09:46 23   And I wanted to see whether those contracts

09:46 24   would be relevant to any opinions that I was retained

09:46 25   to give. And so essentially the process was I had a

31

```
09:46  1  small sample, and I wanted a bigger sample.
09:46  2       Q.   And how did you gain an understanding of
09:46  3  Ripple's business model?
09:46  4       A.   I -- as a general matter, I had a sense of
09:47  5  what cryptocurrency companies do, and I think I
09:47  6  had -- without revealing any substance, I had
09:47  7  conversations with counsel about, So what kind of
09:47  8  company is this, and so on.
09:47  9       Q.   So you learned about Ripple's business
09:47 10  model through communicating with counsel?
09:47 11       A.   I learned -- I learned about -- generally
09:47 12  learned about what cryptocurrencies do just because,
09:47 13  if you're interested in commerce and you were in
09:47 14  a -- a lead institution, you talk about these things
09:47 15  with people who know them.
09:47 16            And I wanted to confirm the general view I
09:47 17  had of this kind of industry with -- I wanted to see
09:47 18  whether this company was sort of like the others
09:47 19  that -- or basically a typical cryptocurrency
09:47 20  company.
09:48 21       Q.   What did you do to supervise the work of
09:48 22  the attorneys acting at your direction?
09:48 23       A.   I didn't directly supervise the attorneys.
09:48 24       Q.   What did you do to verify the accuracy of
09:48 25  their work?
```

32

09:48 1   A.   Well, if -- if I wanted to see direct sales

09:48 2   contracts, and I had seen a couple before the

09:48 3   attorneys were going to get me more of them, I

09:48 4   essentially internally reviewed to see whether what I

09:48 5   was being shown were direct sales contracts, in that

09:48 6   category.

09:48 7   Q.   So for the contracts listed on Exhibits C

09:48 8   through F to your report, what did you do to verify

09:48 9   that those exhibits accurately categorized the

09:49 10   contracts?

09:49 11   A.   I'm not sure --

09:49 12   MR. FIGEL: Objection.

09:49 13   You can answer.

09:49 14   A.   Also I'm not sure I understand that

09:49 15   question.

09:49 16   Q.   What did you do to make sure Exhibit -- to

09:49 17   verify that Exhibits C to F to your report -- well,

09:49 18   let me back up.

09:49 19   You -- you testified you did not prepare

09:49 20   Exhibits C to F to your report, correct?

09:49 21   A.   That's correct.

09:49 22   Q.   And you also testified you don't know who

09:49 23   prepared them?

09:49 24   A.   I don't have -- no -- I mean, I have a

09:49 25   suspicion, but I wouldn't want to testify that I

33

09:49 1 actually know.

09:49 2   Q.   So, what did you do to verify that these

09:49 3 Exhibits C to F are accurate?

09:49 4   A.   I'm not sure what you mean by "accurate."

09:49 5   Q.   Well, so, for instance, Exhibit C lists

09:49 6 hundreds of sales contracts.

09:49 7   A.   Yes.

09:49 8   Q.   What did you do to verify that each

09:50 9 contract listed on Exhibit C appropriately belongs to

09:50 10 be listed along with the other sales contracts?

09:50 11   MR. FIGEL: Objection.

09:50 12   A.   I looked at a lot of them to see whether

09:50 13 they were sales contracts or not.

09:50 14   Q.   And that was the work you did after signing

09:50 15 your report?

09:50 16   A.   Some before, some after.

09:50 17   Q.   So, how many -- how many hours did you

09:50 18 spend -- well, let -- you -- just to take a step

09:50 19 back.

09:50 20   You said before you signed your report, you

09:50 21 had only looked at 140 contracts. Right?

09:50 22   A.   Yes.

09:50 23   Q.   And then --

09:50 24   A.   Approximately 140.

09:50 25   Q.   What did you do at the time you signed your

34

09:50   1   report to verify that the other 1500 contracts listed

09:50   2   on the exhibits to your report were accurately

09:50   3   categorized?

09:51   4   MR. FIGEL: Objection.

09:51   5   A.   I didn't do -- the only way to verify --

09:51   6   let me back up.

09:51   7   I asked the attorneys for a representative

09:51   8   sample of contracts in each of the categories that I

09:51   9   thought would be relevant, and I relied on the

09:51 10   attorneys to pick contracts in those categories that

09:51 11   would, when I looked at the entire universe,

09:51 12   accurately represent the entire universe.

09:51 13   Q.   And the result of that direction was the

09:51 14   Exhibits C to F to your report?

09:51 15   A.   Yes.

09:51 16   Q.   And before you signed your report, what did

09:51 17   you do to verify that Exhibits C through F were

09:51 18   accurate?

09:52 19   A.   I think I've answered this question, but if

09:52 20   you want me to try again, I'll try again.

09:52 21   Exhibits C through F are -- are the

09:52 22   universe. When I wrote my report, I didn't see the

09:52 23   entire universe.

09:52 24   I relied on the attorneys to give me

09:52 25   contracts in these categories that would be accurate

35

09:52 1 samples of the entire universe.

09:52 2   Q.   And did you do anything prior to signing

09:52 3 your report to verify the attorneys' work?

09:52 4   A.   No.

09:52 5   Q.   Is it your understanding that the

09:52 6 1700 contracts listed on Exhibits C to F of your

09:52 7 report reflect all of Ripple's offers and sales of

09:52 8 XRP at issue in this lawsuit?

09:53 9   A.   No.

09:53 10   Q.   How many offers and sales of XRP by Ripple

09:53 11 that are at issue in this lawsuit are not reflected

09:53 12 on Exhibits C to F of your report?

09:53 13   MR. FIGEL: Objection.

09:53 14   A.   I don't --

09:53 15   MR. FIGEL: You can answer.

09:53 16   A.   I don't know.

09:53 17   Q.   Do you know how many offers and sales of

09:53 18 XRP Ripple made between February 2013 and

09:53 19 December 2020 that are not reflected on Exhibit --

09:53 20 not reflected by one of the contracts on Exhibits C

09:53 21 to F of your report?

09:53 22   MR. FIGEL: Objection.

09:53 23   A.   No.

09:53 24   Q.   Do you know whether Ripple made offers or

09:53 25 sales of XRP that were not reflected by written

36

09:53 1   agreement?

09:53 2   MR. FIGEL: Objection.

09:53 3   A.   No.

09:54 4   Q.   If Ripple had offered or sold XRP but did

09:54 5   not document those offers or sales in a written

09:54 6   agreement, did you consider those offers or sales in

09:54 7   forming your opinions?

09:54 8   MR. FIGEL: Objection.

09:54 9   A.   No.

09:54 10   Q.   Are you offering an opinion on any offer or

09:54 11   sale or transfer of XRP not reflected by one of the

09:54 12   contracts listed in your report?

09:54 13   A.   No.

09:54 14   Q.   Are you offering -- are you offering an

09:54 15   opinion on whether any computer code deployed on a

09:54 16   blockchain represents an enforceable contract?

09:54 17   MR. FIGEL: Objection.

09:54 18   A.   No.

09:54 19   Q.   Are you offering an opinion on any of the

09:54 20   statements or representations made on Ripple's

09:54 21   website?

09:54 22   A.   No.

09:55 23   Q.   Did you consider any such statements or

09:55 24   representations in forming your opinions?

09:55 25   A.   The only ones that I considered were in

                                                          37

09:55 1   your complaint and response to interrogatories.

09:55 2   Q.   Are you offering an opinion on any press

09:55 3   release or social media posting made by Ripple or its

09:55 4   personnel?

09:55 5   A.   No.

09:55 6   Q.   Have you spoken with any purchaser of XRP?

09:55 7   A.   No.

09:55 8   Q.   And do you own any XRP?

09:55 9   A.   No.

09:55 10   Q.   Do you own any digital asset or

09:55 11   cryptocurrency?

09:55 12   A.   No.

09:55 13   Q.   Have you ever?

09:55 14   A.   No.

09:55 15   Q.   Are you offering an opinion on any

09:55 16   purchaser or holder of XRP's motives or intentions?

09:55 17   A.   No.

09:56 18   Q.   And then in your report, you refer to

09:56 19   the -- the various -- let's just go to your report.

09:56 20   Can you go, please, to paragraph 5 on page 4 of your

09:56 21   report.

09:56 22   And I want to direct you just to the last

09:56 23   sentence of paragraph 4 -- I'm sorry -- paragraph 5,

09:56 24   the one that reads, Of those contracts, I have

09:56 25   personally reviewed more than 140 contracts that were

                                                                    38

```
09:56  1  exemplars of the categories and subcategories set

09:56  2  forth in this declaration.

09:56  3       A.   Yes.

09:56  4       Q.   And who determined the -- those 140

09:57  5  contracts were exemplars?

09:57  6       A.   The attorneys.

09:57  7       Q.   And who selected the 140 contracts that you

09:57  8  would review?

09:57  9       A.   The attorneys.

09:57 10       Q.   What direction, if any, did you give to the

09:57 11  attorneys who selected those 140 contracts for you?

09:57 12       A.   I -- I think I've answered this question,

09:57 13  but -- to say again, I created the categories.  And

09:57 14  so, for example, I said, I would like to see direct

09:57 15  sales contracts that were representative of the

09:57 16  direct sales contracts that Ripple sold XRP under.

09:58 17       Q.   And just so I'm clear, you came up with

09:58 18  those categories before you started reviewing

09:58 19  contracts?

09:58 20       A.   Well, I saw -- I had saw a few contracts at

09:58 21  the start, just to see what was going on.  But the

09:58 22  very bulk of the contracts that I reviewed, I

09:58 23  reviewed after I communicated the categories to the

09:58 24  attorneys and had them do a search.

09:58 25       Q.   And then following your initial review of
```

39

09:58 1   the 140 contracts, you were provided with access to

09:58 2   all 1700-plus contracts listed in Exhibits C

09:58 3   through F?

09:58 4   A.   I guess I could see whatever I wanted to

09:58 5   see.

09:58 6   Q.   Well, you said you were -- in your report,

09:58 7   it says you were given access to those 1700.

09:58 8   A.   Yes.

09:58 9   Q.   If you just describe the access you were

09:58 10   given.

09:59 11   A.   I could ask the attorneys for contracts,

09:59 12   and they would provide them.

09:59 13   Q.   Were all of the contracts that you had --

09:59 14   were all the contracts that were provided to you,

09:59 15   were they provided to you in paper form or electronic

09:59 16   form?

09:59 17   MR. FIGEL: Objection.

09:59 18   A.   The contracts were provided in paper form.

09:59 19   Q.   Were you given access to any sort of

09:59 20   database containing the contracts?

09:59 21   A.   No. I was given the contracts.

09:59 22   Q.   In hard-copy form.

09:59 23   A.   Yes.

09:59 24   Q.   Were any contracts emailed to you?

09:59 25   A.   No.

                                                              40

09:59 1   Q.   And the contracts that you were physically

09:59 2   given copies of, was -- were they all the 1700

09:59 3   contracts?

09:59 4   A.   I have all of them now.

10:00 5   Q.   Did you have all 1700 contracts before you

10:00 6   signed your report?

10:00 7   A.   No.

10:00 8   Q.   Just the 140?

10:00 9   A.   I don't recall how many I had. But I

10:00 10   didn't have the full universe of 1700.

10:00 11   Q.   And when did you actually get the full

10:00 12   universe?

10:00 13   A.   I think it was in -- sometime after I

10:00 14   signed my report and when there was, I think the

10:00 15   earliest schedule depositions. I recall the

10:00 16   depositions were scheduled for early January and then

10:00 17   were moved, and sometime before then and after my

10:00 18   report.

10:00 19   Q.   How many of the 1700 contracts did you

10:00 20   personally review?

10:00 21   MR. FIGEL: Objection.

10:00 22   You can answer.

10:00 23   A.   I reviewed most of them.

10:00 24   I would say a very large percentage.

10:00 25   Q.   And in the course of that review, did you

41

10:00 1 review all of those -- the entirety of each contract?

10:01 2   A.   No.

10:01 3   Q.   How many of the 1700 contracts did you not

10:01 4 read the entirety of?

10:01 5   MR. FIGEL: Objection.

10:01 6   A.   I didn't -- I was looking for particular

10:01 7 things in those contracts. So either they were there

10:01 8 or they weren't, so I didn't feel that I had to read

10:01 9 the entire document.

10:01 10   So I didn't.

10:01 11   Q.   And that's the case with all 1700

10:01 12 contracts.

10:01 13   A.   Some I read the -- there were some that I

10:01 14 had to read the entire document to get a sense of

10:01 15 what it was about. There were others when, because

10:01 16 they were form contracts that were -- each one was

10:01 17 very much like the other, I just checked to make sure

10:01 18 that Contract 47, for example, was like Contract 46.

10:01 19   Q.   And again, you said that there were some of

10:01 20 the 1700 contracts you didn't review at all.

10:02 21 Correct?

10:02 22   A.   Well, that would be a pretty small

10:02 23 fraction.

10:02 24   Q.   But there are some.

10:02 25   A.   Well, to be exact, there were these big

42

10:02 1 binders. I went through them. It could be that I

10:02 2 turned pages inaccurately or my attention flagged for

10:02 3 a moment, but essentially my object was to go through

10:02 4 everything in the binder.

10:02 5   Q.   But not word for word.

10:02 6   A.   Well, I was looking for particular words.

10:02 7 If I saw them, I would read them. If they were

10:02 8 absent, then I didn't have to read them.

10:02 9   Q.   So if a contract had a provision in it that

10:02 10 you weren't necessarily looking for, you may not have

10:02 11 reviewed that provision.

10:02 12   A.   Yes.

10:02 13   Q.   Of the contracts -- well, why didn't you

10:02 14 read all -- the entirety of all 1700 contracts?

10:03 15   A.   Because I was interested in whether Ripple

10:03 16 assumed any -- or whether there were words in any of

10:03 17 these contracts that would support an inference that

10:03 18 Ripple assumed post-sale obligations toward a buyer

10:03 19 of XRP. And there was a question whether such words

10:03 20 were in any of these contracts or not, and I looked

10:03 21 to see whether they were.

10:03 22   Q.   So does that mean you reviewed every page

10:03 23 of each contract to make sure that those provisions

10:03 24 were not there?

10:03 25   MR. FIGEL: Objection.

43

10:03 1   A.   No.   I didn't have to do that because, as I

10:03 2   said, they were form contracts.   So if in Contract 37

10:03 3   these words would appear or not appear in a relevant

10:04 4   part of the contract, I would look at that.   For

10:04 5   example, I was interested in whether there were

10:04 6   disclaimers, so I would look for those.

10:04 7   Essentially, I searched these contracts

10:04 8   consistent with what I said in my report.

10:04 9   Q.   Of the contracts you reviewed, did any

10:04 10   contain a provision that you considered to be vague

10:04 11   or ambiguous?

10:04 12   A.   Not the -- not the words that I read.

10:04 13   Q.   And of the components of the contracts that

10:04 14   you did not review, how would you know whether they

10:04 15   contained terms that are vague or ambiguous?

10:04 16   A.   I wouldn't know that if I didn't read them.

10:05 17   Q.   So going back to -- you said you reviewed

10:05 18   a -- a relatively small amount -- you initially

10:05 19   reviewed a relatively small amount of contracts and

10:05 20   then came up with the categories described in your

10:05 21   report?

10:05 22   A.   Yeah.

10:05 23   Q.   Were Ripple's lawyers involved in coming up

10:05 24   with those categories?

10:05 25   MR. FIGEL: You can answer yes or no.

44

10:05 1   A.   No.   They were my categories.

10:05 2   Q.   Are the categories you selected the only

10:05 3   reasonable way to categorize the contracts identified

10:05 4   in your report?

10:05 5   MR. FIGEL: Objection.

10:05 6   A.   I can't say they were the only reasonable

10:05 7   way.   They were the way I thought would be

10:06 8   illuminating with respect to the questions that I was

10:06 9   trying to answer.

10:06 10   Q.   So I take it, then, that certain of the

10:06 11   contracts could fall into a category that you did not

10:06 12   identify in your report?

10:06 13   MR. FIGEL: Objection.

10:06 14   A.   Well, it's certainly possible. But if you

10:06 15   look at my report, they were forming categories and

10:06 16   then a whole bunch of miscellaneous contracts. So I

10:06 17   would not imagine that there would be much that would

10:06 18   be missing, but I can't say that there would be

10:06 19   nothing missing.

10:06 20   Q.   Could another expert in the field of

10:06 21   contract law reasonably come up with different

10:06 22   categories?

10:06 23   MR. FIGEL: Objection.

10:06 24   A.   You know, of course, there's that

10:06 25   possibility.   But if you were a contracts expert and

45

10:06 1 interested in the questions that I was interested in,

10:06 2 it would be difficult for me to think that you would

10:06 3 come up with anything very differently from what I

10:07 4 came up with.

10:07 5   Q.   Could Judge Torres come up with different

10:07 6 reasonable ways to categorize the contracts?

10:07 7   MR. FIGEL: Objection.

10:07 8   A.   I don't know.

10:07 9   Q.   Do you know who Judge Torres is?

10:07 10   A.   Not offhand.

10:07 11   Q.   The Article III judge in this lawsuit.

10:07 12   A.   I don't know what Judge Torres did.

10:07 13   Q.   Is there any reason why Judge Torres is not

10:07 14 qualified to interpret the contracts cited in your

10:07 15 report?

10:07 16   MR. FIGEL: Objection.

10:07 17   A.   I don't know anything in particular about

10:07 18 Judge Torres.

10:07 19   Q.   What was your methodology for selecting the

10:07 20 categories and the criteria?

10:07 21   A.   As I said before, I was interested in

10:07 22 whether Ripple had obligated itself to perform

10:08 23 services post sale for the buyers of XRP, so I looked

10:08 24 for contracts in which such obligations might appear.

10:08 25   So, for example, they would or would not

46

10:08   1   appear in a direct sales contract, and certain of the

10:08   2   contracts in which Ripple was a buyer of services

10:08   3   with another company, there might be a possibility

10:08   4   that there was a term in a contract like that that

10:08   5   would make an XRP buyer a third-party beneficiary, so

10:08   6   I looked at the service contracts to see whether such

10:08   7   a -- there were language that might support such an

10:08   8   inference.

10:08   9   I looked -- there were -- Ripple sold -- I

10:08 10   mean, there's a question I had, was whether Ripple

10:09 11   made only discrete sales of particular things or

10:09 12   whether they sold them in a way that is sometimes

10:09 13   customary where you make an agreement with a buyer

10:09 14   that from time to time, the buyer will submit orders,

10:09 15   and the terms of those orders will be the ones of the

10:09 16   master agreement. So I was interested in whether

10:09 17   there were any contracts like that.

10:09 18   Q.   And -- and I'm sorry, because I'm -- I'm

10:09 19   not sure we're on the same page for -- for this

10:09 20   question.

10:09 21   I'm not talking about the different

10:09 22   features of the contracts, like a -- post obligations

10:09 23   or anything like that. Just the -- basically the

10:09 24   categories you cite in your report, direct sales

10:09 25   contract, wholesale contract, programmatic contract,

47

10:09 1   loans, employee compensation, those categories. What

10:09 2   was your --

10:09 3   MR. FIGEL: Objection. Can I have just a

10:09 4   moment, Mr. Hanauer?

10:09 5   MR. HANAUER: I just want to make sure I'm

10:09 6   seeing the question.

10:09 7   MR. FIGEL: Well, you interrupted an answer

10:10 8   to the question, What was your methodology for

10:10 9   selecting the categories in, and the criteria. And

10:10 10   he was giving an answer as to his -- the methodology

10:10 11   that he was giving.

10:10 12   And then you interrupted him and said what

10:10 13   you just said, which is, I'm not talking about the

10:10 14   different features of the contracts. So I don't -- I

10:10 15   just want to make sure the witness has had an

10:10 16   opportunity to finish his answer with respect to the

10:10 17   methodology, which was the question that you posed.

10:10 18   A.   I was -- I thought I had answered that. I

10:10 19   was looking for contract types which might contain

10:10 20   terms that would create a contractual expectation on

10:10 21   the part of a buyer of XRP. Those provisions could

10:11 22   appear in various kinds of contracts, so I was

10:11 23   interested in what kinds of contracts there were.

10:11 24   Q.   I guess my question was -- or my question

10:11 25   now is, the categories you've identified, direct

48

10:11 1   sales, programmatic, wholesale, employee

10:11 2   compensation, what was your methodology for coming up

10:11 3   with those general categories, selecting those

10:11 4   general categories?

10:11 5   A.   I think I've answered that question. I

10:11 6   didn't have -- because I'm not sure what -- what you

10:11 7   mean in your question by a methodology.

10:11 8   I -- the overarching question that I was

10:11 9   trying to address was whether there was language in

10:11 10   contracts that Ripple used that would sustain the

10:11 11   particular inference, and I was interested in the

10:11 12   various kinds of contracts that might contain such

10:12 13   language.

10:12 14   Q.   And you split up those various kinds of

10:12 15   contracts into categories such as direct sales,

10:12 16   programmatic sales, loans?

10:12 17   A.   Right. Yeah, there were -- yeah, there

10:12 18   were -- I think that's right.

10:12 19   Q.   So I guess what I'm trying to get at is,

10:12 20   you testified that you came up with the categories

10:12 21   after only reviewing a small amount of contracts, and

10:12 22   I guess, what was the methodology of deciding those

10:12 23   categories that you relayed to counsel and instructed

10:12 24   them on how to list in the appendix? What was your

10:12 25   methodology, you know, of coming up with these

49

10:12   1   categories before you started your more thorough

10:12   2   review of the contracts?

10:12   3   MR. FIGEL: Objection.

10:12   4   A.   Well, it would be were there contracts of

10:13   5   Type A, were there contracts of Type B, were there

10:13   6   contracts of Type C.

10:13   7   Q.   And what was your methodology in coming up

10:13   8   with Type A, Type B, Type C?

10:13   9   A.   Well, for example, although I think I've

10:13 10   answered this, if Type A is a direct sales contract,

10:13 11   then I wanted to see a direct sales contract because

10:13 12   you might find a commitment to buyers in a direct

10:13 13   sales contract.

10:13 14   If it was a service contract, you might

10:13 15   find third-party beneficiary language in a service

10:13 16   contract.

10:13 17   The overarching question I was trying to

10:13 18   answer was whether there was -- there were terms or

10:13 19   phrases in any of these contracts that can sus--

10:13 20   could sustain an inference that Ripple assumed

10:14 21   post-sale obligations toward buyers.

10:14 22   I really don't have anything else to say to

10:14 23   that, because I just asked for what -- is there a

10:14 24   contract like this, is there a contract like that.

10:14 25   Q.   And -- and I guess that's what I'm getting

50

10:14 1   at. When you -- when you relayed to counsel, said,

10:14 2   Are there direct sales contracts, are there service

10:14 3   contracts, are there loan contracts, what was your

10:14 4   methodology in choosing those various categories that

10:14 5   you asked counsel to find for you?

10:14 6   MR. FIGEL: Objection.

10:14 7   A.   Because the -- contracts of that type might

10:14 8   or might not contain the language that I was

10:14 9   interested in.

10:14 10   Q.   How did you go about choosing those

10:14 11   specific types?

10:14 12   A.   I'm not sure I have more to say about that.

10:14 13   I mean, it might be -- I mean, there was some

10:14 14   back-and-forth in the sense of -- in the course of

10:14 15   discussions in which I said I wanted to see contracts

10:14 16   in various categories, I don't have a direct

10:15 17   recollection, but it wouldn't surprise me if somebody

10:15 18   said, Well, you know they were loans. If anybody

10:15 19   said that to me, I'd say, Well, let me see those.

10:15 20   Q.   Did you ask to review any representations

10:15 21   beyond the four corners of a contract?

10:15 22   A.   No.

10:15 23   Q.   Why not?

10:15 24   A.   Because the question that was addressed --

10:15 25   the question that was -- that I was retained to

                                                              51

10:15 1 answer was whether there were contractual obligations

10:15 2 created, which I sought to answer by looking at the

10:15 3 contracts.

10:15 4   Q.   Was any documentation provided to you

10:15 5 showing the work that went into the preparation of

10:15 6 Exhibits C to F of your report?

10:16 7   A.   No.

10:16 8   MR. FIGEL: Objection.

10:16 9   A.   No.

10:16 10   Q.   How are you doing on time? We've been

10:16 11 going a little bit more than an hour and may be

10:16 12 logical.

10:16 13   A.   Maybe another half hour, and then I'll want

10:16 14 to do pushups.

10:16 15   MR. HANAUER: That's fine.

10:16 16   MR. FIGEL: That was not the answer I was

10:16 17 hoping for. Does anybody else need a break?

10:16 18   THE WITNESS: Well, we can do a break now.

10:16 19 It's okay, I don't care.

10:16 20   MR. FIGEL: It's up -- it's up to you.

10:16 21   THE WITNESS: I don't mind going for a

10:16 22 little while longer.

10:16 23   MR. FIGEL: All right. Well, you're the

10:16 24 guy that matters, so we're going to keep going.

10:16 25 Okay. But whenever you -- whenever you need one,

52

10:16 1   just let me know, okay?

10:16 2   THE WITNESS: Well -- yeah, we've been

10:16 3   doing an hour. Maybe a little bit more.

10:16 4   Q.   Okay. So in your report you reference the

10:16 5   Supreme Court's decision in SEC versus

10:16 6   W.J. Howey Company?

10:16 7   A.   Yes.

10:16 8   Q.   You reviewed the Supreme Court's decision

10:16 9   in Howey before preparing your report?

10:16 10   A.   Yes.

10:16 11   Q.   Do you consider yourself an expert on how

10:16 12   courts have applied that decision?

10:17 13   A.   I don't know that anyone would be an expert

10:17 14   in how a court applied a particular decision. I have

10:17 15   read some post Howey cases.

10:17 16   Q.   Did you consider any of the post Howey

10:17 17   cases in preparing your report?

10:17 18   A.   No, I did not.

10:17 19   Q.   Have courts provided more recent guidance

10:17 20   since the Supreme Court's Howey decision on how to

10:17 21   determine if transactions involve the offer or sale

10:17 22   of an investment contract?

10:17 23   MR. FIGEL: Objection.

10:17 24   A.   I've read some cases, but I haven't --

10:17 25   there -- I am told that there are hundreds of cases

                                                           53

10:17 1   that apply Howey. I have not read hundreds of cases.

10:18 2   Q.   In forming your opinions, did you consider

10:18 3   any court cases applying Howey?

10:18 4   A.   In forming my report, no.

10:18 5   Q.   And in forming your opinions, did you

10:18 6   consider the features of any contracts in cases

10:18 7   applying Howey to see how the court analyzed those

10:18 8   contracts to see if the financial instruments were

10:18 9   investment contracts?

10:18 10   MR. FIGEL: Objection.

10:18 11   A.   Not in preparing my report.

10:18 12   Q.   In addition to reviewing the Supreme

10:18 13   Court's Howey decision, you also reviewed the lower

10:18 14   courts' opinions in the Howey litigation?

10:19 15   A.   Yes.

10:19 16   Q.   And you also read the transcript of record

10:19 17   before the Supreme Court?

10:19 18   A.   Yes.

10:19 19   Q.   Did you review all 134 pages of that

10:19 20   transcript of record?

10:19 21   A.   Yes.

10:19 22   Q.   How did you obtain it?

10:19 23   A.   I don't recall. I -- I either got it from

10:19 24   my library, or the lawyers gave it to me. I don't

10:19 25   recall how I came about getting it.

                                                              54

10:19 1   Q.   And when I say Howey, I'm going to refer to

10:19 2   the Supreme Court's decision.

10:19 3   A.   Right.

10:19 4   Q.   Okay.

10:19 5   Howey involved two common law contracts.

10:19 6   A.   Howey just involved two contracts. I don't

10:19 7   know what common law adds to that description.

10:19 8   Q.   That's fair. Howey involved a land sale

10:19 9   contract and a service contract?

10:19 10   A.   Yes.

10:19 11   Q.   And you reviewed both of those contracts?

10:20 12   A.   Yes. They were in the record, so I...

10:20 13   MR. HANAUER: Exhibit 5.

10:20 14   MS. WAXMAN: Sorry.

10:20 15   THE WITNESS: A lot of paper in this case.

10:20 16   MR. FIGEL: Do you want me to give him --

10:20 17   MR. HANAUER: Yeah, the witness should have

10:20 18   one.

10:20 19   MR. FIGEL: Okay, that's fine. He should

10:20 20   have one, yes, I was just not sure about which one.

10:20 21   (Transcript of Howey litigation was marked

10:20 22   Exhibit AS-5 for identification, as of this

10:20 23   date.)

10:20 24   Q.   So I just tendered you Exhibit 5. Is

10:20 25   Exhibit 5 a copy of the Howey transcript of record

                                                                    55

10:21 1 that you reviewed?

10:21 2   A.   It seems to be.

10:21 3   Q.   And the two contracts at issue in Howey

10:21 4 that you reviewed, those are reflected on pages 11 to

10:21 5 20 of Exhibit 5?

10:21 6   A.   Yes.

10:21 7   (Witness reviewing document.)

10:21 8   A.   Yes.

10:21 9   Q.   And Exhibit 5 also contains stipulated

10:21 10 facts that the Supreme Court considered in deciding

10:21 11 Howey?

10:21 12   A.   Yes.

10:21 13   Q.   And that's on pages 5 to 11?

10:22 14   A.   Yes.

10:22 15   Q.   And you reviewed those stipulated facts?

10:22 16   A.   Once.

10:22 17   Q.   Is it your understanding that in addition

10:22 18 to -- so let me take a step back.

10:22 19   So the two contracts at issue in Howey were

10:22 20 a land sale contract and a services contract?

10:22 21   A.   Yes.

10:22 22   Q.   In addition to receiving the land sales

10:22 23 contract and the services contract, the investors in

10:22 24 the Howey case, they also received a sales talk from

10:22 25 representatives of the companies selling those

56

10:22 1 contracts?

10:22 2   MR. FIGEL: Objection.

10:22 3   A.   I think they did. I think this is in the

10:22 4 record.

10:22 5   Q.   And that sales talk is included on pages 20

10:22 6 to 28 of Exhibit 5?

10:22 7   A.   I don't recall the pages, but --

10:23 8   (Witness reviewing document.)

10:23 9   A.   That seems to be correct.

10:23 10   Q.   Just for your reference, on pages 8 to 9 of

10:23 11 Exhibit 5, in paragraph 12 it says, Attached hereto

10:23 12 in a part hereof, as Exhibit B 1, is a typical sales

10:23 13 talk employed by representatives as acting for the

10:23 14 two companies in effectuating sales.

10:23 15   A.   Yes.

10:23 16   Q.   And that's the same sales talk I just asked

10:23 17 you about?

10:23 18   A.   It seems to be, yes.

10:23 19   Q.   And you reviewed the sales talk in

10:23 20 preparing your report?

10:23 21   A.   I read everything here.

10:24 22   Q.   In Exhibit 5?

10:24 23   A.   Yes.

10:24 24   Q.   In determining whether an investment

10:24 25 contract existed in Howey, did the Supreme Court look

57

10:24 1   at the two contracts, the land sales contract and the

10:24 2   services contract, in isolation; or did the Supreme

10:24 3   Court consider them together?

10:24 4   MR. FIGEL: Objection.

10:24 5   A.   I think the court collapsed the two into

10:24 6   one.

10:24 7   Q.   And is that one of the lessons from Howey,

10:24 8   that if multiple contracts govern a commercial

10:24 9   relationship, those multiple contracts should be

10:24 10   considered together to determine if an investment

10:24 11   contract exists under the federal securities laws?

10:24 12   MR. FIGEL: Objection.

10:24 13   A.   I'm not offering an opinion on whether

10:24 14   something is or isn't an investment contract.

10:24 15   Q.   And when you say "investment contract," do

10:24 16   you mean investment contract as that term is

10:25 17   construed under the federal securities laws?

10:25 18   A.   Yes.

10:25 19   Q.   And going forward, if I use the term

10:25 20   "investment contract," will you understand that I'm

10:25 21   referencing that term as it's used under the federal

10:25 22   securities laws?

10:25 23   A.   Yes, so long as you understand that I'm not

10:25 24   giving an opinion on that issue.

10:25 25   Q.   That should make our time here a lot of

58

10:25 1   shorter.

10:25 2   A.   Good.

10:25 3   Q.   Are you offering an opinion on whether or

10:25 4   not the sales talk the investors received was a

10:25 5   component of the investment contract the Court in

10:25 6   Howey found exists?

10:25 7   MR. FIGEL: Objection.

10:25 8   A.   The contracts speak for themselves; that

10:25 9   is, the contracts create obligations and duties.

10:25 10   Q.   But my question is, when determining

10:26 11   whether an investment contract exists, was the Court

10:26 12   just looking at the land sales and services contract

10:26 13   or was it looking also at the sales talk?

10:26 14   MR. FIGEL: Objection.

10:26 15   A.   I assume the Court read the record.

10:26 16   Q.   Can I refer you now to your report, page 7,

10:26 17   paragraph 10.

10:26 18   I want to refer you to the first full

10:26 19   sentence on paragraph 7.

10:26 20   A.   Uh-huh.

10:27 21   Q.   Do you see -- what do you mean when you

10:27 22   write, In the commercial circumstances?

10:27 23   MR. FIGEL: Objection.

10:27 24   That's not what it says.

10:27 25   A.   Yes.

59

10:27 1   It's -- it says what it says, if you have a

10:27 2 question about it.

10:27 3   Q.   That's what I tried to ask. What did

10:27 4 you -- what did you mean when you write, In the

10:27 5 commercial circumstances?

10:27 6   A.   I didn't. I wrote, The commercial context,

10:27 7 or -- in paren, or economic substance, closed paren.

10:27 8   Q.   I just want to make sure we're on -- this

10:27 9 is the top of page 7.

10:27 10   A.   Oh.

10:27 11   Well, I am -- you said paragraph 10. Are

10:27 12 you referring to anything --

10:27 13   Q.   Yeah. Paragraph 10 spills over from page 6

10:27 14 into page 7. I apologize for not trying to get you

10:28 15 there.

10:28 16   Top of page 7, the first full sentence.

10:28 17   A.   Well, the first full sentence begins, The

10:28 18 two contracts in Howey considered together.

10:28 19   Is that the sentence you're --

10:28 20   Q.   Yes. Yes, sir. I'm asking you, when you

10:28 21 write, Considered together in the commercial

10:28 22 circumstances, what do you mean by "commercial

10:28 23 circumstances"?

10:28 24   A.   That they were selling orange groves.

10:28 25   Q.   Were the two contracts in Howey the only

                                                              60

10:28 1 factual basis for providing the investors the

10:28 2 prospect of an investment return?

10:28 3   MR. FIGEL: Objection.

10:28 4   A.   If you're asking me what the investors were

10:28 5 thinking or what they relied upon, that's beyond the

10:28 6 scope of my report.

10:28 7   Q.   I'm asking you what they were told.

10:29 8   MR. FIGEL: Objection.

10:29 9   A.   What they were told is in the record.

10:29 10   Q.   Right. So my question is, is the only

10:29 11 factual -- so in Howey, the investors were led to

10:29 12 expect returns on their investment. Correct?

10:29 13   A.   Yeah. Everybody who makes an investment

10:29 14 anticipates a return.

10:29 15   I mean, they weren't doing it for nothing.

10:29 16   Q.   And what I'm asking is, the only factual

10:29 17 basis that the investors received to expect that

10:29 18 return, was it just the two contracts?

10:29 19   MR. FIGEL: Objection.

10:29 20   A.   No. The investors thought they were making

10:29 21 an investment in orange groves. Whatever went into

10:29 22 that determination on the part of the investors is

10:29 23 what they considered.

10:29 24   Q.   But what was told them that would create an

10:30 25 expectation that they would profit?

61

10:30 1   MR. FIGEL: Objection.

10:30 2   A.   I don't know what was told them. But I

10:30 3 assume that they received a sales talk which would be

10:30 4 similar to the one in the record.

10:30 5   Q.   And in that sales talk, the investors were

10:30 6 told to expect profits from their investment?

10:30 7   A.   I think the investors were told that this

10:30 8 would be a good investment, which is what sellers

10:30 9 tell buyers.

10:31 10   Q.   Is it your understanding of Howey that one

10:31 11 requisite element to find an investment contract is

10:31 12 an expectation of profit by the investor?

10:31 13   MR. FIGEL: Objection.

10:31 14   A.   If by "investment contract," you mean

10:31 15 something under the securities laws, I'm not

10:31 16 testifying to what elements add up to what a

10:31 17 securities law conclusion would be.

10:31 18   Q.   What provision of the land sales contract

10:31 19 or the services contract in Howey led investors to

10:31 20 expect substantial profits?

10:31 21   MR. FIGEL: Objection.

10:31 22   A.   I don't know what led investors to expect

10:31 23 whatever the investors expected.

10:31 24   Q.   What from the land sales or the services

10:31 25 contract did the Supreme Court find gave investors an

62

10:32 1   expectation of substantial profit?

10:32 2   A.   I don't think the Supreme Court said that.

10:32 3   I think the Supreme Court said that the return

10:32 4   that -- that the inventors could not realize a return

10:32 5   except for -- or at least importantly, for the

10:32 6   efforts of the Howey Company.

10:32 7   MR. HANAUER: Daphna, could we do

10:32 8   Exhibit 4.

10:32 9   THE WITNESS: If we're going to talk about

10:32 10   this, I -- this would be good time for me to take a

10:32 11   break, if that would be okay.

10:32 12   MR. HANAUER: Perfect.

10:32 13   THE VIDEOGRAPHER: Going off the record.

10:32 14   The time is 10:34.

10:33 15   (A recess was taken from 10:34 to 10:48.)

10:47 16   THE VIDEOGRAPHER: Going back on the

10:47 17   record.   The time is 10:48.

10:47 18   Q.   Professor Schwartz, do you have Exhibit 4

10:47 19   in front of you?

10:47 20   A.   I do.

10:47 21   (Supreme Court's Decision in Securities and

10:47 22   Exchange Commission v. W.J. Howey Co., et al.,

10:47 23   was marked Exhibit AS-4 for identification, as

10:47 24   of this date.)

10:47 25   Q.   And Exhibit 4, that's a copy of the Supreme

63

10:47 1 Court's decision in Howey that you reviewed?

10:47 2   A.   Yes.

10:47 3   Q.   I would like to refer you to the -- page 3

10:47 4 of the exhibit, the paragraph that starts with, 7

10:47 5 after 4 stars.

10:47 6   The one that begins, The purchasers, for

10:47 7 the most part, are nonresidents of Florida.

10:47 8   A.   Yes.

10:47 9   Q.   And then do you see a little bit further in

10:47 10 the paragraph, it says, they are attracted by the

10:47 11 expectation of substantial profits. It was

10:47 12 represented, for example, that profits during the

10:47 13 1943-1944 season amounted to 20 percent and that even

10:48 14 greater profits might be expected during the 1944 to

10:48 15 1945 season?

10:48 16   A.   I do.

10:48 17   Q.   Were those representations about

10:48 18 substantial profits, were those contained in the land

10:48 19 sales contract?

10:48 20   A.   No.

10:48 21   Q.   Were they contained in the services

10:48 22 contract?

10:48 23   A.   No.

10:48 24   Q.   They were in the sales talk, though.

10:48 25   A.   Yes.

64

```
10:48  1          Q.   Did any of the contracts in Howey give the

10:48  2   buyer a right to share in the profits of any company?

10:48  3               MR. FIGEL:  Objection.

10:48  4          A.   Yeah.  I think they were entitled to share

10:48  5   in the profits from the sale of oranges.

10:49  6          Q.   Did any of the contracts give the buyer a

10:49  7   right to share in the profits of W.J. Howey Co. --

10:49  8   Company?

10:49  9          A.   No.

10:49 10          Q.   What about Howey-in-the-Hills Service,

10:49 11   Inc.?

10:49 12          A.   I don't think so.

10:49 13          Q.   Did any of the contracts in Howey give the

10:49 14   buyer voting rights in any company?

10:49 15          A.   No.

10:49 16          Q.   Did any of the contracts in Howey give the

10:49 17   buyer the rights to dividends for any company?

10:49 18               MR. FIGEL:  Objection.

10:49 19          A.   "Dividend" is a term of art.  If by

10:49 20   "dividends" you mean payouts a corporation makes to

10:49 21   shareholders, the answer would be no.

10:49 22          Q.   Are you offering an opinion on whether any

10:49 23   of Ripple's actions affected the value of XRP or

10:49 24   resulted in profits to XRP purchasers?

10:50 25          A.   No.
```

65

10:50 1   Q.   Are you offering any opinion whether

10:50 2   something affected or impacted the price of XRP?

10:50 3   MR. FIGEL: Objection.

10:50 4   A.   No.

10:50 5   Q.   I'd like you to look at your report,

10:50 6   paragraph 11.

10:50 7   A.   Okay.

10:50 8   Q.   And do you see the sentence that says, I

10:50 9   was not able to identify a single contract that

10:50 10   included an express provision that obligated Ripple

10:50 11   to perform post-sale duties that could affect the

10:50 12   value of XRP or return profits to any person?

10:51 13   A.   Yes.

10:51 14   Q.   In your opinion, is an express provision

10:51 15   that obligates Ripple to perform post-sale duties

10:51 16   that could affect the value of XRP or return profits

10:51 17   to any person required to establish the existence of

10:51 18   an investment contract under the federal securities

10:51 19   laws?

10:51 20   A.   I have --

10:51 21   MR. FIGEL: Objection.

10:51 22   A.   -- no opinion on what would or would not

10:51 23   constitute an investment contract under the

10:51 24   securities laws.

10:51 25   Q.   And I'm just -- if you bear with me, I'm

66

10:51 1 | going to ask you a series of fairly similar questions

10:51 2 | that hopefully will save us a very significant amount

10:51 3 | of time.

10:51 4 | Are you offering the opinion that the

10:51 5 | presence of any contractual provision or type of

10:51 6 | contractual provision is required to establish the

10:51 7 | existence of an investment contract under the federal

10:52 8 | securities laws?

10:52 9 | A.   No.

10:52 10 | MR. FIGEL: Objection.

10:52 11 | Q.   Are you offering the opinion that the

10:52 12 | absence of any contractual provision or type of

10:52 13 | contractual provision is required to establish the

10:52 14 | existence of an investment contract under the federal

10:52 15 | securities laws?

10:52 16 | MR. FIGEL: Objection.

10:52 17 | A.   No.

10:52 18 | Q.   Are you offering the opinion that the

10:52 19 | presence of any combination of contractual provisions

10:52 20 | is required to establish the existence of an

10:52 21 | investment contract?

10:52 22 | MR. FIGEL: Objection.

10:52 23 | A.   No.

10:52 24 | Q.   Are you offering the opinion that the

10:52 25 | presence of any combination of contractual provisions

67

10:52 1 precludes the existence of an investment contract?

10:52 2   MR. FIGEL: Objection.

10:52 3   A.   No.

10:52 4   Q.   Are you offering the opinion that the

10:52 5 presence of any contractual provision or type of

10:52 6 contractual provision precludes the existence of an

10:52 7 investment contract?

10:52 8   MR. FIGEL: Objection.

10:52 9   A.   No.

10:52 10   Q.   Are you offering the opinion that the

10:52 11 absence of any contractual provision or type of

10:53 12 contractual provision precludes the existence of an

10:53 13 investment contract under the federal securities

10:53 14 laws?

10:53 15   A.   No.

10:53 16   Q.   Did Ripple sell XRP only to people who

10:53 17 intended to use XRP for non-investment purposes?

10:53 18   MR. FIGEL: Objection.

10:53 19   A.   I don't know the answer to that question.

10:53 20   That is, I'm -- I'm saying that I don't

10:53 21 know what any particular buyers intended.

10:54 22   Q.   Did the contracts in Howey suggest an

10:54 23 intention to convey third-party rights?

10:54 24   A.   I don't recall any language in those

10:54 25 contracts that would support that conclusion.

68

10:54	1	Q. In your report, you talk about Ripple's
10:54	2	business model.
10:54	3	Is that accurate?
10:54	4	A. I don't recall where in my report I said
10:54	5	that, but if I --
10:54	6	Q. Page 8. The last full paragraph of -- the
10:54	7	last full sen -- I'm sorry. Page 8, the last full
10:54	8	paragraph of paragraph 12.
10:54	9	A. I see that.
10:54	10	Q. So what is Ripple's business model?
10:54	11	A. That they create and sell cryptocurrency to
10:55	12	buyers and -- that's the story. They create it and
10:55	13	sell it.
10:55	14	Q. So Ripple created XRP.
10:55	15	A. Yeah, and they sell it.
10:55	16	Q. Are you aware that the vast majority of
10:55	17	Ripple's revenues come from selling XRP?
10:55	18	A. I don't know where their revenues come
10:55	19	from.
10:55	20	Q. Well, you just said their business model
10:55	21	was selling XRP.
10:55	22	A. What I said was that their business model
10:55	23	doesn't require them to be a member of a network. In
10:55	24	a variety of industries, networks are requisite to
10:55	25	how the industry functions. Ripple essentially

69

10:56 1   functions on its own.

10:56 2   Q.   You write in your report that, Ripple's

10:56 3   return does not depend on or confer any rights in a

10:56 4   third party.

10:56 5   Do you see that?

10:56 6   A.   I see it.

10:56 7   Q.   What do you mean by that?

10:56 8   A.   What I mean by that is so far as I can

10:56 9   tell, their return comes -- primarily comes from

10:56 10   selling XRP.

10:56 11   Q.   So when you say a third party, is someone

10:56 12   who purchases Ripple -- or is someone that purchases

10:56 13   XRP from Ripple a third party?

10:56 14   A.   No.

10:57 15   Q.   So, when you mean a third party, you mean

10:57 16   someone other than Ripple or the person or entity

10:57 17   that purchases XRP?

10:57 18   A.   There are industries in which there are

10:57 19   people in a network, or several parties get together

10:57 20   in a joint or common venture. All I meant here was

10:57 21   that Ripple is just the maker and seller of a

10:57 22   product.

10:57 23   Q.   Are you offering an opinion whether

10:57 24   Ripple's products affected the price of XRP?

10:57 25   A.   No.

70

```
10:57  1              MS. PROSTKO:  Objection.

10:57  2        Q.   Are you offering an opinion on how the

10:57  3   liquidity of XRP affects its price?

10:57  4              MR. FIGEL:  Objection.

10:57  5        A.   I'm not offering an opinion on that.

10:58  6              MS. PROSTKO:  Sorry to interrupt,

10:58  7   interject.  I had an objection at the same time the

10:58  8   answer was being given to the question about the --

10:58  9   are you offering an opinion about whether Ripple's

10:58 10   efforts affected the price of XRP, and I don't see

10:58 11   that noted on the rough transcript.

10:58 12              MR. FIGEL:  57:52.

10:58 13        Q.   Are you offering an opinion on whether uses

10:58 14   other than trading for investment purposes existed

10:58 15   for XRP?

10:58 16              MR. FIGEL:  Objection.

10:58 17        A.   No, I don't think so.

10:58 18              If it's not in my report, I don't -- I'm

10:58 19   not offering an opinion on it.

10:58 20        Q.   Does your report rest on the assumption

10:58 21   that there were uses for XRP, other than trading for

10:59 22   investment purposes?

10:59 23              MR. FIGEL:  Objection.

10:59 24        A.   No.

10:59 25        Q.   Can you please look at paragraph 13 of your
```

71

10:59   1   report.

10:59   2   And then I want to refer you to the first

10:59   3   full sentence on page 9.

10:59   4   A.   Uh-huh.

10:59   5   Q.   It says, Rather, Ripple's promotional

10:59   6   actions are typical of the actions of most merchants

10:59   7   who are concerned with the aftermarket for the

10:59   8   products they sell?

10:59   9   A.   Yes.

10:59 10   Q.   What are Ripple's promotional actions that

10:59 11   you described?

11:00 12   A.   The ones I observed in the SI-- SEC's

11:00 13   complaint.

11:00 14   Q.   Anything else?

11:00 15   A.   No.

11:00 16   Q.   In forming your opinions, did you consider

11:00 17   how Ripple's promotional actions compare to the

11:00 18   promotional actions of firms offering and selling

11:00 19   securities to investors?

11:00 20   A.   No.

11:00 21   Q.   Do you see how, on page 9 of your report,

11:01 22   you reference De Beers, Rolex, and BMW?

11:01 23   A.   Yes.

11:01 24   Q.   Where did those examples come from?

11:01 25   A.   My knowledge of the world.

72

11:01 1   Q.   Did --

11:01 2   A.   Well, also, I own a Rolex and a BMW.

11:01 3   But I don't own any diamonds.

11:01 4   Q.   Did you come up with the De Beers example

11:01 5   on your own?

11:01 6   A.   Yes.

11:01 7   Q.   And if I told you that the example of

11:01 8   De Beers was listed in another expert report, would

11:01 9   you have any knowledge of that?

11:01 10   A.   No.

11:01 11   Q.   Does De Beers own and control the majority

11:01 12   of diamonds in existence?

11:01 13   MR. FIGEL: Objection.

11:01 14   A.   I don't know De Beers' market share.

11:01 15   Q.   Do you have any reason to believe that

11:01 16   De Beers owns and controls the majority of diamonds

11:02 17   in existence?

11:02 18   A.   As I said, I don't know their market share.

11:02 19   I know that they control a lot of diamonds.

11:02 20   Q.   Does Rolex own and control the majority of

11:02 21   Rolex watches in existence?

11:02 22   MR. FIGEL: Objection.

11:02 23   A.   Well, they don't control the aftermarket in

11:02 24   them.

11:02 25   Q.   And I guess that's my question, are there

73

11:02 1 more -- for using the Rolex example, are there more

11:02 2 Rolex sitting in Rolex's inventory or sitting in the

11:02 3 collection with people that purchase Rolexes?

11:02 4   MR. FIGEL: Objection.

11:02 5   A.   I don't know the answer to that question.

11:02 6   Q.   And -- and it's the same question for

11:02 7 De Beers; who has more diamonds, De Beers in its

11:02 8 inventory, or all the other people in the world who

11:02 9 own diamonds put together?

11:02 10   MR. FIGEL: Objection.

11:02 11   A.   As a matter of fact, I don't know the

11:03 12 relevant proportions. People have been buying

11:03 13 diamonds for hundreds of years, so I would assume, if

11:03 14 I'm going to assume anything, that there are probably

11:03 15 more diamonds out there than the ones that De Beers

11:03 16 owns, but if you're asking me for a fact answer, I

11:03 17 don't know for a fact what any proportions are.

11:03 18   Q.   What -- what about for BMW? Does BMW own

11:03 19 the majority of BMW cars in existence?

11:03 20   MR. FIGEL: Objection.

11:03 21   A.   No.

11:03 22   Q.   Does Ripple own and control the majority of

11:03 23 XRP in existence?

11:03 24   MR. FIGEL: Objection.

11:03 25   A.   I don't know the answer to that.

74

```
11:03  1        Q.    Are you familiar with the concept of

11:03  2   fiduciary duties owed by a company's management to

11:03  3   its owners?

11:03  4        A.    Yes.

11:03  5        Q.    Okay.  What does that concept mean to you?

11:03  6        A.    Well, if the owners are shareholders, the

11:03  7   manager's own duties of loyalty, care, and good faith

11:04  8   to the shareholders.

11:04  9              And those are fiduciary duties.

11:04 10        Q.    Did Ripple owe fiduciary duties to its

11:04 11   equity shareholders?

11:04 12              MR. FIGEL:  Objection.

11:04 13        A.    I don't know Ripple's corporate setup.  If

11:04 14   it was a corp-- a typical corporate setup, then the

11:04 15   answer would be yes, but I don't know for a fact what

11:04 16   their corporate setup is.

11:04 17        Q.    Do you know if Ripple has equity

11:04 18   shareholders?

11:04 19        A.    No.

11:04 20        Q.    Let's assume that Ripple did have or does

11:04 21   have equity shareholders.

11:04 22              If -- assuming that's the case, would

11:04 23   Ripple owe fiduciary duties to its equity

11:04 24   shareholders to increase the value of Ripple's

11:04 25   shares?
```

75

11:04	1	MR. FIGEL: Objection.
11:04	2	A. No.
11:05	3	Q. Why do you say that?
11:05	4	A. Well, you're asking me about fiduciary
11:05	5	duties. The fiduciary duties are to manage
11:05	6	carefully, to avoid conflicts of interest, to make
11:05	7	appropriate disclosures.
11:05	8	Companies don't promise shareholders --
11:05	9	usually don't promise shareholders returns.
11:05	10	Q. I'm not asking about the promise of
11:05	11	returns. But does management have a fiduciary duty
11:05	12	to make good-faith efforts to increase the value of
11:05	13	the company?
11:05	14	MR. FIGEL: Objection.
11:05	15	A. No, they don't have a fiduciary duty as
11:05	16	fiduciary duties are technically defined in corporate
11:05	17	law. They have a contractual obligation, implicit in
11:05	18	the share contract, to manage in the best interest of
11:06	19	their shareholders.
11:06	20	THE WITNESS: Did anybody else hear that?
11:06	21	I hope so.
11:06	22	Q. And the obligation of management to act in
11:06	23	the best interests of a company's shareholders, does
11:06	24	that include the obligation to increase the value of
11:06	25	the company's shares?

76

11:06   1   MR. FIGEL: Objection.

11:06   2   A.   Managers want to maximize share value.

11:06   3   Q.   Does that include an obligation to use

11:06   4   good-faith efforts to grow the value of the company's

11:06   5   assets?

11:06   6   MR. FIGEL: Objection.

11:06   7   A.   Those are legal terms. I -- there's --

11:07   8   shareholder of a company doesn't have a right to any

11:07   9   particular level of effort on behalf of the managers.

11:07 10   That's why you write contracts with managers to

11:07 11   incentivize them.

11:07 12   Q.   And again, are you offering an opinion

11:07 13   about the expectations of any purchaser or holder of

11:07 14   XRP?

11:07 15   A.   No.

11:07 16   Q.   So going back to your report, paragraph 9,

11:08 17   do you see the sentence two-thirds of the way down

11:08 18   that begins, Ripple presumably also seeks to protect

11:08 19   the after-sale value of XRP for its own benefit?

11:08 20   A.   Paragraph?

11:08 21   Q.   Page 9.

11:08 22   A.   Oh, page 9.

11:08 23   MR. FIGEL: Do you mind if I point it out

11:08 24   to him?

11:08 25   MR. HANAUER: Yeah, of course.

77

11:08 1   MR. FIGEL: Beginning with "Ripple."

11:08 2   THE WITNESS: Yeah.

11:08 3   (Witness reviewing document.)

11:08 4   Q.   Did you have a chance to review that

11:08 5 sentence?

11:08 6   A.   Yes, I have.

11:08 7   Q.   What do you mean by, Protect the after-sale

11:08 8 value of XRP?

11:09 9   A.   That XRP would not fall materially in

11:09 10 value.

11:09 11   Q.   What steps did Ripple take to protect the

11:09 12 after-sale value of XRP?

11:09 13   MR. FIGEL: Objection.

11:09 14   A.   I don't know.

11:09 15   Q.   You don't know?

11:09 16   A.   Well, other than what I read in the SEC

11:09 17 report, my language in -- my expert report uses the

11:09 18 word "presumably."

11:09 19   Q.   And why would Ripple take steps to protect

11:09 20 the after-sale value of XRP?

11:09 21   MR. FIGEL: Objection.

11:09 22   A.   You could be asking me one of two

11:09 23 questions. One question you can be asking me is,

11:09 24 What is the subjective intention of the people who

11:09 25 run Ripple?

78

11:09 1   I have no idea what that would be.

11:10 2   If you're asking me whether someone who

11:10 3   sells a product that has an aftermarket wants to

11:10 4   protect the aftermarket, the answer would be yes.

11:10 5   Q.   Why would Ripple presumably want to

11:10 6   protect -- strike that.

11:10 7   Why would Ripple want to prevent the price

11:10 8   of XRP from declining materially?

11:10 9   MR. FIGEL: Objection.

11:10 10   A.   XRP -- because XRP is a cryptocurrency. If

11:10 11   you have a currency, you don't want a currency to

11:10 12   fall in value.

11:10 13   Q.   What do you mean by, If you have a

11:10 14   currency?

11:10 15   MR. FIGEL: Objection.

11:10 16   A.   If I'm selling someone a unit of currency,

11:11 17   which they may later use in transactions, I would

11:11 18   like, as the seller of the -- the initial seller,

11:11 19   to -- to see whether a buyer of XRP could actually

11:11 20   transact in it for the buyer's benefit.

11:11 21   Q.   And I believe you testified earlier that

11:11 22   Ripple's business model was selling XRP, right?

11:11 23   A.   Yes.

11:11 24   MR. FIGEL: Objection.

11:11 25   Q.   And that's another reason why Ripple

79

11:11 1   doesn't want the price of XRP to decline materially,

11:11 2   is because Ripple generates revenues from selling

11:11 3   XRP.

11:11 4   MR. FIGEL: Objection.

11:11 5   A.   No. It's -- if my revenue depends on

11:11 6   selling apples, I don't really care what the

11:11 7   post-sale value of an apple is.

11:12 8   Ripple is selling a currency. A currency

11:12 9   is something that people use to exchange for

11:12 10   something else. So Ripple would have an interest in

11:12 11   having people buy their currency; that is, people

11:12 12   would only buy Ripple's currency if they thought that

11:12 13   they could use it as a currency.

11:12 14   Q.   Are you offering the opinion that XRP is a

11:12 15   currency?

11:12 16   MR. FIGEL: Objection.

11:12 17   A.   No. I'm offering -- what am I offering an

11:12 18   opinion on, if anything?

11:12 19   No. I -- what I know is that Ripple sells

11:12 20   XRP and that XRP is used as a currency.

11:12 21   Q.   Are you offering any opinion as to whether

11:13 22   XRP should be legally classified as a currency?

11:13 23   A.   No.

11:13 24   Q.   Could a third party benefit from Ripple's

11:13 25   conduct even if that third party was not made a

80

11:13 1   beneficiary by virtue of a provision in any of

11:13 2   Ripple's contracts?

11:13 3   MR. FIGEL: Objection.

11:13 4   A.   I think you'd have to make that question

11:13 5   more concrete.

11:13 6   I mean, I don't know what type of third

11:13 7   party you're talking about or what you mean by a

11:13 8   "benefit."

11:13 9   Q.   Well, you say in your report that you

11:13 10   couldn't find any provisions that would make a third

11:13 11   party a beneficiary of any of Ripple's contracts.

11:13 12   Right?

11:14 13   A.   I -- yes.

11:14 14   Q.   Are there ways that a third party could

11:14 15   benefit from Ripple's conduct, even if they weren't

11:14 16   described as a third-party beneficiary in any of

11:14 17   Ripple's contracts?

11:14 18   MR. FIGEL: Objection.

11:14 19   A.   Well, if someone came to own Ripple and

11:14 20   Ripple increased in value, through any efforts of --

11:14 21   of -- if someone came to own XRP and XRP increased in

11:14 22   value, they would be happy about that.

11:14 23   Q.   Right. So --

11:15 24   A.   They could own it through buying it, having

11:15 25   it be willed to them, giving it to them as a gift.

81

11:15 1   Q.   So hypothetical here: Ripple sells XRP to

11:15 2   Party B. There's nothing in the contract about any

11:15 3   other third party. And then Ripple -- and then

11:15 4   Party B sells that same XRP to Party C.

11:15 5   If Ripple does something to create -- to

11:15 6   increase the value of XRP, does Party C benefit?

11:15 7   MR. FIGEL: Objection.

11:15 8   A.   Yes.

11:15 9   Q.   Your report mentions the restatement of

11:15 10   contracts.

11:15 11   A.   Yes.

11:15 12   Q.   Does the restatement of contracts define

11:16 13   "investment contract" the same way as that term is

11:16 14   defined under the federal securities laws?

11:16 15   A.   I don't think the restatement mentions the

11:16 16   word "investment contract" or the concept.

11:16 17   Q.   Does the restatement of contracts govern

11:16 18   the determination of whether something is an

11:16 19   investment contract under the federal securities

11:16 20   laws?

11:16 21   MR. FIGEL: Objection.

11:16 22   A.   No.

11:16 23   Q.   Did Ripple sell XRP to purchasers who

11:16 24   acquired it for investment purposes?

11:16 25   MR. FIGEL: Objection.

11:17 1   A.   I don't know to whom Ripple sold XRP.

11:17 2   Q.   Well, you talk about it in your report.

11:17 3   A.   Well, I mean, they -- I know they sold XRP.

11:17 4   But if you're asking me what the purpose was of any

11:17 5   particular buyer, I don't know what that purpose

11:17 6   would have been.

11:17 7   Q.   Did any of the contracts you reviewed say

11:17 8   what the purpose of the -- of the XRP purchases were?

11:17 9   A.   Not that I recall. But I do recall some

11:17 10   contracts explicitly saying that the buyer wasn't

11:17 11   purchasing XRP for an investment purpose.

11:17 12   Q.   When an issuer of securities sells

11:17 13   securities to an investor, does the title and risk of

11:17 14   loss typically pass to the investor?

11:17 15   MR. FIGEL: Objection.

11:18 16   A.   I -- I don't think that would be a standard

11:18 17   term in a contract of the type you described.

11:18 18   Q.   I'm not -- independent of any contract, in

11:18 19   an IPO -- do you know what an IPO is?

11:18 20   A.   Yes.

11:18 21   Q.   When someone buys a company's securities in

11:18 22   an IPO, who assumes the title and risk of loss

11:18 23   associated with those securities?

11:18 24   MR. FIGEL: Objection.

11:18 25   A.   The buyer.

83

11:18 1   Q.   Under what circumstances did the -- does

11:18 2   the seller of securities retain title and risk of

11:18 3   loss after the security has been sold to an investor?

11:18 4   MR. FIGEL: Objection.

11:18 5   A.   I don't think there are any such

11:18 6   circumstances; but if there are any, I don't have

11:18 7   them in mind.

11:19 8   Q.   Can I ask you to look at paragraph 14 of

11:19 9   your report.

11:19 10   Do you see the sentence that says -- near

11:19 11   the middle, Rather than assume any post-sale

11:19 12   obligation to promote and increase the value of XRP,

11:20 13   the typical Ripple sales contract warns the customer

11:20 14   that the future value of XRP depends on the continued

11:20 15   willingness of market participants to engage fiat

11:20 16   currency for virtual currency?

11:20 17   A.   Yes.

11:20 18   Q.   How many contracts did you review that

11:20 19   contain that disclaimer?

11:20 20   A.   I don't know exactly, but I would say that

11:20 21   that's a standard term in just about all of the

11:20 22   direct sales contracts that I looked at.

11:20 23   Q.   How many of those did you look at?

11:20 24   A.   I think I've said before that I don't have

11:20 25   a precise number of the contracts I reviewed in each

                                                              84

11:20 1   category.

11:20 2   Q.   Then the next sentence, you write, The

11:21 3   service contracts in Howey set forth specific

11:21 4   contractually required value-affecting actions that

11:21 5   Howey had the unilateral ability to perform and that

11:21 6   were essential to enable the land purchaser to earn a

11:21 7   profit.

11:21 8   Why do you say that the Howey -- that the

11:21 9   Howey Company had the unilateral ability to harvest

11:21 10   and sell the oranges?

11:21 11   A.   Because the Supreme Court in the Howey case

11:21 12   said that a future of an investment contract was that

11:21 13   the investors' return depended -- and the

11:21 14   Supreme Court used the word "solely" -- on the

11:21 15   efforts of others.

11:21 16   And I wanted to -- so I -- that is my

11:21 17   interpretation of what the Supreme Court meant by

11:21 18   that, was that Howey had the ability to affect the

11:22 19   return in the way that the Supreme Court was

11:22 20   referring to.

11:22 21   Q.   Did the Howey Company have the unilateral

11:22 22   ability to harvest and sell the oranges?

11:22 23   A.   Under the service contract, I think they

11:22 24   were the only ones that could, because the buyers of

11:22 25   orange groves were precluded from entering onto the

85

11:22 1 land to harvest oranges themselves.

11:22 2   Q.   So it's your read of Howey that the

11:22 3 purchasers of the land sale contract were not

11:22 4 required to -- or did not have the ability to harvest

11:22 5 their own oranges?

11:22 6   A.   I don't think they had the ability to

11:22 7 harvest their own oranges. I think they were

11:22 8 entitled to a share of the return from the oranges

11:22 9 that the Howey Company picked.

11:23 10   Q.   But I thought the Howey companies told the

11:23 11 investors that they were under no obligation to use

11:23 12 Howey's services.

11:23 13   A.   Howey told investors -- Howey -- well, let

11:23 14 me back up.

11:23 15   Howey sold investors orange groves. They

11:23 16 offered the investors a service contract that would

11:23 17 go along with the orange groves. It's my

11:23 18 recollection that about 85 percent of the buyers

11:23 19 purchased service contracts from Howey, and

11:23 20 15 percent of the buyers did not.

11:23 21   Q.   And is it your understanding that the

11:23 22 15 percent of the investors in Howey who didn't

11:23 23 purchase the service contracts were not allowed to

11:23 24 enter the orange groves they purchased or harvest the

11:23 25 crop?

86

11:24 1   A.   I think I recall language -- but I can't be

11:24 2   very precise about this -- that the service contracts

11:24 3   Howey offered were typical of service contracts

11:24 4   offered in the industry.

11:24 5   Q.   Were there factors in Howey, beyond the

11:24 6   unilateral control of the Howey companies, that could

11:24 7   have affected the investors' actual profits or

11:24 8   expectations of profits?

11:24 9   MR. FIGEL: Objection.

11:24 10   A.   I don't know anything that the Howey

11:24 11   Company did with respect to the value of oranges.

11:24 12   Q.   Well, we know, from the Supreme Court's

11:24 13   decision, that Howey led the investors to expect

11:24 14   profits. Right?

11:25 15   MR. FIGEL: Objection.

11:25 16   A.   We know that Howey said that if the future

11:25 17   was like the past, you would make money.

11:25 18   Q.   And part of the expectation of profits in

11:25 19   Howey came from the efforts of the Howey companies.

11:25 20   Right?

11:25 21   A.   Well, if the Howey Company didn't expend

11:25 22   any efforts under the service contracts, there

11:25 23   wouldn't have been any profits because there wouldn't

11:25 24   have been any oranges.

11:25 25   Q.   Were there factors other than the actions

87

11:25   1   of the Howey companies that could have affected the

11:25   2   investors' profits?

11:25   3   MR. FIGEL: Objection.

11:25   4   A.   Yeah, there's a market in oranges.

11:25   5   Q.   So like if there's a deep freeze in

11:25   6   Florida, that could affect the investor's profits.

11:25   7   A.   Yeah.

11:25   8   Yeah, as I said, there's a market in

11:25   9   oranges. That price of oranges is, I think, set by

11:26 10   supply and demand.

11:26 11   Q.   And so the factors affecting supply and

11:26 12   demand could affect the price -- or could affect the

11:26 13   Howey's investors' returns independent of the efforts

11:26 14   of the Howey companies?

11:26 15   MR. FIGEL: Objection.

11:26 16   A.   I would put it this way: The efforts of

11:26 17   the Howey companies were necessary for the investors

11:26 18   to receive a return but not sufficient.

11:26 19   Q.   And even if the Howey companies took all

11:26 20   the necessary steps to generate profits for the

11:26 21   investors, there were things outside Howey's control

11:26 22   that could have affected the -- the return to the

11:26 23   investors?

11:27 24   MR. FIGEL: Objection.

11:27 25   A.   I mean, I'm not an expert in the oranges

88

11:27 1 industry so I'm -- I can't really be -- you know,

11:27 2 give any testimony about how that industry works.

11:27 3   I do know that there's a market in oranges

11:27 4 and that the price is set by supply and demand, and

11:27 5 so any one buyer or seller probably couldn't affect

11:27 6 the price by anything it did, but -- but I don't have

11:27 7 personal knowledge of that industry, so it wouldn't

11:27 8 shock me if some industry expert contradicted what I

11:27 9 just said.

11:27 10   Q.   Is it a -- a common feature of commercial

11:27 11 enterprises that external factors beyond the control

11:27 12 of management can affect the profits of the

11:27 13 enterprise and its investors?

11:27 14   A.   It depends on the enterprise.

11:27 15   Q.   What enter-- commercial enterprises are

11:28 16 immune from external factors beyond the control of

11:28 17 management affecting the company's profits?

11:28 18   MR. FIGEL: Objection.

11:28 19   A.   No one's immune from the world, but you

11:28 20 have a lot more control over what goes on if you're a

11:28 21 monopolist than if you're working in a competitive

11:28 22 market. So as I said, it would depend on industry

11:28 23 structure and other things.

11:28 24   Q.   Your report talks about how New York or

11:28 25 Delaware law governs many of the Ripple contracts?

89

11:28 1   A.   Yes.

11:28 2   Q.   How many of the contracts described in

11:28 3   your -- documented in your report are governed by

11:29 4   New York and Delaware law?

11:29 5   A.   I don't know the precise number, but I

11:29 6   think a majority of them are.

11:29 7   Q.   How many of the contracts are governed by

11:29 8   California law?

11:29 9   A.   There are some, but it's my recollection

11:29 10   that that would be a relatively small fraction of the

11:29 11   full universe.

11:29 12   Q.   How many of the 1700 contracts identified

11:29 13   in your report are governed by a jurisdiction that

11:29 14   takes a different approach to the Four Corners Rule?

11:29 15   MR. FIGEL: Objection.

11:29 16   A.   I don't know the number, but the California

11:29 17   contracts would definitely be one of those

11:29 18   jurisdictions.

11:30 19   Q.   What is the California approach to the

11:30 20   interpretation of integration clauses?

11:30 21   MR. FIGEL: Objection.

11:30 22   A.   The California approach is that an

11:30 23   integration clause is evidence of the parties'

11:30 24   intention to make the contract the complete statement

11:30 25   of the rights and duties of the parties, but because

90

11:30 1 it is just evidence, it could be rebutted by other

11:30 2 evidence.

11:30 3   Q.   In this case, does the presence of an

11:30 4 integration clause in any of Ripple's contracts

11:30 5 preclude the court from considering representations

11:31 6 made outside the four corners of Ripple's contracts?

11:31 7   A.   If there is a merger or integration clause,

11:31 8 and you are in a jurisdiction such as New York or

11:31 9 jurisdictions that follow New York, a court would not

11:31 10 consider extracontractual representations when the

11:31 11 court is engaged on deciding what the contract --

11:31 12 what obligations the contract creates.

11:31 13   Q.   What about in an SEC enforcement action

11:31 14 alleging violations of the federal securities laws?

11:31 15   A.   I have --

11:31 16   MR. FIGEL: Objection.

11:31 17   A.   I have no opinion on what a court would do

11:31 18 in that circumstance.

11:32 19   Q.   You write in your report that statutory

11:32 20 interpretation is within your field of expertise?

11:32 21   A.   Yes.

11:32 22   Q.   Is that the case?

11:32 23   A.   Well, I'm claiming it.

11:32 24   Q.   Is the interpretation of a statute

11:32 25 typically a legal question for the court to decide?

91

11:32 1   A.   Yes.

11:32 2   Q.   Are you opining that any statute at issue

11:32 3   in this case is ambiguous?

11:32 4   MR. FIGEL: Objection.

11:32 5   A.   No.

11:33 6   Q.   Could you go to paragraph 16 of your

11:33 7   report.

11:33 8   So I want to refer you to the last word on

11:33 9   page 11, and then that sentence continuing on to

11:33 10   page 12.

11:33 11   A.   Uh-huh.

11:33 12   Q.   You write, Thus, under the standard

11:33 13   interpretive canon, the meaning of the word

11:33 14   "contract" in the statutory phrase "investment

11:33 15   contract" would be its common law meaning?

11:33 16   A.   Yes.

11:33 17   Q.   Does the Supreme Court say that in Howey?

11:33 18   A.   No. The Supreme Court says that the

11:33 19   statute did not define the phrase "investment

11:33 20   contract," but it did not reach the question that I'm

11:34 21   talking about in my report.

11:34 22   Q.   Can an investment contract be established

11:34 23   by a scheme or transaction?

11:34 24   MR. FIGEL: Objection.

11:34 25   A.   I -- I'm not a securities law expert.

                                                                    92

11:34 1   Q.   The determination of whether Ripple's

11:34 2   offers and sales of XRP, whether those offers and

11:34 3   sales violate the federal securities laws, is that

11:34 4   determination governed by the common law of contracts

11:34 5   or the federal securities laws?

11:34 6   MR. FIGEL: Objection.

11:34 7   A.   That would be determined by the federal

11:34 8   securities laws.

11:35 9   Q.   So do you see paragraph 17 of your report,

11:35 10   the last sentence.

11:35 11   It says, It would follow that the contracts

11:35 12   Ripple uses to market XRP are distinguishable from

11:35 13   the contracts Howey used to market citrus groves?

11:35 14   A.   Yes.

11:35 15   Q.   In forming your opinions, did you consider

11:35 16   whether Ripple's representations on its website and

11:35 17   its social media posts are distinguishable or similar

11:36 18   to the sales talk from Howey?

11:36 19   MR. FIGEL: Objection.

11:36 20   A.   No.

11:36 21   Q.   Will you be offering any such opinion?

11:36 22   A.   No.

11:36 23   Q.   Will you be offering an opinion on whether

11:36 24   any of Ripple's contracts are distinguishable from

11:36 25   any contract in any court case applying the Howey

                                                              93

11:36 1   decision?

11:36 2   A.   If I'm -- if I'm shown such a case and

11:36 3   asked for my views, I would give them.

11:36 4   But in the absence of being shown such a

11:36 5   case, I have no intention of giving any such opinion.

11:36 6   Q.   So when you considered a particular

11:37 7   contract, a particular Ripple contract, did you

11:37 8   examine all of the contracts between Ripple and its

11:37 9   counterparty that governed their commercial

11:37 10   relationship?

11:37 11   MR. FIGEL: Objection.

11:37 12   A.   I'm not sure I understand that question.

11:37 13   If -- if -- if it -- if the question is did I read

11:37 14   every word in each of these contracts, I've testified

11:37 15   to that before.

11:37 16   Q.   And the answer's no?

11:37 17   A.   And the answer would be no.

11:37 18   Is there -- if you're asking me a different

11:37 19   question, I'm not quite sure I understand what that

11:37 20   would be.

11:37 21   Q.   And I'm sorry, because it is a different

11:37 22   question.

11:37 23   So when you were considering any specific

11:37 24   contract or -- that you discuss in your report, did

11:37 25   you examine all of the contracts between Ripple and

94

11:37 1   its counterparty governing their commercial

11:37 2   relationship or just the specific contract you

11:37 3   discussed in your report?

11:38 4   A.   Once again, I'm a little bit confused.

11:38 5   When I -- when I looked at the contracts referred to

11:38 6   in my report, or other ones, I was asking what the

11:38 7   legal relationship -- what the relationship was that

11:38 8   the contract created.

11:38 9   Q.   Right. So -- well, let's assume that

11:38 10   Ripple -- well, so let's use the example of the

11:38 11   direct sales contract.

11:38 12   For a direct sales contract between Ripple

11:38 13   and its counterparty, how do you know that that sales

11:38 14   contract was the only contract governing the

11:38 15   commercial relationship between Ripple and its

11:38 16   counterparty?

11:38 17   A.   I don't know that.

11:39 18   Q.   So talking about the direct sales

11:39 19   contracts, are you offering an opinion on how

11:39 20   Ripple's direct sales of XRP were similar or

11:39 21   different than an IPO?

11:39 22   A.   No.

11:39 23   Q.   What about a secondary offering?

11:39 24   A.   In an IPO, you're selling securities. A

11:39 25   security is a contract between the holder and the

95

11:40 1   firm.

11:40 2   Ripple is selling a thing; that is, an item

11:40 3   of cryptocurrency, not a contract.

11:40 4   So there would be a major difference, if

11:40 5   I'm -- between selling a contract and selling a

11:40 6   thing.

11:40 7   Q.   Isn't that the ultimate legal dispute in

11:40 8   this case?

11:40 9   MR. FIGEL: Objection.

11:40 10   A.   No, I don't think so. You asked me whether

11:40 11   there was a similarity. I said Ripple was selling an

11:40 12   item of currency. In an IPO, you're selling

11:40 13   something different.

11:40 14   Q.   So you're opining that what Ripple sold was

11:40 15   not a security?

11:40 16   MR. FIGEL: Objection.

11:40 17   A.   No.

11:40 18   No, I'm not opining that at all.

11:40 19   Q.   I think just said in an IPO, they sell

11:40 20   securities; in Ripple's case, they sell something

11:40 21   else.

11:40 22   A.   No. In an IPO, you're selling a contract,

11:41 23   like a share of stock. If you're selling an item of

11:41 24   cryptocurrency, that's sold under a contract. It

11:41 25   isn't a contract.

96

```
11:41  1          Q.    In an IPO, can the issuer sell securities

11:41  2   directly to a counterparty for the counterparty's own

11:41  3   use?

11:41  4               MR. FIGEL:  Objection.

11:41  5          A.    I'm not an expert in that.

11:41  6          Q.    In a public or private securities offering,

11:41  7   can the issuer and its counterparty execute a single

11:41  8   master agreement containing the terms that would

11:41  9   apply to all subsequent sales of the issuer's

11:41 10   securities to the counterparty?

11:41 11               MR. FIGEL:  Objection.

11:42 12          A.    I'm not an expert in securities.  I do know

11:42 13   that companies that issue stock hold back stock that

11:42 14   they may later issue.  And if they later issue stock,

11:42 15   it would be under the same terms as the earlier

11:42 16   issue.

11:42 17               But I don't have an opinion on anything

11:42 18   else about that.

11:42 19          Q.    Can the issuer of securities agree to

11:42 20   exchange a defined quantity of securities with a

11:42 21   counterparty for a defined quantity of U.S. dollars?

11:42 22               MR. FIGEL:  Objection.

11:42 23          A.    I don't have an opinion on that.

11:42 24          Q.    Are you familiar with the term

11:43 25   "underwriter"?
```

97

11:43 1   A.   Yes.

11:43 2   Q.   And what's your understanding of the term

11:43 3   "underwriter"?

11:43 4   A.   Underwriter is an intermediary between the

11:43 5   company and an ultimate purchaser.

11:43 6   Q.   Are you offering an opinion -- I want to

11:43 7   ask you about the wholesale sales contracts you talk

11:43 8   about in your report.

11:43 9   Are you offering an opinion on whether the

11:43 10   wholesale sales contracts are different or similar

11:43 11   than underwriter contracts in a securities offering?

11:43 12   MR. FIGEL: Objection.

11:43 13   A.   No, I'm not offering an opinion on that.

11:43 14   Q.   In a securities offering, can the issuer of

11:43 15   the securities sell securities to an underwriter

11:43 16   whose stated intent is to sell those securities to an

11:43 17   ultimate third-party purchaser in a transaction to

11:44 18   which the issuer is not a party?

11:44 19   MR. FIGEL: Objection.

11:44 20   A.   I think the answer is "yes" to that.

11:44 21   Q.   Are you offering an opinion on whether the

11:44 22   wholesale sales contracts are different or similar

11:44 23   than broker-dealer contracts in a securities

11:44 24   offering?

11:44 25   MR. FIGEL: Objection.

11:44 1   A.   No.

11:44 2   THE COURT REPORTER: If you answered, I'm

11:44 3 sorry; I didn't hear it.

11:44 4   A.   No.

11:45 5   Q.   Can you look at paragraph 27, please, of

11:45 6 your report.

11:45 7   And you write about -- in the second full

11:45 8 sentence, you write about the wholesale sales orders.

11:45 9   The counterparty would expressly represent

11:45 10 and warrant that it was not purchasing XRP for any

11:45 11 investment purpose.

11:45 12   Do you see that?

11:45 13   A.   Yes.

11:45 14   Q.   Did the direct sales contracts have a

11:45 15 similar representation on the part of the purchaser?

11:45 16   A.   I don't think so.

11:46 17   But I have to check.

11:46 18   (Witness reviewing document.)

11:47 19   Q.   Can I continue?

11:47 20   A.   What?

11:47 21   Q.   May I continue?

11:47 22   A.   Yes.

11:47 23   Q.   I'm sorry. I thought you were still --

11:47 24   A.   No, no.

11:47 25   Q.   Do you know whether or not the wholesale

                                                             99

11:47 1   contract counterparties marketed their XRP to third

11:47 2   parties for investment purposes?

11:47 3   A.   No.

11:47 4   Q.   Do you have any understanding of how the

11:47 5   wholesale contract counterparties marketed the XRP

11:47 6   they sold to third parties?

11:47 7   MR. FIGEL: Objection.

11:47 8   A.   I have no direct knowledge of that.

11:48 9   Q.   You write in your report that the wholesale

11:48 10   sales contracts were only executed between

11:48 11   February 2013 and March 2016.

11:48 12   A.   Yes.

11:48 13   Q.   During that period of time, what uses

11:48 14   beyond investment purposes existed for XRP?

11:48 15   MR. FIGEL: Objection.

11:48 16   A.   I don't know.

11:48 17   Q.   Do you know when Ripple's cross-border

11:48 18   payment software became commercially functional?

11:48 19   MR. FIGEL: Objection.

11:48 20   A.   I don't know the date of that.

11:49 21   Q.   For the wholesale contracts, does it make

11:49 22   commercial sense for Ripple's counterparty to

11:49 23   purchase the XRP from Ripple if the counterparty does

11:49 24   not believe it can sell that XRP to a third party for

11:49 25   a higher price?

100

11:49 1   MR. FIGEL: Objection.

11:49 2   A.   It's a wholesale contract in which the

11:49 3   buyer pays. It would be irrational for the buyer to

11:49 4   believe that they couldn't resell for more than they

11:49 5   bought it for.

11:49 6   Q.   And in paragraph 28 of your report, do you

11:50 7   see how you discuss purchase letters of intent, where

11:50 8   Ripple would pay the counterparty a commission of

11:50 9   ■ to ■ percent of the XRP the counterparty sold?

11:50 10   A.   Yes.

11:50 11   Q.   By earning that commission, is Ripple's

11:50 12   counterparty -- is Ripple's counterparty profiting

11:50 13   off its XRP purchases?

11:50 14   MR. FIGEL: Objection.

11:50 15   A.   I think that's a -- that's an ambiguous

11:50 16   question.

11:50 17   The counterparty is providing a service,

11:50 18   and its being paid a commission. Whether the

11:50 19   counterparty's business is profitable or not, I have

11:50 20   no idea.

11:51 21   Q.   The counterparty's generating revenues

11:51 22   based on that commission, correct?

11:51 23   MR. FIGEL: Objection.

11:51 24   A.   Well, yeah, the counterparty gets a

11:51 25   commission on sales, so it has to have sales.

101

11:51 1   Q.   And by paying those commissions, are

11:51 2   Ripple's efforts a cause of the counterparty's

11:51 3   revenues?

11:51 4   MR. FIGEL: Objection.

11:51 5   A.   No. The counterparty's revenues depend on

11:51 6   the market for XRP, which is a function of a whole

11:51 7   variety of factors that would affect price and

11:51 8   demand. Ripple is just, as I said, buying services

11:51 9   and paying a commission.

11:52 10   Q.   Do you see how you discuss the -- the

11:52 11   contracts described in paragraph 28 required Ripple's

11:52 12   counterparty to sell XRP to third parties at or above

11:52 13   market price?

11:52 14   MR. FIGEL: Objection.

11:52 15   A.   Yes, I see that.

11:52 16   Q.   Are you offering an opinion on whether that

11:52 17   requirement impacts the price of XRP?

11:52 18   A.   No.

11:52 19   Q.   Paragraph 29, you talk about the UCC.

11:52 20   Is that right?

11:52 21   A.   Yes.

11:53 22   Q.   Are you offering an opinion in this case

11:53 23   whether UCC Article 2 applies to the sales of XRP?

11:53 24   A.   No.

11:53 25   Q.   Are you offering an opinion whether any

                                                              102

```
11:53  1  part of the UCC applies to sales of XRP?

11:53  2             MR. FIGEL:  Objection.

11:53  3       A.   No.

11:53  4       Q.   Does the UCC -- the UCC, that's the Uniform

11:53  5  Commercial Code?

11:53  6       A.   Yes.

11:53  7       Q.   Does the UCC contain a provision regarding

11:53  8  the sales of securities?

11:53  9       A.   I think Article 8 contains -- regulates

11:53 10  security transactions.

11:53 11       Q.   Is the UCC's definition of "securities" the

11:53 12  same as the definition of "securities" under the

11:53 13  federal securities laws?

11:53 14       A.   I don't recall what Article 8 provides.

11:53 15       Q.   In a lawsuit alleging violations of the

11:53 16  federal securities laws, if there's a dispute between

11:53 17  the UCC and the federal securities laws, which one

11:54 18  controls?

11:54 19             MR. FIGEL:  Objection.

11:54 20       A.   The federal securities laws.

11:54 21       Q.   In this lawsuit, does the Court look to the

11:54 22  UCC or the federal securities laws to determine if

11:54 23  Ripple's XRP offers and sales involve securities?

11:54 24             MR. FIGEL:  Objection.

11:54 25       A.   The Court is going to look to whatever it
```

103

11:54 1   thinks is relevant.

11:54 2   Q.   Are you offering an opinion whether the

11:54 3   Court should look to the UCC or the federal

11:54 4   securities laws?

11:54 5   A.   No.

11:54 6   Q.   Is it a legal defense to an SEC enforcement

11:54 7   action that the financial instrument at issue does

11:54 8   not meet the UCC definition of a security?

11:54 9   MR. FIGEL: Objection.

11:55 10   A.   I don't know the precise answer to that

11:55 11   question, but I would doubt it.

11:55 12   Q.   And do you see on paragraph 29, you list a

11:55 13   variety of terms that the Ripple sales contracts

11:55 14   typically contain?

11:55 15   A.   Yes.

11:55 16   Q.   Are you offering an opinion whether these

11:55 17   terms are also present in contracts for the sales of

11:55 18   securities in public or private offerings?

11:55 19   MR. FIGEL: Objection.

11:55 20   A.   No.

11:56 21   Q.   And then do you see, in paragraph 30, there

11:56 22   are a list of bullet points, that -- of types of

11:56 23   provisions that you say that the sales contracts

11:56 24   don't have?

11:56 25   A.   Yes.

                                                            104

```
11:56  1          Q.   All things being equal, would the presence
11:56  2   of any of these provisions make a contract more or
11:56  3   less likely to be an investment contract under the
11:56  4   federal securities laws?
11:56  5                MR. FIGEL:  Objection.
11:56  6          A.   I don't have an opinion on that.
11:56  7          Q.   You see in paragraph 32, you talk about
11:56  8   programmatic sales contracts?
11:56  9          A.   Yes.
11:56 10          Q.   Are you offering an opinion on how the
11:57 11   programmatic contracts are similar or different to
11:57 12   underwriter contracts in a securities offering?
11:57 13          A.   No.
11:57 14                MR. FIGEL:  Objection.
11:57 15          A.   No, I'm not.
11:57 16          Q.   Are you offering an opinion on how the
11:57 17   programmatic contracts are similar or different to
11:57 18   broker-dealer contracts in a securities offering?
11:57 19                MR. FIGEL:  Objection.
11:57 20          A.   No.
11:57 21          Q.   For the programmatic sales contracts, does
11:57 22   it make commercial sense for Ripple's counterparty to
11:57 23   purchase XRP from Ripple if it does not believe it
11:57 24   can sell that XRP to a third party for a higher
11:57 25   price?
```

105

11:57	1	MR. FIGEL: Objection.
11:57	2	A. I think there's a problem with your
11:57	3	question because in these agreements, they're not
11:58	4	selling XRP, they're just transferring it.
11:58	5	Q. Do you see, in paragraph 33, how you say
11:58	6	that the programmatic sales contracts are consignment
11:58	7	contracts?
11:58	8	A. I said in substance they're consignment
11:58	9	contracts. Consignment agreements.
11:58	10	Q. Are you offering an opinion on whether an
11:58	11	underwriter contract in a securities offering is a
11:58	12	consignment contract?
11:58	13	A. No.
11:58	14	MR. FIGEL: Objection.
11:58	15	Q. Do you have an opinion on that?
11:58	16	A. No.
11:58	17	Q. Are you offering an opinion on whether a
11:59	18	broker-dealer contract in a securities offering is a
11:59	19	consignment contract?
11:59	20	A. No.
11:59	21	MR. FIGEL: Objection.
11:59	22	MR. HANAUER: We're at noon, and we've been
11:59	23	going an hour and 15, I think. I just want to check
11:59	24	to make sure you're okay.
11:59	25	THE WITNESS: I could take a break. When

106

```
11:59   1   will we break for lunch?

11:59   2             MR. HANAUER:  Let's go off the record.

11:59   3             THE VIDEOGRAPHER:  We're off the record.

11:59   4   The time is 12:00 p.m.

11:59   5             (Discussion off the record.)

12:00   6             (A recess was taken from 12:00 noon to

12:00   7       12:13.)

12:11   8             THE VIDEOGRAPHER:  Going back on the

12:11   9   record, the time is 12:13.

12:11  10             MR. FIGEL:  Mr. Hanauer, before you begin,

12:11  11   could I just memorialize a -- an agreement we just

12:11  12   reached, which is that the normal practice, which is

12:11  13   an objection by one counsel, can serve to preserve

12:12  14   the objections of all parties?

12:12  15             MR. HANAUER:  So stipulated.

12:12  16             MR. FIGEL:  Thank you.

12:12  17       Q.   So, Professor Schwartz, your report talks

12:12  18   about various market maker contracts.

12:12  19       A.   Let me --

12:12  20       Q.   In paragraph 38 of your report.

12:12  21       A.   Yes.

12:12  22       Q.   Are you offering an opinion whether or not

12:12  23   the securities -- strike that.

12:12  24             Are you offering an opinion whether the

12:12  25   issuer of securities is permitted to offer
```

107

12:12 1 consideration to a market maker in exchange for the

12:13 2 market maker making a market in the issuer's

12:13 3 securities?

12:13 4   A.   No.

12:13 5   Q.   Are you offering an opinion whether the

12:13 6 issuer of securities is allowed to contract with a

12:13 7 market maker in a way that allows the issuer to set

12:13 8 terms for the market maker's sales of the issuer's

12:13 9 securities?

12:13 10   A.   No.

12:13 11   Q.   Do you see, in paragraph 39, you talk about

12:13 12 the product incentive contracts?

12:13 13   A.   Uh-huh.   Yes.

12:14 14   Q.   And I believe you talk about -- or are you

12:14 15 familiar with Ripple's On-Demand Liquidity product or

12:14 16 xRapid product?

12:14 17   A.   I know what it is.

12:14 18   Q.   And I believe that you classified contracts

12:14 19 related to that product as both product incentive

12:14 20 contract and master-hosted services contracts?

12:14 21   A.   Yes.

12:14 22   Q.   Are you aware that Ripple's On-Demand

12:14 23 Liquidity and xRapid contracts provided that Ripple

12:14 24 would pay incentives and rebates to the counterparty

12:14 25 for using On-Demand Liquidity or xRapid?

108

12:14 1   MR. FIGEL: Objection.

12:14 2   A.   I am aware of contracts in which Ripple

12:14 3 made such agreements.

12:15 4   Q.   Are you aware that On-Demand Liquidity or

12:15 5 xRapid required Ripple's counterparty to purchase XRP

12:15 6 in order to transfer currency using Ripple's

12:15 7 software?

12:15 8   MR. FIGEL: Objection.

12:15 9   A.   Will you repeat that question, please? I'm

12:15 10 not sure I -- I followed the entire question.

12:15 11   (The record was read back.)

12:15 12   A.   I'm not aware of that.

12:15 13   Q.   And do you -- going to paragraph 46.

12:16 14   I think -- do you see how you talk about

12:16 15 the last sentence, Ripple also agreed to pay

12:16 16 MoneyGram certain market development fees and bonuses

12:16 17 in XRP if the transactions executed on Ripple's

12:16 18 platform exceeded specified volume thresholds?

12:16 19   A.   Yes.

12:16 20   Q.   Did those bonus provisions incentivize

12:17 21 MoneyGram to increase the volume of its XRP

12:17 22 transactions using Ripple's software product?

12:17 23   MR. FIGEL: Objection.

12:17 24   A.   I don't know what "incentivize

12:17 25 MoneyGram" -- I mean, but those payments essentially

109

12:17 1   were linked to volume so the more the -- the larger

12:17 2   the dollar volume of transactions MoneyGram made

12:17 3   through the ODL platform, the greater the bonus

12:17 4   payment.

12:17 5   Q.   Do you have an opinion on how MoneyGram

12:17 6   increasing the volume of its XRP transactions would

12:17 7   impact XRP's price?

12:17 8   MR. FIGEL: Objection.

12:17 9   A.   No.

12:17 10   Q.   Are you offering an opinion whether ODL or

12:17 11   xRapid would be commercially viable for its users if

12:17 12   not for the rebates and incentives paid by Ripple?

12:18 13   A.   I have no opinion on that.

12:18 14   Q.   Can you go to -- so do you see on

12:18 15   paragraph 35 of your report.

12:18 16   You list five bullet points for the type of

12:18 17   provisions you say are absent from the programmatic

12:18 18   contracts?

12:18 19   A.   Yes.

12:18 20   Q.   And then compare that with paragraph 42.

12:19 21   There are three bullet points for

12:19 22   provisions you say are absent from the service

12:19 23   contracts.

12:19 24   Do you see that?

12:19 25   A.   Yup.

110

12:19 1   Q.   And so one of the bullet points that's in

12:19 2   paragraph 35, but not paragraph 42, is a provision

12:19 3   that creates an ongoing obligation owed by Ripple to

12:19 4   the counterparty with respect to any tran-- XRP

12:19 5   transfer pursuant to the contract?

12:19 6   A.   Yes.

12:19 7   Q.   So I take it from the absence of a bullet

12:19 8   point like that in paragraph 42, did you find such

12:20 9   provisions in the services contracts?

12:20 10   A.   I did not.

12:20 11   Q.   Then -- if that's the case, then why did

12:20 12   you not include that bullet point in paragraph 42?

12:20 13   A.   The -- they were different kinds of

12:20 14   contracts. In the programmatic contracts, you're --

12:20 15   XRP was transferred, so -- so it could be -- it could

12:20 16   conceivably be possible if there would be some

12:20 17   obligation with respect to what was transferred.

12:20 18   But -- essentially transferred for resale. So I

12:20 19   found no such provisions, so I said so.

12:20 20   Services contracts were a different kind of

12:21 21   agreement.

12:21 22   Q.   What about the bullet point from

12:21 23   paragraph 35, you -- provisions that impose on Ripple

12:21 24   any fiduciary or similar duty owed to the

12:21 25   counterparty?

111

12:21 1   Were there provisions like that in the

12:21 2   services contract?

12:21 3   A.   No.

12:21 4   Q.   So if -- in paragraph 35, and in other

12:21 5   paragraphs of your report, you're listing all these

12:21 6   types of provisions that are not in the contracts.

12:21 7   Right?

12:21 8   A.   Right.

12:21 9   Q.   And you're doing the same thing with

12:21 10   paragraph 42. Right? The same type of exercise,

12:21 11   listing provisions that are not in the contract?

12:21 12   A.   Yes.

12:21 13   Q.   So what should we infer from the fact that

12:21 14   for some types of contracts, there are only -- you

12:22 15   only identify three types of provisions missing, but

12:22 16   for other types, of contracts, you identify four or

12:22 17   five types of provisions missing?

12:22 18   A.   It's a question of the --

12:22 19   MR. FIGEL: Objection.

12:22 20   You can answer.

12:22 21   THE WITNESS: Should I --

12:22 22   MR. FIGEL: Yes, yeah, I just made the

12:22 23   record.

12:22 24   A.   It's a function of the kind of contract it

12:22 25   is. So, for example, if I'm buying services, I can't

112

12:22 1   possibly own a fiduciary obligation to the seller so

12:22 2   it's pointless to say there's no fiduciary

12:22 3   obligation.

12:22 4   But if I'm selling something, then a

12:22 5   fiduciary obligation may be attached to it.

12:22 6   So, I think the things that I said are a

12:22 7   function of the kind of contracts that there were.

12:23 8   Q.   Let's go to paragraph 56, please.

12:23 9   And you describe the ███████ agreement as

12:23 10   a representative example of an XRP direct sales

12:23 11   contract?

12:23 12   A.   Yes.

12:23 13   Q.   What percentage of the direct sales

12:23 14   contracts did you personally review?

12:23 15   MR. FIGEL: Objection.

12:23 16   A.   I can't recall what percentage. I can only

12:23 17   recall that I reviewed a lot of them.

12:24 18   Q.   Did you review all the direct sales

12:24 19   contracts?

12:24 20   A.   I reviewed most of them because I reviewed,

12:24 21   as I previously testified, almost all of the

12:24 22   1700 contracts. But if you're going to ask me what

12:24 23   percentage fell in each category, I would have

12:24 24   trouble recalling that.

12:24 25   Q.   And you didn't document that in any way.

113

12:24   1   Correct?

12:24   2   A.   No.

12:24   3   Q.   Did you -- just so I have a better record,

12:24   4   did you document in any way which contracts you

12:24   5   reviewed and which ones you didn't review?

12:24   6   A.   Not in a systematic way. I made notes

12:24   7   about some of the contracts to refresh my

12:24   8   recollection when I was writing a report.

12:24   9   Q.   Did you document in any way which contracts

12:24 10   you reviewed and which contracts you didn't review?

12:25 11   A.   Up to the date of -- up to the date of --

12:25 12   no, I didn't -- I'm trying to -- trying to actually

12:25 13   answer your question truthfully.

12:25 14   I just was looking at what -- at

12:25 15   representative samples of the various kinds of

12:25 16   contracts. I didn't document the formal search

12:25 17   process on my part because I didn't do a formal

12:25 18   search process.

12:25 19   Q.   When you looked at the direct sales

12:25 20   contracts, what did you do to determine that the

12:25 21   contracts you reviewed were the only contracts

12:25 22   governing the commercial relationship between Ripple

12:25 23   and its counterparty?

12:25 24   A.   I don't know if they were the only

12:25 25   contracts that constituted a commercial relationship.

114

```
12:25  1        Q.    What is ████████ Capital?

12:25  2        A.    It's a -- I don't know very much about

12:26  3   them.  They buy and trade.

12:26  4        Q.    Are you aware that ████████ Capital is a

12:26  5   venture capital and private equity firm?

12:26  6        A.    No.

12:26  7        Q.    Are you aware that ██████████████ is an

12:26  8   investor in Ripple?

12:26  9        A.    I don't know anything about ████████

12:26 10   ████████ business.

12:26 11        Q.    When you determined that the ████████

12:26 12   agreement is a representative example of an XRP

12:26 13   direct sales contract, did you consider that ████████

12:26 14   ████████ is an equity shareholder of Ripple?

12:26 15        A.    No.

12:26 16        Q.    How many direct sales contracts did you

12:27 17   personally review that did not involve an investor in

12:27 18   Ripple?

12:27 19             MR. FIGEL:  Objection.

12:27 20        A.    I have no idea.

12:27 21        Q.    Did you consider how the ████████ contract

12:27 22   is in any way different from a contract in which the

12:27 23   issuer of securities agrees to sell its securities

12:27 24   directly to an institutional investor?

12:27 25             MR. FIGEL:  Objection.
```

115

12:27 1   A.   No.

12:27 2   Q.   Are you offering an opinion that the

12:27 3   ▓▓▓▓▓▓ contract is different from a contract in

12:27 4 which the issuer of securities agrees to sell its

12:27 5 securities directly to an institutional investor?

12:27 6   MR. FIGEL: Objection.

12:28 7   A.   Well, you would only say that under the

12:28 8   ▓▓▓▓▓▓ agreement, they're selling XRP, which itself

12:28 9 isn't a security.

12:28 10   Q.   You're offering that opinion in this case?

12:28 11   A.   Well, XRP is a thing, not -- I mean, you

12:28 12 asked me whether the contracts under which XRP is

12:28 13 sold are investment contracts. I have no opinion

12:28 14 about that.

12:28 15   I just know that XRP is like a widget.

12:28 16   Q.   Are you offering the opinion that XRP is

12:28 17 not a security?

12:28 18   MR. FIGEL: Objection.

12:28 19   A.   No.

12:28 20   Q.   Can a widget be a security?

12:28 21   MR. FIGEL: Objection.

12:28 22   A.   I don't see -- I don't see how.

12:29 23   Q.   No matter the commercial circumstances?

12:29 24   MR. FIGEL: Objection.

12:29 25   A.   I think there's a difference between a

116

12:29   1   contract and a thing.

12:29   2   Q.   Can an orange grove be a security?

12:29   3   A.   Orange grove is a thing.

12:29   4   Q.   Can an orange grove be a security?

12:29   5   A.   Itself? No.

12:29   6   I guess I would add that a car isn't a

12:29   7   security. A TV isn't a security.

12:29   8   Q.   Can offers or sales of orange groves

12:29   9   constitute the offer and sale of securities?

12:29 10   MR. FIGEL: Objection.

12:29 11   A.   I don't have an opinion on that.

12:30 12   Q.   Do you have an opinion on whether the offer

12:30 13   or sale of anything can constitute the offer or sale

12:30 14   of a security?

12:30 15   MR. FIGEL: Objection.

12:30 16   A.   It would depend on -- it would depend on

12:30 17   the terms.

12:30 18   Q.   But are you offering an opinion in this

12:30 19   case?

12:30 20   A.   No.

12:30 21   MR. FIGEL: Can I just add an objection? I

12:30 22   mean the last question.

12:30 23   Thanks.

12:30 24   Q.   Can you look at paragraph 68, please.

12:31 25   And do you see that you said that the

117

```
12:31  1  ██████  agreement contains terms related to

12:31  2  restrictions on transfer of XRP by ██████

12:31  3       A.   I recall saying that.  Is there a paragraph

12:31  4  that you are particularly referring to?

12:31  5       Q.   I'm --

12:31  6       A.   Oh, yeah.

12:31  7       Q.   Of your report, 68.  I'm sorry.

12:31  8       A.   Yes, okay.

12:31  9            (Witness reviewing document.)

12:31 10       Q.   Does the ██████ contract allow the

12:31 11  parties to set a period of time in which ██████

12:31 12  cannot resell or otherwise distribute the XRP it

12:31 13  purchased from Ripple?

12:31 14       A.   Yeah, I recall that.

12:31 15       Q.   Does the ██████ contract allow the

12:32 16  parties to set a limitation on the amount of XRP

12:32 17  that -- or purchase from Ripple that ██████ can

12:32 18  sell on a daily basis?

12:32 19            MR. FIGEL:  Objection.

12:32 20       A.   I think there were sales restrictions.

12:32 21       Q.   And how many contracts did you review

12:32 22  containing restrictions on what Ripple's counterparty

12:32 23  could do with the XRP they obtained from Ripple?

12:32 24       A.   I don't have a number, but there were some

12:32 25  that had such wholesale restrictions.
```

118

12:32	1	Q. How many contracts did you review that
12:32	2	contained restrictions limiting the quantity of XRP
12:32	3	the purchaser could obtain to the amount needed for
12:32	4	the purchaser's non-investment purposes?
12:33	5	MR. FIGEL: Objection.
12:33	6	A. I don't recall.
12:33	7	Q. How many contracts did you review
12:33	8	containing restrictions limiting Ripple's
12:33	9	counterparty from selling the XRP they purchased from
12:33	10	Ripple only to parties outside the United States?
12:33	11	MR. FIGEL: Objection.
12:33	12	A. I only recall reading a couple of contracts
12:33	13	like that.
12:33	14	Q. How many contracts did you review limiting
12:33	15	Ripple's counterparty from selling the XRP they
12:33	16	obtained from Ripple only to accredited investors?
12:33	17	A. I don't recall any such restrictions.
12:33	18	Q. How many contracts did you review that
12:33	19	contained restrictions allowing Ripple's counterparty
12:34	20	to sell the XRP they obtained from Ripple only to
12:34	21	those third parties that would use XRP for
12:34	22	non-investment purposes?
12:34	23	MR. FIGEL: Objection.
12:34	24	A. I recall that there was such contracts. I
12:34	25	don't recall the number.

119

12:34 1   MR. HANAUER: Can you send Exhibit 8,

12:34 2   please.

12:34 3   (XRP Purchase Summary was marked

12:34 4   Exhibit AS-8 for identification, as of this

12:34 5   date.)

12:34 6   MR. HANAUER: One for the court reporter,

12:34 7   please.

12:35 8   Q.   Is Exhibit 8 a copy of the XRP purchase

12:35 9   summary you reference in paragraph 69 of your report?

12:35 10   A.   Yes.

12:35 11   Q.   So do you see how there's a line for

12:35 12   lock-up period and daily sales limitations, on

12:35 13   Exhibit 8?

12:35 14   A.   Yes.

12:35 15   Q.   And are those the sales restrictions we

12:35 16   were just talking about or resale restrictions?

12:36 17   A.   Yes.

12:36 18   Q.   Did you review any documents, including

12:36 19   other summary of XRP purchases, that actually imposed

12:36 20   a lock-up period or daily sale limitation?

12:36 21   A.   Yes.

12:36 22   Q.   How many did you review?

12:36 23   A.   You know, I -- this may short-circuit it,

12:36 24   but I didn't really count. So. I -- if the answer

12:36 25   is, did I review a contract of a certain type or -- a

                                                        120

12:36 1   few contracts or some contracts, the answer would be

12:36 2   yes. If you're asking me whether it's 11 or 34, I

12:36 3   don't have an answer to that.

12:36 4   Q.   By setting a lock-up period or volume

12:36 5   restriction, could one of these XRP purchase

12:36 6   summaries add a substantive term to a direct sales

12:37 7   contract?

12:37 8   MR. FIGEL: Objection.

12:37 9   A.   I would have to review the contract. There

12:37 10   would be a question whether this was a modification

12:37 11   or not. Modifications are not enforceable unless

12:37 12   they're supported by a separate consideration.

12:37 13   On the other hand, this document says it's

12:37 14   governed by the master agreement, and it could just

12:37 15   be filling in the blanks. If it's filling in the

12:37 16   blanks, then it would be enforceable.

12:38 17   Q.   Are you -- sitting here today, are you

12:38 18   aware of the length of any lock-up period or daily

12:38 19   sales limitation governing any of Ripple's XRP sales

12:38 20   to ███████

12:38 21   A.   No. I'm not aware -- I have a recollection

12:38 22   that they went through ████████████, but I don't

12:38 23   have any particular recollection.

12:38 24   Q.   And are you offering any opinion on how the

12:38 25   lock-up periods or daily volume limitations could

121

12:38 1   affect the price of XRP?

12:38 2   A.   No.

12:39 3   Q.   So in paragraph 71 of your report, you say

12:39 4   that each of the direct sales contracts is in

12:39 5   substance similar to the relevant part of the

12:39 6   ███████ agreement?

12:39 7   A.   Uh-huh. Yes.

12:39 8   Q.   What was your basis for saying that for the

12:39 9   sales contracts you did not personally review?

12:39 10   A.   I think the answer to that question is in

12:39 11   the first sentence of paragraph 71.

12:40 12   I don't have anything to add to my -- to

12:40 13   what the first sentence of paragraph 71 says.

12:40 14   Q.   So is the answer that for the contracts,

12:40 15   you didn't personally review your basis for

12:40 16   concluding that those contracts were in substance

12:40 17   similar to the ███████ agreement; the basis of that

12:40 18   was the work done by counsel?

12:40 19   A.   It was a combination of my work and work

12:40 20   done from counsel, acting at my direction. I asked

12:40 21   counsel in particular, whether those contracts were

12:40 22   relevantly different. I assume that my counsel knew

12:40 23   how to read a contract, too.

12:40 24   Q.   Are there any written communications on

12:41 25   that subject between you and counsel?

122

12:41 1   A.   I don't recall any.

12:41 2   Q.   Do you see the list of bullet points, on

12:41 3   paragraph 71 of provisions you say that the direct

12:41 4   sales contracts typically contain?

12:41 5   A.   Yes.

12:41 6   Q.   Are there direct sales contracts listed on

12:41 7   Exhibit C that do not contain all those terms?

12:41 8   A.   Well, yeah, because some of the direct

12:41 9   sales contracts just were an exchange of a certain

12:41 10   number of XRP in return for price, but this contract

12:42 11   contemplates a series of sales.

12:42 12   Q.   Were there direct sales contracts that had

12:42 13   terms that created an ongoing obligation owed by

12:42 14   Ripple after delivery of the purchased units of XRP?

12:42 15   A.   I don't recall any such language that would

12:42 16   sustain an inference like that.

12:42 17   Q.   Then why is that bullet point missing from

12:42 18   paragraph 72?

12:42 19   MR. FIGEL: Objection.

12:43 20   A.   I don't recall why it's missing, but I

12:43 21   would -- it is my recollection that you couldn't find

12:43 22   any such language in that contract.

12:43 23   Q.   Okay. Let's go to paragraph 75, please,

12:43 24   where you talk about the wholesale sales contracts.

12:43 25   For the wholesale sales contracts, what did

123

```
12:43   1   you do to determine that the contracts you reviewed

12:43   2   were the only contracts governing the relationship

12:43   3   between Ripple and its counterparty?

12:43   4        A.    I didn't do anything.

12:44   5        Q.    What is ████████

12:44   6        A.    I don't know very much about the

12:44   7   business -- businesses of any of the buyers or a lot

12:44   8   of the buyers to these contracts because that was

12:44   9   beyond the scope of my report to know that.

12:44  10        Q.    Are you aware that ████████ is a digital

12:44  11   asset exchange?

12:44  12        A.    I think I knew that.  But as I said, I

12:44  13   wasn't asked to investigate or learn about the

12:44  14   business buyers; that is, what their businesses were.

12:44  15        Q.    Could the business of Ripple's counterparty

12:44  16   inform what they intended to do with the XRP they

12:45  17   obtained from Ripple?

12:45  18             MR. FIGEL:  Objection.

12:45  19        A.    Well, there were contractual restrictions

12:45  20   on what they could do.  I don't have direct knowledge

12:45  21   as to whether they adhered to those restrictions or

12:45  22   not.

12:45  23        Q.    But beyond the four corners of the

12:45  24   contract, if someone wanted to know what the

12:45  25   purchaser of XRP wanted to do with that XRP that they
```

124

12:45	1	purchased, would they want to know what the business
12:45	2	is of the person or entity that purchased the XRP?
12:45	3	MR. FIGEL: Objection.
12:45	4	A. Well, you're describing a -- a search. If
12:45	5	I -- I want to know what Bitstamp was doing, I would
12:45	6	assume that someone would search in a rational way to
12:45	7	find out what Bitstamp was doing.
12:45	8	Q. Did you perform any such searches?
12:46	9	A. No.
12:46	10	MR. HANAUER: Exhibit 9, please.
12:46	11	(Bitstamp Wholesale Order was marked
12:46	12	Exhibit AS-9 for identification, as of this
12:46	13	date.)
12:46	14	Q. Is Exhibit 9 a copy of the ▮▮▮▮▮▮
12:46	15	wholesale order referenced in paragraph 75 of your
12:46	16	report?
12:47	17	A. I think it is.
12:47	18	Q. Do you see the second paragraph of
12:47	19	Exhibit 9? It says, This agreement governs the
12:47	20	purchase and sale of the purchased Ripple currency
12:47	21	specified below.
12:47	22	A. Yes.
12:47	23	Q. Why does it refer to whatever Ripple is
12:47	24	selling as purchased Ripple currency?
12:47	25	MR. FIGEL: Objection.

125

12:47 1   (Witness reviewing document.)

12:48 2   A.   Can you repeat that question? I just

12:48 3 was --

12:48 4   THE WITNESS: Mr. Reporter, could you

12:48 5 please repeat that question.

12:48 6   (The record was read back.)

12:48 7   A.   I don't know.

12:48 8   Q.   And then, do you see on Exhibit 9 -- if we

12:48 9 go to Section 1.4 of that contract, which I believe

12:48 10 is on page 2 of Exhibit 9.

12:48 11   A.   Yes.

12:49 12   Q.   And one of the terms of the sale is that

12:49 13 Bitstamp represents that it will not resell or

12:49 14 otherwise distribute the Ripple currency to any party

12:49 15 if Bitstamp has actual or reasonable knowledge that

12:49 16 such other party intends to purchase or acquire the

12:49 17 Ripple currency as an investment.

12:49 18   A.   Yes, I looked at this section.

12:49 19   Q.   What is the purpose of such a provision?

12:49 20   MR. FIGEL: Objection.

12:49 21   A.   I can only infer purpose from the words. I

12:50 22 don't have any independent knowledge of what the

12:50 23 purpose is -- of the parties were in adopting

12:50 24 Section 1.4.

12:50 25   Q.   I'll take your reasonable inference.

126

12:50 1   What's that?

12:50 2   A.   Well, it -- my reasonable inference is that

12:50 3   they -- that Ripple wanted XRP to be used in commerce

12:50 4   rather than held.

12:50 5   Q.   And what do you mean by "used in commerce"?

12:50 6   A.   Used in transactions.

12:50 7   Q.   You mean used to facility cross-border

12:50 8   payments?

12:50 9   MR. FIGEL: Objection.

12:50 10   A.   I don't know anything in -- as I said, I

12:50 11   don't have any independent knowledge, but the point

12:51 12   of a restriction like this would be that you want the

12:51 13   product to be used in various kinds of transactions.

12:51 14   I don't know whether they would be cross border or

12:51 15   not cross border.

12:51 16   Q.   When someone purchases digital currency off

12:51 17   a digital currency exchange, does the exchange have

12:51 18   any knowledge whether the purchaser intends to use

12:51 19   the digital currency for investment purposes?

12:51 20   MR. FIGEL: Objection.

12:51 21   A.   I -- I don't know what particular people

12:51 22   from particular exchanges know, but that's not the

12:51 23   point of an exchange is to know what people use

12:52 24   what's being traded -- what purpose they have. The

12:52 25   point of an exchange is to facilitate deals.

127

12:52 1   Q.   And the Bitstamp wholesale order, that's

12:52 2   back from 2000-- or Exhibit 9, that's back from 2013?

12:52 3   That's when it was executed?

12:52 4   A.   That's the effective date.

12:52 5   Q.   And back in 2013, what noninvestment uses

12:52 6   existed for XRP?

12:52 7   A.   I don't know.

12:52 8   Q.   Were -- back in 2013, were any of Ripple's

12:52 9   products that used XRP in commercial operation?

12:52 10   MR. FIGEL: Objection.

12:52 11   A.   I don't know that.

12:52 12   Q.   Are you offering an opinion that the

12:52 13   Bitstamp contract in Exhibit 9 is different from a

12:52 14   contract in which the issuer of securities agrees to

12:52 15   sell its securities directly to an exchange?

12:53 16   MR. FIGEL: Objection.

12:53 17   A.   No.

12:53 18   Q.   And then, do you see on paragraph -- excuse

12:53 19   me, on Section 9.3 of Exhibit 9, the no third-party

12:53 20   beneficiaries?

12:53 21   A.   Yes.

12:53 22   Q.   Are you offering an opinion whether the

12:53 23   federal securities laws allow parties to an

12:53 24   investment contract to waive away the requirements of

12:53 25   the Securities Act of 1933?

128

12:53 1   MR. FIGEL: Objection.

12:53 2   A.   No.

12:53 3   Q.   Do you have an opinion on that subject?

12:53 4   A.   No.

12:53 5   Q.   Can you look at paragraph 85 of your

12:54 6   report, please.

12:54 7   And you list a bunch of bullet points after

12:54 8   writing, Specifically, the wholesale contracts

12:54 9   typically contain. And then you list various types

12:54 10   of provisions.

12:54 11   Do you see that?

12:54 12   A.   Yes.

12:54 13   Q.   Are there wholesale sales contracts listed

12:54 14   on Exhibit C to report that do not contain any of the

12:54 15   terms listed in those bullet points?

12:55 16   A.   I don't recall reading any such contract.

12:55 17   Q.   Then why are you using the word "typical,"

12:55 18   or "typically"?

12:55 19   A.   I'm using the word "typical" as a hedge

12:55 20   because at that point, I hadn't read every single

12:55 21   one.

12:55 22   Q.   And then in paragraph 86, where you say

12:55 23   that Each of the wholesale sales contracts listed in

12:55 24   Exhibit C lacks any express provision or

12:55 25   representation, you were relying on counsel to tell

                                                              129

12:55 1 you that for the contracts you didn't review?

12:55 2   A.   Yes.

12:56 3   Q.   Did any of the wholesale sales contracts

12:56 4 you reviewed, or have counsel review, contain a

12:56 5 provision restricting what someone who purchased XRP

12:56 6 from Ripple's counterparty could do with the XRP they

12:56 7 purchased?

12:56 8   MR. FIGEL: Objection.

12:56 9   A.   I don't recall any such restriction.

12:56 10   MR. HANAUER: Ready for lunch?

12:56 11   THE WITNESS: Yes.

12:56 12   THE VIDEOGRAPHER: Off the record. The

12:56 13 time is 12:57.

12:56 14   (Luncheon recess at 12:57)

      15

      16

      17

      18

      19

      20

      21

      22

      23

      24

      25

                                                        130

12:56	1	A F T E R N O O N S E S S I O N
12:56	2	(1:52)
12:56	3	ALAN SCHWARTZ
12:56	4	resumed, having been previously duly
12:56	5	sworn by a Notary Public, was
12:56	6	examined and testified further
12:56	7	as follows:
01:50	8	THE VIDEOGRAPHER: We are going back on the
01:50	9	record. The time is 1:52.
01:50	10	CONTINUED EXAMINATION BY MR. HANAUER:
01:50	11	Q. Professor Schwartz, can you please look at
01:50	12	paragraph 89 of your report, where you talk about the
01:51	13	programmatic contracts.
01:51	14	And you reference an agreement between
01:51	15	Ripple and GSR Holdings Limited?
01:51	16	A. Yes.
01:51	17	Q. And is Exhibit 10, which I -- which should
01:51	18	be in front of you, is that a copy of the GSR
01:51	19	agreement referenced in paragraph 89 of your report?
01:51	20	(Agreement between Ripple and GSR Holdings
01:51	21	Limited was marked Exhibit AS-10 for
01:51	22	identification, as of this date.)
01:51	23	A. I'm afraid I don't have Exhibit 10.
01:51	24	Oh, okay. Now I have Exhibit 10.
01:51	25	Yes.

131

01:51 1   Q.   And when you looked at the programmatic

01:52 2   contracts, what did you do, if anything, to determine

01:52 3   that the contracts you reviewed were the only

01:52 4   contracts governing the commercial relationship

01:52 5   between Ripple and its counterparty?

01:52 6   A.   I didn't do anything.

01:52 7   Q.   What is GSR Holdings Limited?

01:52 8   A.   GSR -- I think it's a digital asset

01:52 9   exchange.

01:52 10   Q.   And did all of the programmatic contracts

01:52 11   you reviewed or had reviewed for you by counsel have

01:52 12   a digital asset exchange as the counterparty?

01:52 13   MR. FIGEL: Objection.

01:53 14   A.   I think the answer is yes.

01:53 15   Q.   And do you see, on Exhibit 10, Section 2,

01:53 16   it says, GSR agrees to transact in XRP according to

01:53 17   the then current programmatic schedule provided by

01:53 18   Ripple, (programmatic market activity) subject to the

01:53 19   terms of this agreement?

01:53 20   A.   Yes.

01:53 21   Q.   And did you review any of the program --

01:53 22   programmatic market activity schedules?

01:53 23   A.   I think I reviewed the one attached to the

01:53 24   GSR agreement.

01:53 25   Q.   Is that the only one?

132

01:53 1   A.   I don't recall -- I -- I probably reviewed

01:54 2   one or two others, but I mainly focused on that one.

01:54 3   Q.   And which one was the one -- which schedule

01:54 4   was attached to the programmatic -- the GSR

01:54 5   agreement?

01:54 6   A.   Whichever the one was attached was the one

01:54 7   I looked at.

01:54 8   Q.   And that's where I'm getting at, I'm not

01:54 9   sure there is one attached to the agreement, and I

01:54 10   don't see any listed in your report.

01:54 11   A.   No, I think this is about -- I have a

01:54 12   recollection, but it may be in error, in one of the

01:54 13   large binders that I was given, I saw such a thing,

01:55 14   but -- but I can't right now reconstruct it.

01:55 15   Q.   And you think you may have looked at one?

01:55 16   Just one?

01:55 17   A.   I haven't looked at a lot of them.

01:55 18   Q.   Do you know how many exist?

01:55 19   A.   No.

01:55 20   Q.   Do you know what they say, the program--

01:55 21   the programmatic market activity schedules?

01:55 22   A.   I think they -- they control the -- the

01:55 23   timing and distribution of Ripple.

01:55 24   I'm sorry.

01:55 25   Q.   Do you need to take that?

133

01:55 1   A.   I don't have to take it, I just wanted to

01:55 2   not take it.

01:55 3   Q.   And I think your answer was -- when I asked

01:55 4   you about what the programmatic market activity

01:55 5   schedules say, I think you responded, They control

01:55 6   the timing and distribution of Ripple?

01:55 7   A.   Of -- I mean of XRP.

01:56 8   Q.   And could your opinions about the

01:56 9   programmatic contracts change based on what's in the

01:56 10   schedules that you did not review?

01:56 11   MR. FIGEL: Objection.

01:56 12   A.   Yeah, if there's anything inconsistent with

01:56 13   anything I said, that would -- and it was materially

01:56 14   inconsistent, my views would change.

01:56 15   Q.   And do you see, on Exhibit 10, I want to

01:56 16   refer you to Section 3.

01:56 17   The remittance of proceeds to Ripple.

01:57 18   A.   Yes.

01:57 19   Q.   So what is your understanding of how that

01:57 20   works?

01:57 21   MR. FIGEL: Objection.

01:57 22   Q.   Of how GSR makes money off this contract.

01:57 23   MR. FIGEL: Objection.

01:57 24   A.   What I infer from the contract is the

01:57 25   █ percent is a commission.

                                                                    134

01:57 1   Q.   Did you review any other programmatic

01:57 2   contracts that allowed Ripple's counterparty to

01:57 3   retain a portion of the proceeds from distributing

01:57 4   the XRP obtained from Ripple?

01:57 5   MR. FIGEL: Objection.

01:57 6   A.   I think I did, but I don't have a direct

01:57 7   recollection of that.

01:57 8   Q.   If I asked you to assume that Ripple's

01:58 9   efforts caused the price of XRP to increase, would

01:58 10   Exhibit 10 lead GSR to expect profits based on

01:58 11   Riffle -- Ripple's efforts?

01:58 12   MR. FIGEL: Objection.

01:58 13   A.   As I recall, your question was efforts to

01:58 14   increase the price. Was that -- was that what you

01:58 15   said?

01:58 16   Q.   Yeah. Assume -- and I know it's disputed

01:58 17   in this case. But just assume that Ripple's efforts,

01:58 18   in fact, caused the price of XRP to increase.

01:58 19   Okay?

01:58 20   A.   Yeah.

01:58 21   And the question is, would that affect

01:58 22   GSR's return?

01:58 23   Q.   If that's the case, can GSR expect profits

01:58 24   off this contract in Exhibit 10 based on Ripple's

01:59 25   efforts?

135

01:59 1   MR. FIGEL: Objection.

01:59 2   A.   I can't answer that question without

01:59 3   knowing what -- what you -- what Ripple would be

01:59 4   doing.

01:59 5   For example, increasing the price is

01:59 6   consistent with reducing the supply. Since GSR gets

01:59 7   compensated on the basis of the sales it makes, if

01:59 8   supply shrunk, they would lose money rather than gain

01:59 9   it so that there would be a question as to what

01:59 10   Ripple was doing.

01:59 11   Q.   Could reducing the supply of XRP increase

01:59 12   its price?

01:59 13   MR. FIGEL: Objection.

01:59 14   A.   Reducing -- this is an "other things equal"

01:59 15   question?

01:59 16   Q.   Correct.

01:59 17   A.   Other things equal, if the supply curve

01:59 18   shifts in, the price goes up, assuming demand is

01:59 19   unchanged.

01:59 20   Q.   So assuming demand is unchanged, if the

02:00 21   supply of XRP drops, the price of XRP goes up?

02:00 22   MR. FIGEL: Objection.

02:00 23   A.   I mean, I can't say that as a matter of

02:00 24   fact. It's a matter of theory. If demand is

02:00 25   unchanged and the supply of an asset falls, the price

                                                              136

02:00 1 of the asset should rise.

02:00 2   Q.   Are you aware of any efforts by Ripple, to

02:00 3 decrease the supply of XRP available to the

02:00 4 marketplace?

02:00 5   MR. FIGEL: Objection.

02:00 6   A.   No.

02:00 7   MS. PROSTKO: Objection.

02:00 8   Q.   Are you aware of Ripple's escrow program?

02:00 9   A.   Excuse me?

02:00 10   Q.   Are you aware of Ripple's escrow program?

02:00 11   A.   Yes, I think so.

02:00 12   Q.   What do you know about that?

02:00 13   MR. FIGEL: Objection.

02:00 14   A.   I think it's an orderly market provision.

02:00 15   Q.   Can you elaborate, please.

02:00 16   A.   I don't have much more to say than that,

02:00 17 that it's -- it's an interest of any seller to insure

02:01 18 that -- essentially to reduce volatility.

02:01 19   Q.   Is that in the contracts, the escrow

02:01 20 program?

02:01 21   MR. FIGEL: Objection.

02:01 22   A.   No. It's what I infer from -- it's what --

02:01 23 what I would infer, but it is not so far as I can

02:01 24 tell in the contract.

02:01 25   Q.   Can you look at paragraph 101 of your

137

02:01 1 report, please.

02:01 2   And you -- just picking up halfway through

02:01 3 that first sentence, you write, I conclude that each

02:01 4 of the programmatic contracts is in substance similar

02:01 5 to the GSR agreement.

02:02 6   A.   Yes.

02:02 7   Q.   And at the time you wrote that, you were

02:02 8 relying on Ripple's attorneys to tell you about the

02:02 9 contracts that you did not personally review?

02:02 10   A.   Yeah. I think I've testified to that.

02:02 11   Q.   And would that be the case for any contract

02:02 12 that you didn't personally review, you relied on

02:02 13 Ripple's attorneys to tell you whether they were

02:02 14 similar to the contracts you did review?

02:02 15   MR. FIGEL: Objection.

02:02 16   A.   That's partly right. I also asked whether

02:02 17 there were material differences.

02:02 18   Q.   So for any contract that you did not

02:02 19 personally review, you relied on Ripple's counsel to

02:02 20 tell you whether there were material similarities or

02:02 21 differences to the contracts that you had reviewed?

02:03 22   A.   That's correct.

02:03 23   Q.   And then, in staying with paragraph 1,

02:03 24 you're saying, after you -- strike that. Going back

02:03 25 to paragraph 101, after you write that the

138

02:03 1 programmatic contracts are similar to the GSR

02:03 2 agreement, you write, Specifically, each of these

02:03 3 contracts contains a provision stating that the

02:03 4 agreement in any related documents constitute the

02:03 5 entire agreement between the parties?

02:03 6   A.   Yes.

02:03 7   Q.   Is that type of provision, that's an

02:03 8 integration clause?

02:03 9   A.   Yes, it is.

02:03 10   Q.   And why is it that an integration clause

02:03 11 makes all the programmatic contracts similar in

02:03 12 substance?

02:03 13   MR. FIGEL: Objection.

02:04 14   A.   I didn't say that.

02:04 15   Q.   Well, you write -- the first sentence says

02:04 16 they're all similar in substance. Paragraph 101.

02:04 17 Right?

02:04 18   A.   Yes.

02:04 19   Q.   And then the second sentence is,

02:04 20 Specifically these contracts all have integration

02:04 21 clauses?

02:04 22   A.   Yeah, that's an example of similarity.

02:04 23 Other examples of similarity are in paragraph 102.

02:04 24   Q.   So I guess the -- the presence of

02:04 25 integration clauses is not what makes all of these

139

02:04 1   programmatic contracts the same; they just all happen

02:04 2   have to integration clauses?

02:04 3   A.   Well, they can't be the same because

02:04 4   they're different, logically speaking.

02:04 5   The contracts, I thought, were similar in

02:05 6   important respects, of which the presence of an

02:05 7   integration clause is one.

02:05 8   Q.   Do most commercial contracts between

02:05 9   sophisticated parties contain integration clauses?

02:05 10   A.   I can't answer that.

02:05 11   Q.   Well, you're an expert on contracts, right?

02:05 12   A.   There are maybe 20 million commercial

02:05 13   contracts a year. If you're asking me whether

02:05 14   2,417,312 have an integration clause, I'd say I don't

02:05 15   know the answer to that.

02:05 16   Q.   But, I mean, you studied contracts for a

02:05 17   long time, right?

02:05 18   A.   I have.

02:05 19   Q.   For most of the contracts you personally

02:05 20   reviewed between sophisticated parties, do those

02:05 21   contracts typically contain integration clauses?

02:05 22   A.   It would depend on the industry. I don't

02:05 23   think they're in M&A contracts. But they're in other

02:05 24   kinds of -- they're also not in a usual sales

02:05 25   contract. But they tend to be in complicated

140

02:05 1 agreements, such as construction contracts or the

02:06 2 agreements to construct a shopping center contract.

02:06 3   So it would depend on the context.

02:06 4 Sometimes you have one, and sometimes you don't.

02:06 5   Q.   Did any of the 1700 contracts you reviewed

02:06 6 or had counsel review in this case not contain

02:06 7 integration clauses?

02:06 8   A.   I think -- yes, I think I've seen some that

02:06 9 didn't.

02:06 10   Q.   What percentage generally of the contracts?

02:06 11   A.   I can't say without going over that sample

02:06 12 again.

02:06 13   Q.   Did any of the programmatic sales contracts

02:06 14 identified in your report contain a provision

02:07 15 restricting what someone who purchased XRP from

02:07 16 Ripple's counterparty could do with the XRP they

02:07 17 purchased?

02:07 18   MR. FIGEL: Objection.

02:07 19   A.   No, I don't think so.

02:07 20   No.

02:07 21   Q.   Did you review any contracts between Ripple

02:07 22 and GSR where Ripple contracted with GSR to purchase

02:07 23 XRP in the secondary market?

02:07 24   A.   I don't recall that.

02:07 25   Q.   Did you consider any such contract in

141

02:07 1 forming your opinions?

02:07 2   A.   I don't think so.

02:08 3   Q.   Okay. Paragraph 105 discusses the

02:08 4 market-making contracts.

02:08 5   MR. HANAUER: Can you send around 11,

02:08 6 please.

02:08 7   (█   Agreement was marked Exhibit AS-11 for

02:08 8   identification, as of this date.)

02:08 9   A.   I think I have -- okay.

02:08 10   Q.   Is Exhibit 11 a copy of the █ agreement

02:08 11 referenced in paragraph 105 of your report?

02:09 12   A.   I think so.

02:09 13   Q.   Any reason why you would say Exhibit 11 is

02:09 14 not a copy of the █ agreement referenced in

02:09 15 paragraph 105 of your report?

02:09 16   A.   No.

02:09 17   Q.   When you looked at the market-making

02:09 18 contracts, did you do anything to determine that the

02:10 19 contracts you reviewed were the only contracts

02:10 20 governing the commercial relationship between Ripple

02:10 21 and its counterparty?

02:10 22   A.   No.

02:10 23   Q.   Independent of this case, have you reviewed

02:10 24 any contracts involving a market maker?

02:10 25   MR. FIGEL: Objection.

142

02:10 1   A.   In my life?

02:10 2   Q.   Yeah.

02:10 3   A.   I can't remember. Probably, but I can't

02:10 4   remember for sure.

02:10 5   Q.   Can you name any today as you sit here

02:10 6   today?

02:10 7   A.   No.

02:10 8   Q.   Are you offering any opinion on how

02:10 9   Exhibit 11 is different or similar than any other

02:10 10   contract involving a securities market maker?

02:10 11   MR. FIGEL: Objection.

02:10 12   A.   No, I'm not.

02:11 13   Q.   By contracting with market makers, did

02:11 14   Ripple help facilitate the trading of XRP?

02:11 15   MR. FIGEL: Objection.

02:11 16   A.   I can infer such an intention from the

02:11 17   agreement.

02:11 18   Other than that, I don't have an answer.

02:11 19   Q.   What is the job of a market maker?

02:11 20   A.   To make a market.

02:11 21   Q.   And does making that market help facilitate

02:11 22   trading in whatever is being sold?

02:11 23   A.   Yes.

02:11 24   Q.   By contracting with market makers, did

02:11 25   Ripple help provide investors with a mechanism to

                                                            143

02:11 1   sell XRP at a profit?

02:11 2   MR. FIGEL: Objection.

02:11 3   MS. PROSTKO: Objection.

02:11 4   A.   I'm going to resist the last part of your

02:11 5   question. They -- it provided an opportunity to

02:12 6   trade XRP. Whether at a profit or not, I have no

02:12 7   idea.

02:12 8   Q.   So by contracting with market makers,

02:12 9   Ripple provided an opportunity for traders to trade

02:12 10   in XRP?

02:12 11   MR. FIGEL: Objection.

02:12 12   A.   That is the purpose of -- of these

02:12 13   agreements.

02:12 14   Q.   And do you see on Exhibit 11 how the

02:12 15   agreement talks about a defined spread and a

02:12 16   deployment amount?

02:12 17   A.   Yes.

02:13 18   Q.   Did the other market-making contracts you

02:13 19   reviewed contain similar provisions?

02:13 20   A.   I can't recall right now.

02:13 21   Q.   In paragraph 108 of your report, you say

02:13 22   that the market-making contract provides that Ripple

02:13 23   will deliver ███████████ --

02:13 24   A.   Yes.

02:13 25   Q.   -- to GSS?

144

```
02:13  1          A.   Yes.

02:13  2          Q.   Is that ██████████, is that

02:13  3   compensation to ████ or is that for ███ to use in its

02:13  4   market-making activities?

02:13  5               MR. FIGEL:  Objection.

02:14  6          A.   The contract defines it as compensation.

02:14  7          Q.   Is there any restrictions in the ████

02:14  8   agreement on what ███ can do with the ████████████

02:14  9   it obtained from Ripple?

02:14 10          A.   I don't recall any such restrictions.

02:14 11          Q.   And since ████ is obtaining ████████████

02:14 12   as compensation, does that incentivize ████ to make a

02:14 13   market for XRP at a higher price?

02:14 14               MR. FIGEL:  Objection.

02:15 15          A.   That's payment for GSR to make a market,

02:15 16   which is to say it's payment for GSR to do what they

02:15 17   do.

02:15 18          Q.   GSS?

02:15 19          A.   GSS, that is.

02:15 20          Q.   So -- but now -- once ████ -- once ████

02:15 21   obtains that ████████████ --

02:15 22          A.   Right.

02:15 23          Q.   -- it's in GSS's interest for that XRP to

02:15 24   be worth more.

02:15 25               MR. FIGEL:  Objection.
```

145

02:15	1	A. Not necessarily.
02:15	2	Q. Why do you say that?
02:15	3	A. Because if their intention is to convert it
02:15	4	immediately into dollars, they only care about the
02:15	5	price at the time they get it.
02:16	6	Q. Do you know what ▮▮▮▮ intentions were to
02:16	7	do with the ▮▮▮▮▮▮ it obtained from -- or
02:16	8	▮▮▮▮▮▮ it obtained from Ripple?
02:16	9	A. No.
02:16	10	Q. So can you look at paragraph 111 of your
02:16	11	report.
02:16	12	Again, I'd ask you to compare that with
02:16	13	paragraph 102.
02:16	14	And it looks like paragraph 102 contains a
02:16	15	bullet point that paragraph 111 does not, that
02:16	16	says -- discusses provisions that create an ongoing
02:17	17	obligation owed by Ripple to the counterparty?
02:17	18	A. Yes.
02:17	19	Q. Did you find any such provisions in the GSS
02:17	20	contract or market maker contracts?
02:17	21	A. No.
02:17	22	Q. So, again, why were you listing five bullet
02:17	23	points in paragraph 102 but only four bullet points
02:17	24	in paragraph 111?
02:17	25	A. I can't recall why I did that, but I do

146

02:17 1   know that there's no such language in Exhibit 10.

02:17 2   Q.   What about Exhibit 11?

02:17 3   A.   Which one is -- oh, Exhibit 11?

02:17 4   I don't -- I have -- 5, 4 -- oh. This

02:18 5   is -- this is Exhibit 10.

02:18 6   MR. FIGEL: Is that --

02:18 7   A.   You referred to Exhibit 11, I don't think I

02:18 8   have an Exhibit 11.

02:18 9   MR. FIGEL: I think it's in front of right

02:18 10   there.

02:18 11   A.   There's Exhibit 10.

02:18 12   Oh, this is Exhibit -- no, I didn't see

02:18 13   anything in that agreement either.

02:18 14   MR. FIGEL: Just so the record's clear, do

02:18 15   you have Exhibit 11?

02:18 16   THE WITNESS: I do. It's right here.

02:18 17   MR. HANAUER: Mr. Court Reporter, was I

02:18 18   asking a question about -- an authentication question

02:18 19   on Exhibit 11? Just to make sure I have it.

02:18 20   (The record was read back.)

02:19 21   Q.   Okay. Sorry about that, sir.

02:19 22   Just so I have this in the record, is

02:19 23   Exhibit 11 an accurate copy of the GSS agreement

02:19 24   referenced in paragraph 105 of your report?

02:19 25   A.   Yes.

147

02:19 1   Q.   Thank you.

02:19 2   Did any of the market maker contracts you

02:19 3   reviewed contain a provision restricting what someone

02:19 4   who purchased XRP from the market maker could do with

02:19 5   the XRP they purchased?

02:20 6   MR. FIGEL: Objection.

02:20 7   A.   No.

02:20 8   MR. HANAUER: Exhibit 12.

02:20 9   (Copy of Azimo Agreement was marked Exhibit

02:20 10   AS-12 for identification, as of this date.)

02:20 11   Q.   While we're passing out exhibits, I will

02:20 12   ask you to refer to paragraph 116 of your report.

02:20 13   And once you've had a chance to review

02:20 14   Exhibit 12 I'll ask you, is Exhibit 12 a copy of the

02:20 15   Azimo agreement referenced in paragraph 116 of your

02:20 16   report?

02:20 17   A.   Yes.

02:20 18   Q.   And when you looked at the product

02:21 19   incentive contracts, did you do anything to determine

02:21 20   that the contracts you reviewed were the only

02:21 21   contracts governing the commercial relationship

02:21 22   between Ripple and its counterparty?

02:21 23   A.   No.

02:21 24   Q.   What is Azimo?

02:21 25   (Witness reviewing document.)

                                                              148

```
02:21  1        A.   Azimo is a company that -- well, I must
02:21  2   say, I don't know very much about Azimo, but it
02:21  3   essentially does transactions in cryptocurrency in
02:22  4   various markets.
02:22  5        Q.   Do you know what type -- type or -- of
02:22  6   transactions or the purpose of the transactions?
02:22  7        A.   No.
02:22  8        Q.   And do you see how the preamble to
02:22  9   Exhibit 12 references a master-hosted services
02:22 10   agreement between Ripple and Azimo?
02:22 11        A.   Are you referring to my report or to
02:22 12   Exhibit 12?
02:22 13        Q.   Exhibit 12.  The preamble to Exhibit 12.
02:22 14        A.   Yes.
02:22 15        Q.   Did you review the master-hosted services
02:22 16   agreement between Ripple and Azimo?
02:22 17        A.   I don't recall doing so.
02:22 18        Q.   Do you know if Azimo was a user of Ripple's
02:23 19   ODL product?
02:23 20        A.   I don't know whether it was or wasn't.
02:23 21        Q.   Are you offering an opinion whether --
02:23 22   okay.  Let me try and help you out with this.  Let's
02:23 23   look at paragraph 117.
02:23 24             Can you just read that to yourself.
02:23 25        A.   Yes.
```

149

02:23 1   Oh, yes. Yeah. It -- that's -- I now --

02:23 2   it has refreshed my recollection.

02:23 3   Q.   Okay. So I'll ask you again, was Azimo a

02:23 4   user of Ripple's ODL product?

02:23 5   A.   Yes.

02:23 6   Q.   And you say that -- in paragraph 117, you

02:24 7   say, Ripple purchases services from Azimo in exchange

02:24 8   for payment.

02:24 9   A.   Yes.

02:24 10   Q.   Does Azimo also purchase services from

02:24 11   Ripple?

02:24 12   A.   Well, if it's using the ODL product, it

02:24 13   must purchase services, but I was referring to the

02:24 14   particular contract in Exhibit 12.

02:24 15   Q.   And you reference, in paragraph 117, how

02:24 16   the ████ agreement obligates Ripple to pay █ million

02:24 17   in XRP -- $█ million worth of XRP --

02:24 18   A.   Yes.

02:24 19   Q.   -- in exchange for Azimo meeting certain

02:24 20   milestones?

02:24 21   A.   Not milestones. Well, yes, incentive

02:24 22   milestones, but then it's later defined in particular

02:25 23   as a number of transactions.

02:25 24   Q.   Are you offering an opinion whether it

02:25 25   would be commercially viable for Azimo to use ODL

                                                              150

```
02:25  1 | absent the incentives paid by Ripple?
02:25  2 |          MR. FIGEL:  Objection.
02:25  3 |     A.   No.
02:25  4 |     Q.   Can you look at paragraph -- or Section 4,
02:25  5 | Exhibit A to Exhibit 12.
02:26  6 |          It's part of Exhibit 12 with a Bates number
02:26  7 | ending in 182.
02:26  8 |     A.   Yes, I'm looking at that now.
02:26  9 |     Q.   And do you see that Azimo acknowledges that
02:26 10 | virtual currency, including XRP, is not legal tender?
02:26 11 |     A.   Yes.
02:26 12 |     Q.   Did any of the contracts you reviewed treat
02:26 13 | XRP as either fiat currency or legal tender?
02:26 14 |          MR. FIGEL:  Objection.
02:26 15 |     A.   No, I don't recall seeing any such
02:26 16 | provisions.
02:26 17 |     Q.   Do you have an opinion whether XRP is
02:26 18 | either legal tender or fiat currency?
02:27 19 |          MR. FIGEL:  Objection.
02:27 20 |     A.   I don't think it's either one.
02:27 21 |     Q.   So paragraph 124 of your report references
02:27 22 | an agreement with -- references the ███████████
02:27 23 | pilot agreement.
02:28 24 |          Do you see that?
02:28 25 |     A.   Uh-huh.
```

151

02:28 1   Q.   And you conclude paragraph 124 by writing,

02:28 2   Ripple agrees to pay ████   on a monthly basis,

02:28 3   ████████   of the aggregate value of XRP purchased or

02:28 4   sold by ████ on Bitstamp using its algorithm?

02:28 5   A.   Yes.

02:28 6   Q.   By contracting with ████   did Ripple help

02:28 7   facilitate the trading of XRP?

02:28 8   MR. FIGEL: Objection.

02:28 9   A.   I don't know. That's a question of fact as

02:28 10   to the effect of the agreement. I don't have any

02:28 11   opinion on the effect of any of these agreements.

02:29 12   Q.   Going back to Azimo, what purchases -- or

02:29 13   what services did Ripple purchase from Azimo?

02:29 14   MR. FIGEL: Objection.

02:29 15   A.   To use Ripple in -- to use XRP in

02:29 16   transactions in the specified markets. Specified

02:29 17   countries, actually.

02:29 18   Q.   Did Ripple pay Azimo to buy and sell XRP in

02:29 19   the market?

02:29 20   MR. FIGEL: Objection.

02:29 21   A.   I don't recall any contract provisions to

02:29 22   that effect.

02:29 23   Q.   And again, you did not review the master

02:29 24   services agreement between Ripple and Azimo?

02:30 25   A.   I don't recall reviewing that particular

152

02:30 1 one.

02:30 2   Q.   Can you look at paragraph 131, please.

02:30 3   And do you see how you write, the --

02:30 4 Specifically the product incentive contracts

02:30 5 typically contain, and then there are two bullet

02:31 6 points?

02:31 7   A.   Uh-huh.

02:31 8   Q.   So, similar question to what I was asking

02:31 9 you earlier about the integration clause. Is it

02:31 10 the -- are you -- are you saying that all of the

02:31 11 products incentive contracts had the two provisions

02:31 12 listed in the bullet points on paragraph 31, or are

02:31 13 you saying that those two provisions are what make

02:31 14 the product incentive contracts similar in substance?

02:31 15   MR. FIGEL: Objection.

02:31 16   A.   What makes the contracts similar are the

02:31 17 clauses they have in common and the clauses that they

02:31 18 in common lack. So I'm not basing similarity on any

02:31 19 particular term.

02:31 20   Q.   Would you be able to find provision -- are

02:32 21 the two provisions listed in -- on the bullet points

02:32 22 in paragraph 131, are those common provisions in

02:32 23 contracts in a whole variety of industries?

02:32 24   A.   I guess I would answer it in this way.

02:32 25   With a lot of contracts, there is -- there

153

02:32 1 are few or no precontractual communications between

02:32 2 parties. Example, in a typical sales contract, if

02:32 3 you want to ship TVs to a retailer, they're sold

02:32 4 under a standard contract, then retailer takes the

02:32 5 contract or it doesn't.

02:32 6   In other areas, there are discussions prior

02:32 7 to the making of a contract. And that -- it's --

02:33 8 that creates an incentive to use a merger clause in

02:33 9 order to ensure that the enforceable promises people

02:33 10 make are in their written contract.

02:33 11   Q.   Did any of the product incentive contracts

02:33 12 identified in your report contain a provision

02:33 13 restricting what someone who purchased XRP from

02:33 14 Ripple's counterparty could do with the XRP they

02:33 15 purchased?

02:33 16   MR. FIGEL: Objection.

02:33 17   A.   No.

02:33 18   Q.   Did any contract identified in your report

02:33 19 contain a provision restricting what someone who

02:33 20 purchased XRP from Ripple's counterparty could do

02:33 21 with the XRP they purchased?

02:33 22   MR. FIGEL: Objection.

02:33 23   A.   No. Maybe this is volunteering, but you

02:34 24 couldn't bind a party who wasn't -- an agent who

02:34 25 wasn't a party to a contract to do or not do things.

154

02:34 1   Q.   So, it would have been impossible for

02:34 2   Ripple to put restrictions on what the purchaser of

02:34 3   XRP from one of Ripple's counterparties could do with

02:34 4   the XRP purchased from the counterparty?

02:34 5   MR. FIGEL: Objection.

02:34 6   A.   Well, Ripple could do what it did do. It

02:34 7   could require the buyer of XRP to restrict the use by

02:34 8   parties down in the distribution chain.

02:34 9   And I think I recall provisions saying that

02:34 10   the buyer wouldn't sell to anyone who had an

02:34 11   investment purpose or the like.

02:35 12   But the most you could do is -- is to have

02:35 13   your -- is to require your counterparty to make

02:35 14   transactions with nonparties under certain terms so

02:35 15   that if the counterparty didn't do that, you could

02:35 16   sue the counterparty.

02:35 17   Q.   Did any of Ripple's contracts identified in

02:35 18   your report bind third parties that were not Ripple's

02:35 19   counterparties?

02:35 20   MR. FIGEL: Objection.

02:35 21   A.   No.

02:35 22   Q.   Can we go to paragraph 135 where you talk

02:35 23   about the employee and executive compensation

02:36 24   contract.

02:36 25   A.   Yes.

155

```
02:36  1              MR. HANAUER:  Bless you.

02:36  2         Q.   Did any of the employee and executive

02:36  3    compensation contracts contain a restriction on what

02:36  4    the Ripple employee or executive could do with the

02:36  5    XRP they obtained from Ripple?

02:36  6              MR. FIGEL:  Objection.

02:36  7         A.   I don't think so.

02:36  8         Q.   Did you review any of Defendant

02:37  9    Garlinghouse's employee executive compensation

02:37 10    contracts with Ripple?

02:37 11         A.   No.

02:37 12         Q.   Did you review any of Defendant

02:37 13    Garlinghouse's contracts between him and Ripple?

02:37 14         A.   No.

02:37 15         Q.   Did you consider any of Defendant

02:37 16    Garlinghouse's contracts in forming your opinions?

02:37 17         A.   No.

02:38 18         Q.   Could you go to paragraph 144 of your

02:38 19    report, please.

02:38 20              (MoneyGram Agreement was marked Exhibit

02:38 21         AS-15 for identification, as of this date.)

02:38 22         Q.   Is Exhibit 15 a copy of the MoneyGram

02:38 23    agreement referenced in paragraph 144 of your report.

02:38 24         A.   Yes.

02:38 25         Q.   And when you looked at the master-hosted
```

156

02:39   1   services agreements, did you do anything to determine

02:39   2   that the contracts you reviewed were the only

02:39   3   contracts governing the commercial relationship

02:39   4   between Ripple and its counterparty?

02:39   5   A.   No.

02:39   6   Q.   Why was Ripple contracting with MoneyGram?

02:39   7   MR. FIGEL: Objection.

02:39   8   A.   I don't know why, as a matter of fact, they

02:39   9   were contracting with MoneyGram.

02:39 10   Q.   And do you see how -- or can I refer you to

02:39 11   paragraph 147 of your report.

02:39 12   A.   Uh-huh.

02:40 13   Q.   Do you see how that discusses Ripple paying

02:40 14   rebates to MoneyGram?

02:40 15   A.   Yes.

02:40 16   Q.   Are you offering an opinion whether it

02:40 17   would be commercially viable for MoneyGram to use

02:40 18   Ripple's products, if not for the rebates and

02:40 19   incentives Ripple offered?

02:40 20   MR. FIGEL: Objection.

02:40 21   A.   No.

02:41 22   Q.   Can I refer you to paragraph 160 of your

02:41 23   report, please.

02:41 24   (Loan Agreement was marked Exhibit AS-16

02:41 25   for identification, as of this date.)

                                                              157

02:41 1   Q.   Before I ask you about the loan agreements,

02:41 2   we just looked at the Azimo agreement and the

02:41 3   MoneyGram agreement.

02:41 4   A.   Yes.

02:41 5   Q.   Why did you put them in different

02:41 6   categories?

02:41 7   A.   Because the loan is a different transaction

02:41 8   from --

02:41 9   Q.   I'm sorry. And I'm not trying to be

02:41 10   confusing or anything like that.

02:41 11   A.   No.

02:41 12   Q.   Before we get to the loan agreements, I

02:41 13   want to refer back to the last two sets of agreements

02:41 14   we looked at, the MoneyGram agreement and the Azimo

02:41 15   agreement.

02:41 16   And my question is, why did you put them

02:42 17   into different categories?

02:42 18   A.   The -- because they had different

02:42 19   commercial purposes.

02:42 20   The Azimo agreement, at least as I infer

02:42 21   from the words, was an agreement in which Azimo is

02:42 22   being paid to conduct certain transactions.

02:42 23   In the MoneyGram agreement, MoneyGram was

02:42 24   using a service that Ripple provided. So they were

02:42 25   different deals.

                                                                  158

02:42 1   Q.   Do you know if Azimo used a service that

02:42 2   Ripple provided?

02:42 3   A.   I don't know any more than what the

02:42 4   contract says.

02:42 5   Q.   The contract that you reviewed says?

02:42 6   A.   Yes.

02:43 7   Q.   So do you see Exhibit 16 in front of you?

02:43 8   A.   I do.

02:43 9   Q.   Is Exhibit 16 a copy of the loan agreement

02:43 10   referenced in paragraph 160 of your report?

02:43 11   A.   Yes.

02:43 12   Q.   What is ██████████ or ██████████████?

02:44 13   A.   I'm not sure what ████████ is.

02:44 14   Q.   Do you know what their -- what ██████████

02:44 15   business is?

02:44 16   A.   Not right now, no.

02:44 17   Q.   Do you know what the businesses of the

02:44 18   other counterparties to the loan agreements

02:44 19   identified in your report are?

02:44 20   A.   I don't recall.

02:44 21   Q.   Do you know what the purpose of the loans

02:44 22   identified in your report were?

02:44 23   A.   I think ██████████ -- ██████████ is a financial

02:44 24   services company, which is about all I know about it.

02:45 25   I would infer from looking at the agreement

159

02:45 1 that the goal was to have ▮▮▮▮▮▮ use XRP, but I

02:45 2 don't know that as a matter of fact.

02:45 3   Q.   Was the loan agreement with ▮▮▮▮▮▮

02:45 4 related to a broader commercial relationship between

02:45 5 Ripple and ▮▮▮▮▮▮

02:45 6   MR. FIGEL: Objection.

02:45 7   A.   I don't know that.

02:45 8   Q.   Were -- do you know if any of the other

02:45 9 loan agreements identified in your report were part

02:45 10 of larger commercial relationships between Ripple and

02:45 11 the counterparty?

02:45 12   A.   I don't know that.

02:45 13   Q.   Do you know if Ripple paid ▮▮▮▮▮▮

02:45 14 incentives, bonuses, or rebates as part of a broader

02:45 15 commercial relationship?

02:45 16   MR. FIGEL: Objection.

02:46 17   A.   No.

02:46 18   Q.   Do you know if Ripple paid the other loan

02:46 19 and promissory note counterparties bonuses,

02:46 20 incentives, or rebates as part of a larger commercial

02:46 21 relationship?

02:46 22   A.   No.

02:46 23   Q.   Did Ripple reimburse ▮▮▮▮▮▮ for the --

02:46 24 for the interest Ripple charged on the loan?

02:46 25   MR. FIGEL: Objection.

160

02:46 1   A.   Well, there's no contractual obligation for

02:46 2   Ripple to do that. If -- at least no contractual

02:47 3   obligation under the digital asset loan agreement.

02:47 4   Q.   Do you know if Ripple reimbursed █████████

02:47 5   for the interest it charged on the loan?

02:47 6   A.   No.

02:47 7   Q.   Do you know if Ripple reimbursed any other

02:47 8   of the loan or promissory note counterparties for the

02:47 9   interest it charged?

02:47 10   A.   No.

02:47 11   Q.   Did the loan -- the ████████ loan agreement

02:47 12   contain a provision restricting what ████████ could

02:47 13   do with the XRP Ripple loaned it?

02:47 14   A.   Such a restriction would -- is not in the

02:47 15   contract.

02:47 16   Q.   Did any other of the loans or promissory

02:47 17   notes identified in your report contain restrictions

02:47 18   on what Ripple's counterparty could do with the XRP?

02:48 19   A.   I don't recall seeing any of them in this

02:48 20   type of agreement.

02:48 21   Q.   May I direct your attention to

02:48 22   paragraph 170, please.

02:48 23   (██ Custody Agreement was marked Exhibit

02:48 24   AS-17 for identification, as of this date.)

02:48 25   Q.   And Exhibit 17, is that a copy of the ██

161

02:49 1   custody agreement referenced in paragraph 170 of your

02:49 2   report?

02:49 3   A.   Yes.

02:49 4   Q.   When you looked at the custody agreements

02:49 5   referenced in your report, did you do anything to

02:49 6   determine that those agreements that you reviewed

02:49 7   were the only contracts governing the commercial

02:49 8   relationship between Ripple and its counterparty?

02:49 9   A.   No.

02:49 10   Q.   So the counterparty to the ▮ custody

02:49 11 agreement is an entity called ▮▮▮▮▮▮▮▮.

02:49 12   A.   Yes.

02:49 13   Q.   What is their business?

02:49 14   A.   I don't know.

02:50 15   Q.   Do you know the businesses of any of the

02:50 16 other parties to the custody agreements identified in

02:50 17 your report?

02:50 18   A.   I don't recall.

02:50 19   Q.   And do you know what the purpose was of the

02:50 20 ▮ custody agreement?

02:50 21   MR. FIGEL: Objection.

02:50 22   A.   The customer had purchased XRP. And it

02:50 23 wanted Ripple to essentially hold it for them, to be

02:50 24 the custodian of it for them rather than take

02:50 25 possession themselves.

162

02:50	1	Q. And do you know what ███████████.
02:50	2	intended to do with the XRP Ripple loaned it?
02:51	3	MR. FIGEL: Objection.
02:51	4	A. No.
02:51	5	I think -- no, I don't.
02:51	6	Q. And was the ██ custody agreement
02:51	7	substantially similar to the other custody agreements
02:51	8	you reviewed?
02:51	9	A. Yes.
02:51	10	Q. So the ██ custody agreement lays out the
02:51	11	terms for Ripple to custody XRP that ██████████ had
02:51	12	previously purchased from Ripple?
02:51	13	A. That is my understanding.
02:52	14	Q. And why did ██████████ originally buy XRP
02:52	15	from Ripple?
02:52	16	MR. FIGEL: Objection.
02:52	17	A. I don't know.
02:52	18	Q. Can I ask you to look at paragraph 8 of
02:52	19	Exhibit 17.
02:52	20	A. Uh-huh.
02:52	21	Q. And after that first romanette, is ██████
02:52	22	██████ representing that its holding the XRP for
02:52	23	investment purposes?
02:53	24	A. It's representing it has the authority to
02:53	25	hold XRP for investment purposes.

163

02:53 1   Q.   And do you know whether or not ███████

02:53 2   was, in fact, holding XRP for investment purposes?

02:53 3   A.   No.

02:53 4   Q.   How many of the other custody agreements

02:53 5   contained a similar provision where the counterparty

02:53 6   represented that it is authorized to hold XRP for

02:53 7   investment purposes?

02:53 8   A.   I think they all did.

02:53 9   Q.   Was the ██ custody agreement related to a

02:53 10   broader commercial relationship between Ripple and

02:53 11   ███████████ ?

02:53 12   A.   I don't know that.

02:53 13   Q.   Were the other custody agreements

02:53 14   identified in your report part of -- strike that.

02:54 15   Did you review any other contracts,

02:54 16   reflecting a broader commercial relationship between

02:54 17   Ripple and the counterparties to the other custody

02:54 18   agreements identified in your report?

02:54 19   MR. FIGEL: Objection.

02:54 20   A.   No.

02:54 21   Q.   Do you know if Ripple paid ███████████

02:54 22   incentives, bonuses, or rebates?

02:54 23   MR. FIGEL: Objection.

02:54 24   A.   No, I don't know whether they did or not.

02:54 25   Q.   Do you know if Ripple paid incentives,

164

02:54 1 bonuses, or rebates to the other counterparties of

02:54 2 the custody agreements?

02:54 3   MR. FIGEL: Objection.

02:54 4   A.   No.

02:54 5   Q.   Did the ▮ custody agreement contain a

02:54 6 provision restricting what ▮▮▮▮▮ could do with

02:55 7 the XRP that Ripple custodied?

02:55 8   A.   No.

02:55 9   Q.   Did the other custody agreements identified

02:55 10 in your report contain provisions restricting what

02:55 11 Ripple's counterparty could do with the XRP?

02:55 12   A.   Not to my knowledge.

02:55 13   Q.   How are you doing on breaks?

02:55 14   A.   Doing okay.

02:55 15   Q.   Doing okay. All right. Let's keep going.

02:55 16   Can I ask you to look at page -- I'm sorry,

02:55 17 paragraph 178 of your report.

02:56 18   And you reference that Rippleworks is a

02:56 19 charitable organization that provides grants and

02:56 20 other funding to Social Impact Ventures?

02:56 21   A.   Yes.

02:56 22   Q.   What is your basis for saying that?

02:56 23   A.   I think that -- that they were identified

02:56 24 as such in the contract.

02:56 25   MR. HANAUER: Let's do Exhibit 18.

                                                          165

02:56 1   (Copy of Custody Agreement was marked

02:56 2   Exhibit AS-18 for identification, as of this

02:56 3   date.)

02:57 4   Q.   Is Exhibit 18 a custody -- a copy of the

02:57 5   custody agreement identified in paragraph 178 of your

02:57 6   report?

02:57 7   A.   Yes.

02:57 8   Q.   I'll -- I'll return to my question, and --

02:57 9   and what is your basis for saying that Rippleworks is

02:57 10   a charitable organization that provides grants and

02:57 11   funding to Social Impact Ventures?

02:57 12   A.   It's described as a foundation. Foundation

02:58 13   is not a profit-making company. So foundation's

02:58 14   usually charitable companies, which essentially make

02:58 15   grants.

02:58 16   I might have learned, in conversation about

02:58 17   this case, about Social Impact Ventures. But it

02:58 18   was -- and I don't recall where I heard that, but it

02:58 19   was clear to me that -- just from reading the

02:58 20   agreement that we were not talking about a

02:58 21   profit-making enterprise as a counterparty.

02:58 22   Q.   Did you write the words, "A charitable

02:58 23   organization that provides grants and other funding

02:58 24   to Social Impact Ventures"?

02:58 25   A.   Yes, I did.

166

02:58 1   Q.   Are you aware that the amended complaint in

02:58 2   this case alleges that Ripple and the individual

02:58 3   defendants used Rippleworks as a mechanism to achieve

02:59 4   Ripple's goal of distributing XRP into the public

02:59 5   trading market and increase trading in XRP?

02:59 6   A.   I'm not aware of that.

02:59 7   Q.   Are you offering any opinion that

02:59 8   challenges those allegations?

02:59 9   A.   I don't have an opinion one way or the

02:59 10   other.

02:59 11   Q.   Are you offering any opinion challenging

02:59 12   the amended complaint's -- strike that.

02:59 13   Are you offering any opinion challenging

02:59 14   any of the amended complaint's allegations relating

02:59 15   to Rippleworks?

02:59 16   MR. FIGEL: Objection.

02:59 17   A.   I would have to know what they were.

02:59 18   Q.   Well, you did review the complaint, the

02:59 19   amended complaint, correct?

02:59 20   A.   Yes.

02:59 21   Q.   And as you sit here today, are you refuting

03:00 22   any of the allegations about Rippleworks?

03:00 23   A.   No, that's not in my report. I don't have

03:00 24   any -- any expert opinion on what Ripple and

03:00 25   Rippleworks did.

                                                             167

03:00 1   Q.   Did the Rippleworks cus-- did Exhibit 18,

03:00 2   did that contain a -- does that contain a provision

03:00 3   restricting what Rippleworks can do with the XRP

03:00 4   Ripple custody?

03:00 5   A.   No.

03:00 6   Q.   Can you look at your report, paragraph 188,

03:00 7   please.

03:00 8   So do you see how paragraph 188 references

03:01 9   settlement agreements involving Ripple on one hand,

03:01 10   and on the other hand, R3 HoldCo, Jed McCabe [sic],

03:01 11   Arthur Britto, Greg Kidd, and Matthew Mellon?

03:01 12   A.   Yes.

03:01 13   Q.   Were those the only parties to settlement

03:01 14   agreements that you reviewed?

03:01 15   A.   I think so.

03:02 16   Q.   So in Exhibit 5 to your report, it looks

03:02 17   like there could be more than a hundred settlement

03:02 18   agreements.

03:02 19   A.   I don't know how many there were.

03:02 20   Q.   Well, you can look at Exhibit F to your

03:02 21   report.

03:02 22   A.   Yeah, I -- there were a lot of them. I

03:02 23   don't -- you asked me, once again, about a specific

03:02 24   number. I don't have a specific number.

03:02 25   Q.   And did the -- the settlement agreements

                                                             168

03:02 1   on -- identified in Exhibit F to your report, did all

03:02 2   of those settlement agreements involve either

03:02 3   R3 HoldCo, Jed McCabe, Arthur Britto, Greg Kidd or

03:02 4   Matthew Mellon?

03:03 5   A.   I think so.

03:03 6   I don't recall any other parties.

03:03 7   Q.   Why were there so many settlement

03:03 8   agreements for only a handful of counterparties?

03:03 9   MR. FIGEL: Objection.

03:03 10   A.   I don't know.

03:03 11   Q.   Did you review all the settlement

03:03 12   agreements contained on Exhibit F to your report?

03:03 13   A.   If they were an exhibit to my report, I

03:03 14   looked at them, or most of them, or almost all of

03:03 15   them.

03:03 16   Q.   After you signed your report.

03:03 17   A.   Some before, more after.

03:04 18   Q.   For R3 HoldCo, what is that company's

03:04 19   business?

03:04 20   A.   I'm not sure.

03:04 21   Q.   And do you know what the purpose was of

03:04 22   R3 HoldCo's original contractual relationship with

03:04 23   Ripple?

03:04 24   A.   No.

03:04 25   Q.   Do you know what Arthur Britto or Greg

169

03:04 1 Kidd's relationship was with Ripple?

03:04 2   A.   No.

03:05 3   Q.   What about Matthew Mellon?

03:05 4   A.   I know that Matthew Mellon was supposed to

03:05 5 provide certain services to Ripple.

03:05 6   Q.   What services were those?

03:05 7   A.   The contract describes them as ambassador

03:05 8 services.

03:05 9   Q.   Are you able to fill in any more details on

03:05 10 what those ambassador services entailed?

03:05 11   A.   No.

03:05 12   Q.   Did any of the settlement agreements

03:05 13 identified in your report contain a provision

03:05 14 restricting what Ripple's counterparty could do with

03:05 15 the XRP Ripple provided?

03:05 16   MR. FIGEL: Objection.

03:05 17   A.   I don't think so.

03:06 18   Q.   So in paragraph 191, you say that the R3

03:06 19 option sets out terms pursuant to which XRP2 grants

03:06 20 R3 HoldCo the right to purchase up 5 billion units of

03:06 21 XRP at a per-unit price of .8 -- of .85 cents.

03:06 22   Is that correct?

03:06 23   A.   Yeah.

03:06 24   Q.   And you understood XRP2 to be a subsidiary

03:06 25 of Ripple?

170

03:06 1   A.   Yes.

03:06 2   Q.   Is the option to purchase point -- XRP at

03:06 3 .85 cents per unit, is that a significant discount to

03:07 4 Ripple's market price?

03:07 5   MR. FIGEL: Objection.

03:07 6   A.   I don't know the answer to that.

03:07 7   Q.   If you were to assume that .85 cents per

03:07 8 unit was a significant discount to market price, did

03:07 9 the R3 option allow R3 HoldCo to profit from the XRP

03:07 10 it obtain-- purchased from Ripple if it immediately

03:07 11 sold that XRP into the market?

03:07 12   MR. FIGEL: Objection.

03:07 13   A.   That's a two -- maybe you could break that

03:07 14 question down into two, because that was a pretty

03:07 15 long question.

03:07 16   Q.   Okay. So the first part is the -- I asked

03:08 17 you if the -- the option price was a significant

03:08 18 discount to market price.

03:08 19   A.   I said I didn't know the answer to that.

03:08 20   Q.   Fair enough.

03:08 21   Now I'm asking you to assume that it was a

03:08 22 significant discount to market price.

03:08 23   A.   Yes.

03:08 24   Q.   If that's the case, does the R3 option

03:08 25 allow Ripple's counterparty to profit off the XRP it

171

03:08 1 purchased from Ripple if it turns around and sells

03:08 2 that XRP at market price?

03:08 3   MR. FIGEL: Objection.

03:08 4   A.   Well, I mean, if -- if I could sell

03:08 5 something at $10 a unit in the market and you're

03:08 6 charging me $2 for it, I'm going to make $8 if I

03:08 7 resell it. That seems to be -- so it's certainly --

03:08 8 what you say is a possibility.

03:08 9   But in other words, this -- so far as I can

03:08 10 tell, these were -- this is another way to make a --

03:09 11 to make a payment pursuant to a settlement agreement.

03:09 12   So instead of giving you a hundred dollars,

03:09 13 I give you the right to buy an asset for 50 you can

03:09 14 sell at a hundred dollars. It seems as if that

03:09 15 was -- that there was just a settlement and that's

03:09 16 the way that R3 HoldCo is partially compensated. But

03:09 17 that's all I know about it.

03:09 18   Q.   Would it make commercial sense for

03:09 19 R3 HoldCo to exercise the R3 option if the market

03:09 20 price of XRP was below .85 cents per unit?

03:09 21   MR. FIGEL: Objection.

03:09 22   A.   No.

03:10 23   Q.   Did you review -- so can I refer you to

03:10 24 paragraph 204 of your report, please.

03:10 25   A.   Yes.

172

```
03:10   1          Q.   And do you see how you say, In addition to

03:10   2   the R3 HoldCo settlement, I also reviewed the Britto

03:10   3   settlement agreement?

03:10   4          A.   Yes.

03:10   5          Q.   Did you review any other settlement

03:10   6   agreements other than the ones between RC HoldCo and

03:11   7   Ripple and Arthur Britto and Ripple?

03:11   8          A.   I don't recall doing that.

03:11   9          Q.   Did you review any settlement agreement

03:11  10   between Ripple and Mr. McCaleb?

03:11  11          A.   I don't recall reading that.

03:11  12          Q.   Did the Britto settlement agreement allow

03:11  13   Mr. Britto to purchase XRP at a discount to market

03:11  14   price?

03:11  15               MR. FIGEL:  Objection.

03:11  16          A.   The contract does not give Mr. Britto any

03:11  17   such rights.  If there are any extracontractual

03:11  18   rights, I don't know about them.

03:12  19               MR. HANAUER:  How are you doing?

03:12  20               THE WITNESS:  I'm okay.  Well, it's -- we

03:12  21   could take a break for a little while.

03:12  22               MR. FIGEL:  I think we should.

03:12  23               MR. HANAUER:  Go off the record, please.

03:12  24               THE VIDEOGRAPHER:  Off the record, the time

03:12  25   is 3:13.
```

173

03:12   1   (A recess was taken from 3:13 to 3:39.)

03:37   2   THE VIDEOGRAPHER: Back on the record. The

03:37   3   time is 3:39. And, Reid, just put your microphone

03:37   4   on.

03:38   5   MR. FIGEL: Thank you.

03:38   6   Q.   Professor Schwartz, can I direct you to

03:38   7   paragraph 209 of your report where you're talking

03:38   8   about the Xpring contracts?

03:38   9   A.   Yes.

03:38 10   Q.   What was the Xpring program?

03:38 11   A.   Excuse me?

03:38 12   Q.   What was the -- and I'm not sure if I'm

03:38 13   saying this right. What was the Xpring program?

03:38 14   A.   It's a program under which Ripple made

03:38 15   investments in other companies and which they

03:38 16   exchanged either cash or XRP for equity or services.

03:38 17   Q.   And what's your basis for saying that?

03:38 18   A.   The contract -- that's what the contracts

03:38 19   provided.

03:39 20   Q.   And do you know what the Xpring

03:39 21   counterparties intended to do with the XRP Ripple

03:39 22   provided them?

03:39 23   A.   Do I -- no, I don't know what they intended

03:39 24   to do.

03:39 25   Q.   Are you aware that the amended complaint in

                                                                      174

03:39 1 this case alleges that Ripple used Xpring as a

03:39 2 mechanism to achieve Ripple's goal of distributing

03:39 3 XRP into the public trading market and increase

03:39 4 trading in XRP?

03:39 5   A.   Yes, I'm aware of that.

03:39 6   I want to amend what I said in the ████

03:39 7 contract.

03:39 8   THE COURT REPORTER: I'm sorry. In the

03:39 9 what?

03:39 10   THE WITNESS: ████████.

03:39 11   THE COURT REPORTER: Thank you.

03:39 12   A.   ██████ promised to -- to develop and

03:40 13 integrate XRP, and to essentially, you know, get X--

03:40 14 increase XRP's use. So...

03:40 15   Q.   That was the purpose of ██████ contract

03:40 16 with Ripple?

03:40 17   A.   That's what they promised to use best

03:40 18 efforts to do.

03:40 19   Q.   So going -- is there anything else you need

03:40 20 to amend or correct?

03:40 21   A.   No.

03:40 22   Q.   So, I believe you said that you were aware

03:40 23 of the allegations in the amended complaint regarding

03:40 24 Xpring?

03:40 25   A.   Yes. I read the amended complaint.

175

```
03:40  1          Q.   Are you offering any opinion that

03:40  2     challenges the amended complaint's allegations

03:40  3     regarding Xpring?

03:40  4          A.   No.

03:40  5               MR. FIGEL:  Objection.

03:41  6          Q.   Did the Xpring contracts contain a

03:41  7     provision restricting what Ripple's counterparty

03:41  8     could do with the XRP Ripple provided?

03:41  9          A.   Not to my recollection.

03:41 10          Q.   Did Ripple take any steps to restrict the

03:41 11     Xpring counterparties from reselling the XRP Ripple

03:41 12     provided them to the public?

03:41 13               MR. FIGEL:  Objection.

03:41 14          A.   No.

03:41 15               Not that -- no.

03:42 16          Q.   Can I refer you to paragraph 216 of your

03:42 17     report, please.

03:42 18               So you reference various joint venture

03:42 19     contracts?

03:42 20          A.   Yes.

03:42 21          Q.   And what did you do to determine that the

03:42 22     joint venture contracts you reviewed were the only

03:42 23     contracts governing the commercial relationship

03:42 24     between Ripple and its counterparty?

03:42 25          A.   I didn't do anything.
```

176

03:43 1   (Joint Venture Agreement Between Ripple and

03:43 2   SBI was marked Exhibit AS-20 for identification,

03:43 3   as of this date.)

03:43 4   Q.   Do you see how Exhibit-- I'm sorry.

03:43 5   Do you see on paragraph 216 of your report

03:43 6 references a joint venture agreement between Ripple

03:43 7 and SBI?

03:43 8   A.   Yes.

03:43 9   Q.   Is Exhibit 20 a copy of that joint venture

03:43 10 agreement?

03:44 11   A.   Yes.

03:44 12   Q.   What was the business purpose of the SBI

03:44 13 joint venture?

03:44 14   A.   Essentially to distribute or increase

03:44 15 distribution of Ripple, in the territory defined

03:44 16 under agreement.

03:44 17   Q.   When you say "increase the distribution of

03:44 18 Ripple," do you mean the distribution of XRP?

03:44 19   A.   Yes, the distribution of XRP in Japan,

03:44 20 specifically.

03:44 21   Q.   By entering into the joint venture

03:45 22 agreement, did Ripple help facilitate the trading of

03:45 23 XRP?

03:45 24   MR. FIGEL: Objection.

03:45 25   A.   The object was to have SBIH, I think it's

                                                                    177

```
03:45  1  | SBIH's clients and future clients use XRP.
03:45  2  |      Q.   For what?
03:45  3  |      A.   For whatever purpose that they wanted to
03:45  4  | use it.
03:45  5  |      Q.   Are you offering any opinion on what
03:45  6  | anybody who obtained XRP from the joint venture
03:45  7  | intended to do with it?
03:45  8  |           MR. FIGEL:  Objection.
03:45  9  |      A.   No.
03:45 10  |      Q.   Did the joint venture -- any of the joint
03:45 11  | venture agreements contain a provision restricting
03:46 12  | what could be done with any of the XRP Ripple
03:46 13  | provided?
03:46 14  |      A.   No.
03:46 15  |      Q.   Can you look at paragraph 219 of your
03:46 16  | report.
03:47 17  |           Do see how paragraph 219 of your report
03:47 18  | references an entity called ██████
03:47 19  |      A.   Yes.
03:47 20  |      Q.   And do you have Exhibit 21 in front of you?
03:47 21  |      A.   Yes.
03:47 22  |           (████ Contract was marked Exhibit AS-21 for
03:47 23  |      identification, as of this date.)
03:47 24  |      Q.   Is Exhibit 21 one of the ████ contracts
03:47 25  | referenced in paragraph 219?
```

178

03:47 1   A.   Yes.

03:47 2   Q.   And what was the purpose of the

03:48 3   contemplated arrangement between Ripple and ████

03:48 4   A.   ████   was supposed to create a -- a fund and

03:48 5   sell shares in it to investors.

03:48 6   And the fund was going to hold as an asset

03:48 7   XRP.

03:48 8   Q.   Is it your understanding that the potential

03:48 9   investors in the XRP fund would seek to profit off

03:48 10   their investment?

03:48 11   MR. FIGEL: Objection.

03:48 12   A.   I think everybody seeks to profit off their

03:48 13   investment.

03:48 14   Q.   And you write in paragraph 219 that the

03:48 15   parties contemplated that interest in the fund would

03:49 16   be offered and sold in the United States pursuant to

03:49 17   an exemption from registration under the Securities

03:49 18   Act?

03:49 19   A.   Yes.

03:49 20   Q.   Would the interests in the ████ fund sold

03:49 21   to investors, would those have been securities under

03:49 22   the federal securities laws?

03:49 23   MR. FIGEL: Objection.

03:49 24   A.   I don't have an opinion about that.

03:49 25   Q.   Do you know why the ████ fund was never

179

03:49 1 established?

03:49 2   A.   No.

03:49 3   MR. HANAUER: Can I take one minute to

03:49 4 confer with counsel.

03:49 5   THE VIDEOGRAPHER: Going off the record.

03:49 6 The time is 3:51.

03:50 7   (Discussion off the record.).

03:50 8   THE VIDEOGRAPHER: Back on the record. The

03:50 9 time is 3:51.

03:50 10   MR. HANAUER: Thank you very much,

03:50 11 Professor Schwartz. We have no further questions at

03:50 12 this time.

03:50 13   THE WITNESS: Okay.

03:50 14   MR. FIGEL: And on behalf of Ripple, we

03:50 15 have no questions.

03:50 16   I'm not sure if anyone else on -- do

03:50 17 counsel for the other parties have any questions for

03:50 18 Professor Schwartz?

03:50 19   MS. PROSTKO: No. On behalf of Larsen

03:50 20 defendant, we have no questions, but we thank you

03:50 21 very much for your time today.

03:50 22   MR. BONILLA: I have no questions, for

03:50 23 Defendant Garlinghouse.

03:50 24   MR. HANAUER: Do you do the reserving

03:50 25 signature on the record here in New York?

180

03:50   1   MR. FIGEL: Yes.

03:50   2   We will just assume it.

03:51   3   MR. HANAUER: Okay. Thank you.

03:51   4   THE VIDEOGRAPHER: That concludes today's

03:51   5   deposition. The time is 3:52.

        6   (Time noted: 3:52 p.m.)

        7

        8

        9

       10

       11

       12

       13

       14

       15

       16

       17

       18

       19

       20

       21

       22

       23

       24

       25

                                                              181

```
 1                    CERTIFICATE OF WITNESS

 2

 3

 4       I, ALAN SCHWARTZ, do hereby declare under

 5       penalty of perjury that I have read the entire

 6       foregoing transcript of my deposition testimony,

 7       or the same has been read to me, and certify that

 8       it is a true, correct and complete transcript of

 9       my testimony given on February 11, 2022, save and

10       except for changes and/or corrections, if any, as

11       indicated by me on the attached Errata Sheet, with

12       the understanding that I offer these changes and/or

13       corrections as if still under oath.

14         _____ I have made corrections to my deposition.

15         _____ I have NOT made any changes to my deposition.

16

17    Signed: _____
                ALAN SCHWARTZ
18

19    Dated this _____ day of _____ of 20____.

20

21

22

23

24

25
```

```
 1               C E R T I F I C A T E

 2

 3    STATE OF NEW YORK      )
                             )   Ss.:
 4    COUNTY OF NEW YORK     )

 5

 6         I JEFFREY BENZ, a Certified Realtime Reporter,

 7    Registered Merit Reporter and Notary Public within and

 8    for the State of New York, do hereby certify:

 9         That the witness whose examination is hereinbefore

10    set forth was duly sworn by me and that this transcript

11    of such examination is a true record of the testimony

12    given by such witness.

13         I further certify that I am not related to any of

14    the parties to this action by blood or marriage and that

15    I am in no way interested in the outcome of this matter.

16         IN WITNESS WHEREOF, I have hereunto set my hand

17    this  14th  of  February  , 2022

18

19    _____

20    JEFFREY BENZ, CRR, RMR

21

22

23

24

25
```

183

```
 1                          ERRATA SHEET

 2      Deposition of: ALAN SCHWARTZ
        Date taken:  FEBRUARY 11, 2022
 3      Case:  SEC v. RIPPLE LABS, INC., et al.

 4      PAGE   LINE
        _____ _____   CHANGE:  _____
 5                    REASON:  _____

 6      _____ _____   CHANGE:  _____
                      REASON:  _____
 7
        _____ _____   CHANGE:  _____
 8                    REASON:  _____

 9      _____ _____   CHANGE:  _____
                      REASON:  _____
10
        _____ _____   CHANGE:  _____
11                    REASON:  _____

12      _____ _____   CHANGE:  _____
                      REASON:  _____
13
        _____ _____   CHANGE:  _____
14                    REASON:  _____

15      _____ _____   CHANGE:  _____
                      REASON:  _____
16
        _____ _____   CHANGE:  _____
17                    REASON:  _____

18      _____ _____   CHANGE:  _____
                      REASON:  _____
19
        _____ _____   CHANGE:  _____
20                    REASON:  _____

21      _____ _____   CHANGE:  _____
                      REASON:  _____
22
        _____ _____   CHANGE:  _____
23                    REASON:  _____

24
        Signed_____
25      Dated_____
```

184

Transcript Word Index

[& - 3:39]

[3:51 - agrees]

3:51
180:6,9
3:52
181:5,6
30
12:20 104:21
31
153:12
32
105:7
33
106:5
34
121:2
35
25:5 26:16 110:15 111:2,23
112:4
37
44:2
38
107:20
39
108:11

4

4
5:8,10 7:23 16:14,17 29:7
38:20,23 63:8,18,23,25
64:5 147:4 151:4
40
25:5 26:16
400
3:4
42
110:20 111:2,8,12 112:10
46
42:18 109:13
47
42:18

5

5
5:12 9:22 38:20,23 55:13
55:22,24,25 56:5,9,13 57:6
57:11,22 147:4 150:16,17
168:16 170:20
50
172:13
50,000
25:20
500
22:21,24
55
5:12
56
113:8

57:52
71:12

6

6
5:4 60:13
63
5:10
65
16:19
68
117:24 118:7
69
120:9

7

7
59:16,19 60:9,14,16 64:4
700
23:1
71
122:3,11,13 123:3
72
123:18
75
123:23 125:15

8

8
5:14 57:10 69:6,7 103:9,14
120:1,4,8,13 163:18 170:21
172:6
85
86:18 129:5 170:21 171:3,7
172:20
86
129:22
89
131:12,19

9

9
5:15 57:10 72:3,21 77:16
77:21,22 125:10,12,14,19
126:8,10 128:2,13,19
9.3
128:19
9:13
2:7 6:3
90
144:23 145:2,8,11,21 146:7
146:8
919
2:5 3:19 6:10

a

a.m.
2:7 6:3

ability
85:5,9,18,22 86:4,6
able
22:1 66:9 153:20 170:9
absence
67:12 68:11 94:4 111:7
absent
43:8 110:17,22 151:1
access
40:1,7,9,19
accredited
13:22 119:16
accuracy
32:24
accurate
7:4 34:3,4 35:18,25 69:3
147:23
accurately
33:9 35:2,12
achieve
167:3 175:2
acknowledges
151:9
acquire
126:16
acquired
82:24
act
11:8 76:22 128:25 179:18
acting
32:22 57:13 122:20
action
91:13 104:7 183:14
actions
65:23 72:6,6,10,17,18 85:4
87:25
activities
145:4
activity
132:18,22 133:21 134:4
actual
87:7 126:15
add
62:16 117:6,21 121:6
122:12
addition
54:12 56:17,22 173:1
additional
21:23
address
49:9
addressed
51:24
adds
55:7

adhered
124:21
adopting
126:23
affect
66:11,16 85:18 88:6,12,12
89:5,12 102:7 122:1 135:21
affirmative
24:18
afraid
131:23
aftermarket
72:7 73:23 79:3,4
aged
13:6
agent
154:24
ages
13:7
aggregate
152:3
ago
7:11 14:11 26:17
agree
97:19
agreed
109:15
agreement
5:16,17,18,19,20,21,22,23
37:1,6 47:13,16 97:8
107:11 111:21 113:9
115:12 116:8 118:1 121:14
122:6,17 125:19 131:14,19
131:20 132:19,24 133:5,9
138:5 139:2,4,5 142:7,10
142:14 143:17 144:15
145:8 147:13,23 148:9,15
149:10,16 150:16 151:22
151:23 152:10,24 156:20
156:23 157:24 158:2,3,14
158:15,20,21,23 159:9,25
160:3 161:3,11,20,23 162:1
162:11,20 163:6,10 164:9
165:5 166:1,5,20 172:11
173:3,9,12 177:1,6,10,16
177:22
agreements
106:3,9 109:3 141:1,2
144:13 152:11 157:1 158:1
158:12,13 159:18 160:9
162:4,6,16 163:7 164:4,13
164:18 165:2,9 168:9,14,18
168:25 169:2,8,12 170:12
173:6 178:11
agrees
115:23 116:4 128:14

[agrees - basis]

agrees (cont.)
132:16 152:2
al
5:11 6:5 63:22 184:3
alan
1:13 2:4 5:2,8 6:4,15 7:2
16:16 131:3 182:4,17 184:2
algorithm
152:4
allegation
21:7
allegations
9:14 167:8,14,22 175:23
176:2
alleges
167:2 175:1
alleging
91:14 103:15
allow
118:10,15 128:23 171:9,25
173:12
allowed
17:23 86:23 108:6 135:2
allowing
27:17 119:19
allows
108:7
ambassador
170:7,10
ambiguous
44:11,15 92:3 101:15
amend
175:6,20
amended
20:6,24 21:1 167:1,12,14
167:19 174:25 175:23,25
176:2
americas
4:9
amount
44:18,19 49:21 67:2 118:16
119:3 144:16
amounted
64:13
ana
4:15
analysis
10:6 26:11
analyzed
54:7
analyzing
26:18
answer
7:25 8:6,17,25 12:3 13:18
15:1 16:24 19:2 21:15,20
24:16 25:11,12 27:17 28:3

answer (cont.)
28:15 30:15,18 33:13 36:15
41:22 44:25 45:9 48:7,10
48:16 50:18 52:1,2,16
65:21 68:19 71:8 74:5,16
74:25 75:15 79:4 94:17
98:20 104:10 112:20
114:13 120:24 121:1,3
122:10,14 132:14 134:3
136:2 140:10,15 143:18
153:24 171:6,19
answered
35:19 39:12 48:18 49:5
50:10 99:2
answering
8:13 24:2,4
answer's
94:16
anticipates
61:14
anybody
30:9 51:18 52:17 76:20
178:6
apologize
60:14
appear
6:12 44:3,3 46:24 47:1
48:22
appearances
6:12
appendix
49:24
apple
80:7
apples
80:6
applied
53:12,14
applies
102:23 103:1
apply
54:1 97:9
applying
14:24 54:3,7 93:25
approach
90:14,19,22
appropriate
76:7
appropriately
34:9
approximately
25:20 34:24
approximation
23:11
arbitration
9:5

areas
9:10 14:15 154:6
arrangement
179:3
art
65:19
arthur
168:11 169:3,25 173:7
article
46:11 102:23 103:9,14
asked
35:7 50:23 51:5 57:16 94:3
96:10 116:12 122:20
124:13 134:3 135:8 138:16
168:23 171:16
asking
60:20 61:4,7,16 74:16 76:4
76:10 78:22,23 79:2 83:4
94:18 95:6 121:2 140:13
147:18 153:8 171:21
asset
38:10 124:11 132:8,12
136:25 137:1 161:3 172:13
179:6
assets
16:3,6 77:5
assist
16:22
assisted
17:25
associated
83:23
assume
19:14 59:15 62:3 74:13,14
75:20 84:11 95:9 122:22
125:6 135:8,16,17 171:7,21
181:2
assumed
43:16,18 50:20
assumes
83:22
assuming
75:22 136:18,20
assumption
71:20
assumptions
23:21,24,25
attached
57:11 113:5 132:23 133:4,6
133:9 182:11
attention
43:2 161:21
attorney
8:7 14:10 17:25 20:5
attorneys
6:12 17:8,10 18:2,4 32:22

attorneys (cont.)
32:23 33:3 35:7,10,24 36:3
39:6,9,11,24 40:11 138:8
138:13
attracted
64:10
authentication
147:18
authority
163:24
authorized
164:6
available
137:3
avenue
2:6 3:19 4:4,9 6:10
avoid
76:6
aware
28:18,20 69:16 108:22
109:2,4,12 115:4,7 121:18
121:21 124:10 137:2,8,10
167:1,6 174:25 175:5,22
azimo
5:18 148:9,15,24 149:1,2
149:10,16,18 150:3,7,10,16
150:19,25 151:9 152:12,13
152:18,24 158:2,14,20,21
159:1

b

back
33:18 34:19 35:6 44:17
51:14 56:18 63:16 77:16
86:14 97:13 107:8 109:11
126:6 128:2,2,5,8 131:8
138:24 147:20 152:12
158:13 174:2 180:8
baker
4:17
bankruptcy
9:11
bar
13:19,24
based
8:7 101:22 134:9 135:10,24
bases
19:4
basically
23:2 29:11 32:19 47:23
basing
153:18
basis
61:1,17 118:18 122:8,15,17
136:7 152:2 165:22 166:9
174:17

bates
151:6
bay
10:11
bear
66:25
beers
72:22 73:4,8,11,14,16 74:7
74:7,15
beginning
78:1
begins
60:17 64:6 77:18
behalf
77:9 180:14,19

███████████████████

beliefs
11:7
believe
16:8 73:15 79:21 100:24
101:4 105:23 108:14,18
126:9 175:22
belongs
34:9
ben
6:22
beneficiaries
128:20
beneficiary
47:5 50:15 81:1,11,16
benefit
77:19 79:20 80:24 81:8,15
82:6
benjamin
3:5,20
benz
1:24 2:7 6:7,17 183:6,20
berg
3:13
best
17:19 23:11 76:18,23
175:17
better
114:3
beyond
9:3 15:16 51:21 61:5 87:5
89:11,16 100:14 124:9,23
bf
5:21 161:23,25 162:10,20
163:6,10 164:9 165:5
big
10:10 42:25
bigger
32:1

billed
25:18 26:5
billing
25:23
billion
170:20
bind
154:24 155:18
binder
43:4
binders
23:3,4,5,6,8 43:1 133:13
birth
13:11
bit
13:18 52:11 53:3 64:9 95:4
bitstamp
5:15 124:5,10 125:5,7,11
125:14 126:13,15 128:1,13
152:4
bjleb
3:21
blanks
121:15,16
bless
156:1
blockchain
15:25 37:16
blood
183:14
bmw
72:22 73:2 74:18,18,19
boards
12:23,24 13:3
bonilla
4:5 180:22
bonus
109:20 110:3
bonuses
109:16 160:14,19 164:22
165:1
border
100:17 127:7,14,15
bought
101:5
boxes
28:8
bradley
1:7 4:3
brady
6:6
brands
13:2,8
break
26:15 52:17,18 63:11
106:25 107:1 171:13

break (cont.)
173:21
breaks
165:13
britto
168:11 169:3,25 173:2,7,12
173:13,16
broad
22:8
broader
160:4,14 164:10,16
broker
98:23 105:18 106:18
bulk
39:22
bullet
104:22 110:16,21 111:1,7
111:12,22 123:2,17 129:7
129:15 146:15,22,23 153:5
153:12,21
bunch
45:16 129:7
business
11:8 31:21 32:3,9 69:2,10
69:20,22 79:22 101:19
115:10 124:7,14,15 125:1
159:15 162:13 169:19
177:12
businesses
124:7,14 159:17 162:15
buy
80:11,12 115:3 152:18
163:14 172:13
buyer
43:18 47:2,5,13,14 48:21
65:2,6,14,17 79:19 83:5,10
83:25 89:5 101:3,3 155:7
155:10
buyers
46:23 50:12,21 62:9 68:21
69:12 85:24 86:18,20 124:7
124:8,14
buyer's
79:20
buying
74:12 81:24 102:8 112:25
buys
83:21

---
c
---

california
90:8,16,19,22
called
6:16 10:24 162:11 178:18
calls
18:2

canon
92:13
capital
10:24 115:1,4,5,7,14
capital's
115:10
car
117:6
care
52:19 75:7 80:6 146:4
careful
27:18
carefully
76:6
cars
74:19
case
1:6 9:14 10:8,12,13,23 11:3
11:7,11 15:5 16:5,6,14
18:24 19:21 20:5,22,25
24:7,11,24 25:19 26:3,6
42:11 55:15 56:24 75:22
85:11 91:3,22 92:3 93:25
94:2,5 96:8,20 102:22
111:11 116:10 117:19
135:17,23 138:11 141:6
142:23 166:17 167:2
171:24 175:1 184:3
cases
9:8 12:7 14:24 53:15,17,24
53:25 54:1,3,6
cash
174:16
categories
31:1,3,15,18,22 35:8,10,25
39:1,13,18,23 44:20,24
45:1,2,15,22 46:20 47:24
48:1,9,25 49:3,4,15,20,23
50:1 51:4,16 158:6,17
categorize
31:7 45:3 46:6
categorized
33:9 35:3
category
33:6 45:11 85:1 113:23
cause
102:2
caused
135:9,18
cayman
10:24
center
141:2
cents
170:21 171:3,7 172:20

[certain - constitute]

certain
13:22 45:10 47:1 109:16
120:25 123:9 150:19
155:14 158:22 170:5
certainly
45:14 172:7
certificate
182:1
certified
2:8 183:6
certify
182:7 183:8,13
cgsh.com
4:6
chain
155:8
challenges
167:8 176:2
challenging
167:11,13
chance
8:1 78:4 148:13
change
134:9,14 184:4,6,7,9,10,12
184:13,15,16,18,19,21,22
changes
182:10,12,15
characterization
11:10
charged
26:2 160:24 161:5,9
charging
172:6
charitable
165:19 166:10,14,22
check
29:4 99:17 106:23
checked
42:17
chermak
4:16
choosing
51:4,10
christian
1:8 4:8
circuit
120:23
circumstance
91:18
circumstances
59:22 60:5,22,23 84:1,6
116:23
cite
47:24
cited
7:22 8:5 23:15 25:9 30:2

cited (cont.)
46:14
citrus
93:13
civ
1:6
claiming
91:23
clarify
19:12
classified
80:22 108:18
clause
90:23 91:4,7 139:8,10
140:7,14 153:9 154:8
clauses
90:20 139:21,25 140:2,9,21
141:7 153:17,17
clear
18:11 39:17 147:14 166:19
cleary
4:4
clients
14:7 178:1,1
cliffs
13:1,7
closed
60:7
code
37:15 103:5
collapsed
58:5
collection
74:3
combination
11:8 67:19,25 122:19
coming
44:23 49:2,25 50:7
commencing
2:7
commerce
32:13 127:3,5
commercial
58:8 59:22 60:5,6,21,22
89:10,15 94:9 95:1,15
100:22 103:5 105:22
114:22,25 116:23 128:9
132:4 140:8,12 142:20
148:21 157:3 158:19 160:4
160:10,15,20 162:7 164:10
164:16 172:18 176:23
commercially
100:18 110:11 150:25
157:17
commission
1:4 3:4 5:11 63:22 101:8,11

commission (cont.)
101:18,22,25 102:9 134:25
commissions
102:1
commitment
50:12
common
15:11,17 55:5,7 70:20
89:10 92:15 93:4 153:17,18
153:22
communicated
39:23
communicating
32:10
communications
27:19,22 122:24 154:1
companies
10:4,10 32:5 56:25 57:14
76:8 86:10 87:6,19 88:1,14
88:17,19 97:13 166:14
174:15
company
32:8,18,20 47:3 53:6 63:6
65:2,8,14,17 76:13 77:8
85:9,21 86:9 87:11,21 98:5
149:1 159:24 166:13
company's
75:2 76:23,25 77:4 83:21
89:17 169:18
compare
72:17 110:20 146:12
compensated
136:7 172:16
compensation
48:1 49:2 145:3,6,12
155:23 156:3,9
competitive
89:21
complaint
20:6,24 21:1,7 38:1 72:13
167:1,18,19 174:25 175:23
175:25
complaint's
167:12,14 176:2
complete
18:22 90:24 182:8
completing
25:2
complicated
13:18 140:25
component
59:5
components
44:13
computer
37:15

conceivably
111:16
concept
75:1,5 82:16
concerned
72:7
conclude
138:3 152:1
concludes
181:4
concluding
122:16
conclusion
62:17 68:25
concrete
81:5
conduct
24:10 80:25 81:15 158:22
confer
70:3 180:4
confirm
32:16
conflicts
76:6
confused
95:4
confusing
158:10
connecticut
10:25 13:22,24
connecticut's
11:8
connection
8:24 21:22
connor
4:11
consider
14:19 19:19 20:8 37:6,23
53:11,16 54:2,6 58:3 72:16
91:10 93:15 115:13,21
141:25 156:15
consideration
108:1 121:12
considered
19:9 20:3,6,10,24 37:25
44:10 56:10 58:10 60:18,21
61:23 94:6
considering
91:5 94:23
consignment
106:6,8,9,12,19
consistent
44:8 136:6
constitute
66:23 117:9,13 139:4

[constituted - court]

constituted
114:25
construct
141:2
construction
141:1
constructions
11:17
construed
58:17
consultant
9:20
contain
15:16 18:17,22 19:4 44:10
48:19 49:12 51:8 84:19
103:7 104:14 123:4,7 129:9
129:14 130:4 140:9,21
141:6,14 144:19 148:3
153:5 154:12,19 156:3
161:12,17 165:5,10 168:2,2
170:13 176:6 178:11
contained
24:7 44:15 64:18,21 119:2
119:19 164:5 169:12
containing
40:20 97:8 118:22 119:8
contains
56:9 103:9 118:1 139:3
146:14
contemplated
179:3,15
contemplates
123:11
contents
30:7
context
60:6 141:3
continue
99:19,21
continued
84:14 131:10
continuing
92:9
contract
5:25 14:17,24 15:6,17 34:9
37:16 42:1,18,18 43:9,23
44:2,4 45:21 47:1,4,25,25
47:25 48:19 50:10,11,13,14
50:16,24,24 51:21 53:22
55:9,9 56:20,20,23,23
57:25 58:1,2,11,14,15,16
58:20 59:5,11,12 62:11,14
62:18,19,25 64:19,22 66:9
66:18,23 67:7,14,21 68:1,7
68:13 76:18 82:2,13,16,19
83:17,18 84:13 85:12,23

contract (cont.)
86:3,16 90:24 91:11,12
92:14,15,20,22 93:25 94:7
94:7,24 95:2,8,11,12,14,14
95:25 96:3,5,22,24,25
100:1,5 101:2 105:2,3
106:11,12,18,19 108:6,20
111:5 112:2,11,24 113:11
115:13,21,22 116:3,3 117:1
118:10,15 120:25 121:7,9
122:23 123:10,22 124:24
126:9 128:13,14,24 129:16
134:22,24 135:24 137:24
138:11,18 140:25 141:2,25
143:10 144:22 145:6
146:20 150:14 152:21
154:2,4,5,7,10,18,25
155:24 159:4,5 161:15
165:24 170:7 173:16
174:18 175:7,15 178:22
contracted
141:22
contracting
143:13,24 144:8 152:6
157:6,9
contracts
9:12 15:10,11,15 19:23
21:23 22:2,10,24 23:1,6,9
23:12,15,18 25:8,15 26:9
26:18,21,23,25 27:3,8,10
27:25 28:6,10,11,21 29:23
30:2,7,10,22 31:1,7,8,10,19
31:22,23 33:2,5,7,10 34:6
34:10,13,21 35:1,8,10,25
36:6,20 37:12 38:24,25
39:5,7,11,15,16,19,20,22
40:1,2,11,13,14,18,20,21
40:24 41:1,3,5,19 42:3,7,12
42:16,20 43:13,14,17,20
44:2,7,9,13,19 45:3,11,16
45:25 46:6,14,24 47:2,6,17
47:22 48:14,22,23 49:10,12
49:15,21 50:2,4,5,6,19 51:2
51:3,3,7,15 52:3 54:6,8,9
55:5,6,11 56:3,19 57:1 58:1
58:8,9 59:8,9 60:18,25
61:18 65:1,6,13,16 68:22
68:25 77:10 81:2,11,17
82:10,12,17 83:7,10 84:18
84:22,25 85:3 86:19,23
87:2,3,22 89:25 90:2,7,12
90:17 91:4,6 93:4,11,13,24
94:8,14,25 95:5,19 98:7,10
98:11,22,23 99:14 100:10
100:21 102:11 104:13,17
104:23 105:8,11,12,17,18

contracts (cont.)
105:21 106:6,7,9 107:18
108:12,18,20,23 109:2
110:18,23 111:9,14,14,20
112:6,14,16 113:7,14,19,22
114:4,7,9,10,16,20,21,21
114:25 115:16 116:12,13
118:21 119:1,7,12,14,18,24
121:1,1 122:4,9,14,16,21
123:4,6,9,12,24,25 124:1,2
124:8 129:8,13,23 130:1,3
131:13 132:2,3,4,10 134:9
135:2 137:19 138:4,9,14,21
139:1,3,11,20 140:1,5,8,11
140:13,16,19,21,23 141:1,5
141:10,13,21 142:4,18,19
142:19,24 144:18 146:20
148:2,19,20,21 151:12
153:4,11,14,16,23,25
154:11 155:17 156:3,10,13
156:16 157:2,3 162:7
164:15 174:8,18 176:6,19
176:22,23 178:24
contractual
48:20 52:1 67:5,6,12,13,19
67:25 68:5,6,11,12 76:17
124:19 161:1,2 169:22
contractually
85:4
contradicted
89:8
control
73:11,19,20,23 74:22 87:6
88:21 89:11,16,20 133:22
134:5
controls
73:16 103:18
conversation
166:16
conversations
19:13,16,17,20 32:7
convert
146:3
convey
68:23
copies
41:2
copy
5:18,22 40:22 55:25 63:25
120:8 125:14 131:18
142:10,14 147:23 148:9,14
156:22 159:9 161:25 166:1
166:4 177:9
corners
15:16 51:21 90:14 91:6
124:23

corp
10:24 75:14
corporate
9:11 12:22,24 75:13,14,16
76:16
corporation
65:20
correct
12:12 18:15 20:7 33:20,21
42:21 57:9 61:12 101:22
114:1 136:16 138:22
167:19 170:22 175:20
182:8
corrections
182:10,13,14
counsel
28:2,12 31:7,11 32:7,10
49:23 51:1,5 107:13 122:18
122:20,21,22,25 129:25
130:4 132:11 138:19 141:6
180:4,17
count
23:10 120:24
counterparties
100:1,5 155:3,19 159:18
160:19 161:8 164:17 165:1
169:8 174:21 176:11
counterparty
94:9 95:1,13,16 97:2,7,10
97:21 99:9 100:22,23 101:8
101:9,12,12,17,24 102:12
105:22 108:24 109:5 111:4
111:25 114:23 118:22
119:9,15,19 124:3,15 130:6
132:5,12 135:2 141:16
142:21 146:17 148:22
154:14,20 155:4,13,15,16
157:4 160:11 161:18 162:8
162:10 164:5 165:11
166:21 170:14 171:25
176:7,24
counterparty's
97:2 101:19,21 102:2,5
countries
152:17
county
183:4
couple
7:10,11 26:17 33:2 119:12
course
41:25 45:24 51:14 77:25
court
1:1 6:7,13 10:12,15,16,17
11:11,15,16,19 12:1,5 14:7
53:14 54:3,7,17 56:10
57:25 58:3,5 59:5,11,15

[court - digital]

court (cont.)
62:25 63:2,3 85:11,14,17
85:19 91:5,9,11,17,25
92:17,18 93:25 99:2 103:21
103:25 104:3 120:6 147:17
175:8,11
courts
14:23 15:5 53:12,19 54:14
court's
5:10 53:5,8,20 54:13 55:2
63:21 64:1 87:12
▮▮▮▮▮▮▮▮
create
48:20 59:9 61:24 69:11,12
82:5 146:16 179:4
created
39:13 52:2 69:14 95:8
123:13
creates
91:12 111:3 154:8
criteria
46:20 48:9
critschard
4:12
crop
86:25
cross
100:17 127:7,14,15
crr
1:24 183:20
crypto
19:14
cryptocurrencies
16:3,6 32:12
cryptocurrency
32:5,19 38:11 69:11 79:10
96:3,24 149:3
ctd
4:1
currency
79:11,11,14,16 80:8,8,11
80:12,13,15,20,22 84:16,16
96:12 109:6 125:20,24
126:14,17 127:16,17,19
151:10,13,18
current
132:17
currently
13:14
curve
136:17
cus
168:1

custodian
162:24
custodied
165:7
custody
5:21,22 161:23 162:1,4,10
162:16,20 163:6,7,10,11
164:4,9,13,17 165:2,5,9
166:1,4,5 168:4
custom
24:14
customary
47:13
customer
84:13 162:22

d

d.c.
3:11 4:5 10:14,16
daily
118:18 120:12,20 121:18
121:25
daphna
3:6 63:7
data
19:9,25
database
40:20
date
6:2 11:4 13:11 16:18 27:5
55:23 63:24 100:20 114:11
114:11 120:5 125:13 128:4
131:22 142:8 148:10
156:21 157:25 161:24
166:3 177:3 178:23 184:2
dated
5:8 16:16 182:19 184:25
day
182:19
de
72:22 73:4,8,11,14,16 74:7
74:7,15
dealer
98:23 105:18 106:18
deals
127:25 158:25
debevoise
2:5 3:18 4:16 6:10
debevoise.com
3:21
december
36:19
decide
91:25
deciding
49:22 56:10 91:11

decision
5:10 53:5,8,12,14,20 54:13
55:2 63:21 64:1 87:13 94:1
declaration
39:2
declare
182:4
decline
80:1
declining
79:8
decrease
137:3
deep
88:5
defendant
3:9 4:3,8 156:8,12,15
180:20,23
defendants
1:9 24:10,18 167:3
defense
104:6
defenses
24:18
define
82:12 92:19
defined
76:16 82:14 97:20,21
144:15 150:22 177:15
defines
145:6
definitely
90:17
definition
103:11,12 104:8
delaware
89:25 90:4
deliver
144:23
delivery
123:14
demand
88:10,12 89:4 102:8 108:15
108:22,25 109:4 136:18,20
136:24
depend
18:19 70:3 89:22 102:5
117:16,16 140:22 141:3
depended
85:13
depends
80:5 84:14 89:14
deployed
37:15
deployment
144:16

deposed
8:15,23
deposition
1:12 2:4 6:4,9 7:7,19 8:8
181:5 182:6,14,15 184:2
depositions
9:3 41:15,16
describe
40:9 113:9
described
44:20 72:11 81:16 83:17
90:2 102:11 166:12
describes
170:7
describing
125:4
description
5:7 55:7
details
170:9
determination
61:22 82:18 93:1,4
determine
53:21 58:10 103:22 114:20
124:1 132:2 142:18 148:19
157:1 162:6 176:21
determined
39:4 93:7 115:11
determining
57:24 59:10
develop
175:12
development
109:16
diamonds
73:3,12,16,19 74:7,9,13,15
difference
96:4 116:25
differences
138:17,21
different
45:21 46:5 47:21 48:14
90:14 94:18,21 95:21 96:13
98:10,22 105:11,17 111:13
111:20 115:22 116:3
122:22 128:13 140:4 143:9
158:5,7,17,18,25
differently
46:3
difficult
46:2
difficulty
27:2
digital
16:2,6 38:10 124:10 127:16
127:17,19 132:8,12 161:3

[direct - exact]

[exactly - figel]

exactly
12:3 20:13 84:20
examination
5:3 6:21 131:10 183:9,11
examine
94:8,25
examined
6:19 131:6
example
39:14 42:18 44:5 46:25
50:9 64:12 73:4,7 74:1
95:10 112:25 113:10
115:12 136:5 139:22 154:2
examples
72:24 139:23
exceeded
109:18
exchange
1:4 3:4 5:10 63:22 80:9
97:20 108:1 123:9 124:11
127:17,17,23,25 128:15
132:9,12 150:7,19
exchanged
174:16
exchanges
127:22
excluded
9:25 10:5,20 11:15,20,24
excuse
128:18 137:9 174:11
execute
97:7
executed
100:10 109:17 128:3
executive
155:23 156:2,4,9
exemplars
39:1,5
exemption
15:21 179:17
exercise
112:10 172:19
exhibit
5:8,10,12,14,15,16,17,18
5:19,20,21,22,23,25 16:8
16:13,17 18:12 19:25 20:2
20:4 33:16 34:5,9 36:19
55:13,22,24,25 56:5,9 57:6
57:11,12,22 63:8,18,23,25
64:4 120:1,4,8,13 123:7
125:10,12,14,19 126:8,10
128:2,13,19 129:14,24
131:17,21,23,24 132:15
134:15 135:10,24 142:7,10
142:13 143:9 144:14 147:1
147:2,3,5,7,8,11,12,15,19

exhibit (cont.)
147:23 148:8,9,14,14 149:9
149:12,13,13 150:14 151:5
151:5,6 156:20,22 157:24
159:7,9 161:23,25 163:19
165:25 166:2,4 168:1,16,20
169:1,12,13 177:2,4,9
178:20,22,24
exhibits
5:6 17:13,20 33:7,9,17,20
34:3 35:2,14,17,21 36:6,12
36:20 40:2 52:6 148:11
exist
133:18
existed
57:25 71:14 100:14 128:6
existence
66:17 67:7,14,20 68:1,6,12
73:12,17,21 74:19,23
exists
58:11 59:6,11
expect
61:12,17 62:6,20,22 87:13
135:10,23
expectation
48:20 61:25 62:12 63:1
64:11 87:18
expectations
77:13 87:8
expected
62:23 64:14
expend
87:21
expert
5:8 9:11,13,20,24 10:4,7,20
10:23 11:18 12:6 14:17,19
14:22 15:2,24 16:2,13,16
24:23 26:5 45:20,25 53:11
53:13 73:8 78:17 88:25
89:8 92:25 97:5,12 140:11
167:24
expertise
14:15 91:20
experts
24:21
explicitly
83:10
express
18:23 66:10,14 129:24
expressed
12:1,2,4 19:9 21:14
expressing
19:21
expressly
99:9

external
89:11,16
extracontractual
91:10 173:17

f

facilitate
127:25 143:14,21 152:7
177:22
facility
127:7
fact
9:17 74:11,16,17 75:15
112:13 135:18 136:24
152:9 157:8 160:2 164:2
factors
87:5,25 88:11 89:11,16
102:7
facts
19:8,25 56:10,15
factual
61:1,11,16
fair
55:8 171:20
fairly
67:1
faith
75:7 76:12 77:4
fall
45:11 78:9 79:12
falls
136:25
familiar
75:1 97:24 108:15
far
25:18 70:8 137:23 172:9
feature
89:10
features
47:22 48:14 54:6
february
1:14 2:6 6:2 36:18 100:11
182:9 183:17 184:2
federal
9:14 10:15,17 14:20,24
15:2,6,10,15,21 58:11,17
58:21 66:18 67:7,14 68:13
82:14,19 91:14 93:3,5,7
103:13,16,17,20,22 104:3
105:4 128:23 179:22
feel
42:8
fees
109:16
fell
113:23

fiat
84:15 151:13,18
fiduciary
75:2,9,10,23 76:4,5,11,15
76:16 111:24 113:1,2,5
field
15:24 16:2 45:20 91:20
figel
3:10,11 7:14,25 8:6,10,13
8:17 15:1,12 16:24 17:2,22
17:25 18:3 19:1,6 21:15,20
23:22 24:2,4,16 25:10
27:16,21 28:3,14 30:15,16
30:18 33:12 34:11 35:4
36:13,15,22 37:2,8,17
40:17 41:21 42:5 43:25
44:25 45:5,13,23 46:7,16
48:3,7 50:3 51:6 52:8,16,20
52:23 53:23 54:10 55:16,19
57:2 58:4,12 59:7,14,23
61:3,8,19 62:1,13,21 65:3
65:18 66:3,21 67:10,16,22
68:2,8,18 71:4,12,16,23
73:13,22 74:4,10,20,24
75:12 76:1,14 77:1,6,23
78:1,13,21 79:9,15,24 80:4
80:16 81:3,18 82:7,21,25
83:15,24 84:4 87:9,15 88:3
88:15,24 89:18 90:15,21
91:16 92:4,24 93:6,19
94:11 96:9,16 97:4,11,22
98:12,19,25 100:7,15,19
101:1,14,23 102:4,14 103:2
103:19,24 104:9,19 105:5
105:14,19 106:1,14,21
107:10,16 109:1,8,23 110:8
112:19,22 113:15 115:19
115:25 116:6,18,21,24
117:10,15,21 118:19 119:5
119:11,23 121:8 123:19
124:18 125:3,25 126:20
127:9,20 128:10,16 129:1
130:8 132:13 134:11,21,23
135:5,12 136:1,13,22 137:5
137:13,21 138:15 139:13
141:18 142:25 143:11,15
144:2,11 145:5,14,25 147:6
147:9,14 148:6 151:2,14,19
152:8,14,20 153:15 154:16
154:22 155:5,20 156:6
157:7,20 160:6,16,25
162:21 163:3,16 164:19,23
165:3 167:16 169:9 170:16
171:5,12 172:3,21 173:15
173:22 174:5 176:5,13
177:24 178:8 179:11,23

[figel - gss]

figel (cont.)
180:14 181:1
figel's
17:15
figure
27:1 28:5,24
fill
170:9
filling
121:15,15
financial
54:8 104:7 159:23
find
50:12,15 51:5 62:11,25
81:10 111:8 123:21 125:7
146:19 153:20
fine
8:13 52:15 55:19
finish
48:16
finished
31:18
firm
7:16,17 17:15 23:5 27:22
96:1 115:5
firms
72:18
first
6:16 30:12 59:18 60:16,17
72:2 122:11,13 138:3
139:15 163:21 171:16
firsthand
30:6
five
9:7 110:16 112:17 146:22
flagged
43:2

florida
64:7 88:6
focused
133:2
follow
91:9 93:11
followed
109:10
following
39:25
follows
6:20 131:7
foregoing
182:6
form
40:15,16,18,22 42:16 44:2

formal
114:16,17
forming
19:9,18,20 20:25 37:7,24
45:15 54:2,4,5 72:16 93:15
142:1 156:16

forth
39:2 51:14 85:3 183:10
forward
58:19
found
11:16 59:6 111:19
foundation
166:12,12
foundation's
166:13
four
7:8,8 9:7 15:16 51:21 90:14
91:6 112:16 124:23 146:23
fraction
42:23 90:10
frederick
3:10
freeze
88:5
friday
1:14
front
16:9 63:19 131:18 147:9
159:7 178:20
full
28:17 41:10,11 59:18 60:16
60:17 69:6,7,7 72:3 90:11
99:7
function
102:6 112:24 113:7
functional
100:18
functions
69:25 70:1
fund
179:4,6,9,15,20,25
funding
165:20 166:11,23
furniture
13:2,8
further
64:9 131:6 180:11 183:13
future
18:18 84:14 85:12 87:16
178:1

g

gain
32:2 136:8
garlinghouse
1:8 4:3 180:23
garlinghouse's
156:9,13,16
garrison
4:9
gavan
3:12 18:5
general
32:4,16 49:3,4
generally
9:8 32:11 141:10
generate
88:20
generates
80:2
generating
101:21
gentleman
7:14
germane
31:2
getting
50:25 54:25 133:8
ggideon
3:15
gideon
3:12 7:14 18:5 30:16
gift
81:25
give
7:4 8:1,2,10 13:17 25:12
30:9,12,15,24 31:25 35:24
39:10 55:16 65:1,6,13,16
89:2 94:3 172:13 173:16
given
8:15 9:4 40:7,10,19,21 41:2
71:8 133:13 182:9 183:12
giving
48:10,11 58:24 81:25 94:5
172:12
go
27:4 29:2,10,18 38:19,20
43:3 51:10 86:17 92:6
107:2 110:14 113:8 123:23
126:9 155:22 156:18
173:23
goal
160:1 167:4 175:2
goes
89:20 136:18,21
going
13:17 33:3 39:21 44:17

going (cont.)
52:11,21,24,24 55:1 58:19
63:9,13,16 67:1 74:14
77:16 103:25 106:23 107:8
109:13 113:22 131:8
138:24 141:11 144:4
152:12 165:15 172:6
175:19 179:6 180:5
good
6:1,22 16:12 59:2 62:8
63:10 75:7 76:12 77:4
gottlieb
4:4
govern
58:8 82:17
governance
9:11
governed
90:3,7,13 93:4 94:9 121:14
governing
95:1,14 114:22 121:19
124:2 132:4 142:20 148:21
157:3 162:7 176:23
governs
89:25 125:19
gradillas
6:8
grant
11:11
grants
165:19 166:10,15,23
170:19
greater
64:14 110:3
greg
168:11 169:3,25
ground
10:5
grove
117:2,3,4
groves
60:24 61:21 85:25 86:15,17
86:24 93:13 117:8
grow
77:4
gsr
5:16 131:15,18,20 132:7,8
132:16,24 133:4 134:22
135:10,23 136:6 138:5
139:1 141:22,22 145:15,16
145:20
gsr's
135:22
gss
5:17 142:7,10,14 144:25
145:3,3,7,8,11,12,18,19,20

[gss - infer]

gss (cont.)
146:19 147:23
gss's
145:23 146:6
guardado
4:15
guess
8:22 40:4 48:24 49:19,22
50:25 73:25 117:6 139:24
153:24
guidance
53:19
guy
52:24

h

half
52:13
halfway
138:2
hamilton
4:4
hanauer
3:5,7 5:4 6:21,22 16:11
48:4,5 52:15 55:13,17 63:7
63:12 77:25 106:22 107:2
107:10,15 120:1,6 125:10
130:10 131:10 142:5
147:17 148:8 156:1 165:25
173:19,23 180:3,10,24
181:3
hanauer's
8:3
hand
9:21 121:13 168:9,10
183:16
handful
169:8
hansen
3:10 7:17
happen
140:1
happy
81:22
hard
8:20 10:3 23:16 40:22
harvest
85:9,22 86:1,4,7,24
haven
29:3,14,16,18
hear
76:20 99:3
heard
166:18
hedge
129:19

held
12:15 127:4
help
143:14,21,25 149:22 152:6
177:22
hereinbefore
183:9
hereof
57:12
hereto
57:11
hereunto
183:16
higher
100:25 105:24 145:13
hills
65:10
hold
97:13 162:23 163:25 164:6
179:6
holdco
168:10 169:3,18 170:20
171:9 172:16,19 173:2,6
holdco's
169:22
holder
38:16 77:13 95:25
holding
163:22 164:2
holdings
5:16 131:15,20 132:7
honestly
23:16
hope
76:21
hopefully
67:2
hoping
52:17
hosted
108:20 149:9,15 156:25
hour
25:21 26:2,16 52:11,13
53:3 106:23
hours
7:20 25:1,5,17 34:17
howey
5:11,12 53:6,9,15,16,20
54:1,3,7,13,14 55:1,5,6,8
55:21,25 56:3,11,19,24
57:25 58:7 59:6 60:18,25
61:11 62:10,19 63:6,22
64:1 65:1,7,10,13,16 68:22
85:3,5,8,9,11,18,21 86:2,9
86:10,13,13,15,19,22 87:3
87:5,6,10,13,16,19,19,21

howey (cont.)
88:1,14,17,19 92:17 93:13
93:18,25
howey's
86:12 88:13,21
huh
59:20 72:4 92:11 108:13
122:7 151:25 153:7 157:12
163:20
hundred
22:17 168:17 172:12,14
hundreds
21:25 22:11 34:6 53:25
54:1 74:13
hypothetical
82:1

i

idea
79:1 101:20 115:20 144:7
identification
16:18 55:22 63:23 120:4
125:12 131:22 142:8
148:10 156:21 157:25
161:24 166:2 177:2 178:23
identified
31:3 45:3 48:25 90:12
141:14 154:12,18 155:17
159:19,22 160:9 161:17
162:16 164:14,18 165:9,23
166:5 169:1 170:13
identify
19:8 21:17 26:20 45:12
66:9 112:15,16
iii
46:11
illuminating
45:8
imagine
45:17
immediately
146:4 171:10
immune
89:16,19
impact
20:21 110:7 165:20 166:11
166:17,24
impacted
66:2
impacts
102:17
implicit
76:17
important
140:6
importantly
63:5

impose
111:23
imposed
120:19
impossible
155:1
inaccurate
18:9
inaccurately
43:2
incentive
108:12,19 148:19 150:21
153:4,11,14 154:8,11
incentives
108:24 110:12 151:1
157:19 160:14,20 164:22
164:25
incentivize
77:11 109:20,24 145:12
include
9:5 76:24 77:3 111:12
included
26:17 57:5 66:10
includes
25:6,8
including
120:18 151:10
inconsistencies
22:9
inconsistent
134:12,14
increase
75:24 76:12,24 82:6 84:12
109:21 135:9,14,18 136:11
167:5 175:3,14 177:14,17
increased
81:20,21
increasing
110:6 136:5
independent
83:18 88:13 126:22 127:11
142:23
index
5:1
indicated
182:11
individual
24:10 167:2
industries
13:1,9 69:24 70:18 153:23
industry
24:14 32:17 69:25 87:4
89:1,2,7,8,22 140:22
infer
112:13 126:21 134:24
137:22,23 143:16 158:20

[infer - know]

[know - management]

know (cont.)
160:7,8,12,13,18 161:4,7
162:14,15,19 163:1,17
164:1,12,21,24,25 167:17
168:19 169:10,21,25 170:4
171:6,19 172:17 173:18
174:20,23 175:13 179:25
knowing
136:3
knowledge
17:19 18:10 30:6 72:25
73:9 89:7 100:8 124:20
126:15,22 127:11,18
165:12
kyle
4:16

l

labs
1:7 3:9 4:15 6:5 184:3
lack
153:18
lacks
129:24
land
55:8 56:20,22 58:1 59:12
62:18,24 64:18 85:6 86:1,3
language
47:7 49:9,13 50:15 51:8
68:24 78:17 87:1 123:15,22
147:1
lapse
13:20 14:1,3
large
23:17 41:24 133:13
larger
28:12,16 110:1 160:10,20
largest
18:3
larsen
1:8 4:8 180:19
law
9:14,21 12:11 13:13,16,22
13:25 14:3,5,17 15:11,17
45:21 55:5,7 62:17 76:17
89:25 90:4,8 92:15,25 93:4
laws
14:20,25 15:3,7,10,15,22
58:11,17,22 62:15 66:19,24
67:8,15 68:14 82:14,20
91:14 93:3,5,8 103:13,16
103:17,20,22 104:4 105:4
128:23 179:22
lawsuit
6:24 8:16,24 9:4 12:9 36:8
36:11 46:11 103:15,21

lawyers
44:23 54:24
lays
163:10
lead
32:14 135:10
learn
124:13
learned
32:9,11,11,12 166:16
leases
10:10
leave
13:5
leb
3:20
led
31:21 61:11 62:19,22 87:13
left
14:13,13
legal
77:7 91:25 95:7 96:7 104:6
151:10,13,18
legally
80:22
length
121:18
lessons
58:7
letters
101:7
level
77:9
library
54:24
license
13:25 14:3
licensed
13:13,15
life
143:1
limine
11:12
limitation
118:16 120:20 121:19
limitations
120:12 121:25
limited
5:16 15:11 131:15,21 132:7
limiting
119:2,8,14
line
120:11 184:4
linked
110:1

liquidity
71:3 108:15,23,25 109:4
list
49:24 104:12,22 110:16
123:2 129:7,9
listed
19:25 22:14 33:7 34:9,10
35:1 36:6 37:12 40:2 73:8
123:6 129:13,15,23 133:10
153:12,21
listing
112:5,11 146:22
lists
34:5
litigation
5:13 9:20 54:14 55:21
litigator
14:16
little
13:17 52:11,22 53:3 64:9
95:4 173:21
llc
159:12
llp
3:18 4:4,9
loan
5:20 51:3 157:24 158:1,7
158:12 159:9,18 160:3,9,18
160:24 161:3,5,8,11,11
loaned
161:13 163:2
loans
48:1 49:16 51:18 159:21
161:16
lock
120:12,20 121:4,18,25
logical
52:12
logically
140:4
long
7:18 14:2,4,11 26:11 58:23
140:17 171:15
longer
52:22
look
20:2 30:25 44:4,6 45:15
57:25 66:5 71:25 84:8,23
99:5 103:21,25 104:3
117:24 129:5 131:11
137:25 146:10 149:23
151:4 153:2 163:18 165:16
168:6,20 178:15
looked
21:23 29:7,8 34:12,21
35:11 43:20 46:23 47:6,9

looked (cont.)
84:22 95:5 114:19 126:18
132:1 133:7,15,17 142:17
148:18 156:25 158:2,14
162:4 169:14
looking
42:6 43:6,10 48:19 52:2
59:12,13 114:14 151:8
159:25
looks
20:4 146:14 168:16
lopez
4:5
lose
136:8
loss
83:14,22 84:3
lot
22:16 29:19,21 34:12 55:15
58:25 73:19 89:20 113:17
124:7 133:17 153:25
168:22
lower
54:13
loyalty
75:7
lunch
107:1 130:10
luncheon
130:14

m

m&a
140:23
major
96:4
majority
69:16 73:11,16,20 74:19,22
90:6
maker
70:21 107:18 108:1,2,7
142:24 143:10,19 146:20
148:2,4
makers
143:13,24 144:8
maker's
108:8
making
61:20 108:2 142:4,17
143:21 144:18,22 145:4
154:7 166:13,21
manage
76:5,18
management
12:18 75:2 76:11,22 89:12
89:17

managers
77:2,9,10
manager's
75:7

marked
16:17 55:21 63:23 120:3
125:11 131:21 142:7 148:9
156:20 157:24 161:23
166:1 177:2 178:22
market
73:14,18 84:15 88:4,8 89:3
89:22 93:12,13 102:6,13
107:18 108:1,2,2,7,8
109:16 132:18,22 133:21
134:4 137:14 141:23 142:4
142:17,24 143:10,13,19,20
143:21,24 144:8,18,22
145:4,13,15 146:20 148:2,4
152:19 167:5 171:4,8,11,18
171:22 172:2,5,19 173:13
175:3
marketed
100:1,5
marketplace
137:4
markets
19:14 149:4 152:16
marriage
183:14
mason
10:24
master
47:16 97:8 108:20 121:14
149:9,15 152:23 156:25
material
138:17,20
materially
78:9 79:8 80:1 134:13
materials
20:3
matter
6:4 32:4 74:11 116:23
136:23,24 157:8 160:2
183:15
matters
52:24
matthew
168:11 169:4 170:3,4
maximize
77:2
mccabe
168:10 169:3
mccaleb
173:10

mean
33:24 34:4 43:22 47:10
49:7 51:13,13 58:16 59:21
60:4,22 61:15 62:14 65:20
70:7,8,15,15 75:5 78:7
79:13 81:6,7 83:3 88:25
109:25 116:11 117:22
127:5,7 134:7 136:23
140:16 172:4 177:18
meaning
11:7 92:13,15
meant
70:20 85:17
mechanism
143:25 167:3 175:2
media
38:3 93:17
meet
104:8
meeting
150:19
mellon
168:11 169:4 170:3,4
member
12:22 13:19,23 69:23
membership
13:20
memorialize
107:11
memory
29:11
mentions
82:9,15
merchants
72:6
merger
91:7 154:8
merit
2:8 183:7
messages
29:5
methodology
46:19 48:8,10,17 49:2,7,22
49:25 50:7 51:4
microphone
174:3
middle
84:11
milestones
150:20,21,22
million
140:12 144:23 145:2,8,11
145:21 146:7,8 150:16,17
mind
52:21 77:23 84:7

minute
180:3
minutes
26:17
miscellaneous
45:16
missing
45:18,19 112:15,17 123:17
123:20
model
31:21 32:3,10 69:2,10,20
69:22 79:22
modification
121:10
modifications
121:11
moment
43:3 48:4
money
25:18 87:17 134:22 136:8
moneygram
5:19 109:16,21,25 110:2,5
156:20,22 157:6,9,14,17
158:3,14,23,23
monopolist
89:21
monthly
152:2
moore
3:12 30:19,20
morning
6:1,22
motion
11:12
motives
38:16
moved
41:17
multiple
58:8,9
mystery
17:23

n

n.w.
3:10
name
6:6,25 7:15,15 10:9 18:4
20:14 30:17 143:5
names
30:15
name's
6:22
natural
13:1,7
nature
19:13

near
84:10
necessarily
43:10 146:1
necessary
88:17,20
need
18:15 25:11 52:17,25
133:25 175:19
needed
119:3
network
69:23 70:19
networks
69:24
new
1:2 2:6,6,9 3:5,5,19,19 4:10
4:10 6:10,11,18 13:19,25
14:4 29:3,14,15,16,17,18
29:20 89:24 90:4 91:8,9
180:25 183:3,4,8
non
68:17 119:4,22
noninvestment
128:5
nonparties
155:14
nonresidents
64:7
noon
106:22 107:6
normal
107:12
notary
2:9 6:17 131:5 183:7
note
160:19 161:8
noted
71:11 181:6
notes
29:10 114:6 161:17
number
5:7 23:12 26:16 31:12
84:25 90:5,16 118:24
119:25 123:10 150:23
151:6 168:24,24
nw
4:4

o

oath
182:13
object
11:10 43:3 177:25
objection
15:1,12 19:1,6 23:22 24:16
25:10 28:14 33:12 34:11

[objection - pages]

objection (cont.)
35:4 36:13,22 37:2,8,17
40:17 41:21 42:5 43:25
45:5,13,23 46:7,16 48:3
50:3 51:6 52:8 53:23 54:10
57:2 58:4,12 59:7,14,23
61:3,8,19 62:1,13,21 65:3
65:18 66:3,21 67:10,16,22
68:2,8,18 71:1,4,7,16,23
73:13,22 74:4,10,20,24
75:12 76:1,14 77:1,6 78:13
78:21 79:9,15,24 80:4,16
81:3,18 82:7,21,25 83:15
83:24 84:4 87:9,15 88:3,15
88:24 89:18 90:15,21 91:16
92:4,24 93:6,19 94:11 96:9
96:16 97:4,11,22 98:12,19
98:25 100:7,15,19 101:1,14
101:23 102:4,14 103:2,19
103:24 104:9,19 105:5,14
105:19 106:1,14,21 107:13
109:1,8,23 110:8 112:19
113:15 115:19,25 116:6,18
116:21,24 117:10,15,21
118:19 119:5,11,23 121:8
123:19 124:18 125:3,25
126:20 127:9,20 128:10,16
129:1 130:8 132:13 134:11
134:21,23 135:5,12 136:1
136:13,22 137:5,7,13,21
138:15 139:13 141:18
142:25 143:11,15 144:2,3
144:11 145:5,14,25 148:6
151:2,14,19 152:8,14,20
153:15 154:16,22 155:5,20
156:6 157:7,20 160:6,16,25
162:21 163:3,16 164:19,23
165:3 167:16 169:9 170:16
171:5,12 172:3,21 173:15
176:5,13 177:24 178:8
179:11,23
objections
107:14
obligated
46:22 66:10
obligates
66:15 150:16
obligation
76:17,22,24 77:3 84:12
86:11 111:3,17 113:1,3,5
123:13 146:17 161:1,3
obligations
43:18 46:24 47:22 50:21
52:1 59:9 91:12
observed
72:12

obtain
54:22 119:3 171:10
obtained
118:23 119:16,20 124:17
135:4 145:9 146:7,8 156:5
178:6
obtaining
145:11
obtains
145:21
obviously
28:16
occasion
10:19
occur
18:19 31:6
october
5:8 7:23 11:3 16:14,17 29:7
odl
110:3,10 149:19 150:4,12
150:25
offer
14:22 37:10 53:21 107:25
117:9,12,13 182:12
offered
9:13 37:4 86:16 87:3,4
157:19 179:16
offering
15:4,9,14,18,19 19:5 20:22
21:6 24:6,9,13,17,20 37:10
37:14,14,19 38:2,15 58:13
59:3 65:22 66:1 67:4,11,18
67:24 68:4,10 70:23 71:2,5
71:9,13,19 72:18 77:12
80:14,17,17,21 93:21,23
95:19,23 97:6 98:6,9,11,13
98:14,21,24 102:16,22,25
104:2,16 105:10,12,16,18
106:10,11,17,18 107:22,24
108:5 110:10 116:2,10,16
117:18 121:24 128:12,22
143:8 149:21 150:24
157:16 167:7,11,13 176:1
178:5
offerings
104:18
offers
15:20 36:7,10,17,24 37:5,6
93:2,2 103:23 117:8
offhand
46:10
office
29:2,19,20
offices
2:5 29:14

oh
16:12 60:10 77:22 118:6
131:24 147:3,4,12 150:1
oil
10:4,10,10
okay
8:12 27:6,23 28:5 52:19,25
53:1,4 55:4,19 63:11 66:7
75:5 106:24 118:8 123:23
131:24 135:19 142:3,9
147:21 149:22 150:3
165:14,15 171:16 173:20
180:13 181:3
once
10:3 56:16 95:4 145:20,20
148:13 168:23
ones
7:22 12:25 20:12 29:7,7
30:21 37:25 47:15 72:12
74:15 85:24 95:6 114:5
173:6
one's
89:19
ongoing
111:3 123:13 146:16
operation
128:9
opining
92:2 96:14,18
opinion
12:2 15:9,14,18,19 21:6
24:13,17 37:10,15,19 38:2
38:15 58:13,24 59:3 65:22
66:1,14,22 67:4,11,18,24
68:4,10 70:23 71:2,5,9,13
71:19 77:12 80:14,18,21
91:17 93:21,23 94:5 95:19
97:17,23 98:6,9,13,21
102:16,22,25 104:2,16
105:6,10,16 106:10,15,17
107:22,24 108:5 110:5,10
110:13 116:2,10,13,16
117:11,12,18 121:24
128:12,22 129:3 143:8
149:21 150:24 151:17
152:11 157:16 167:7,9,11
167:13,24 176:1 178:5
179:24
opinions
15:4 18:23 19:5,9,20 20:22
20:25 21:13 23:20 24:6,9
31:24 37:7,24 54:2,5,14
72:16 93:15 134:8 142:1
156:16
opportunity
48:16 144:5,9

opposed
9:21
opposing
11:12
option
170:19 171:2,9,17,24
172:19
orange
60:24 61:21 85:25 86:15,17
86:24 117:2,3,4,8
oranges
65:5 85:10,22 86:1,5,7,8
87:11,24 88:4,9,9,25 89:3
order
5:15 109:6 125:11,15 128:1
154:9
orderly
137:14
orders
47:14,15 99:8
organization
165:19 166:10,23
original
169:22
originally
163:14
outcome
183:15
outside
88:21 91:6 119:10
overarching
49:8 50:17
owe
75:10,23
owed
75:2 111:3,24 123:13
146:17
owners
75:3,6
owns
73:16 74:16

p

p.l.l.c.
3:10
p.m.
107:4 181:6
page
5:3,7 16:19 38:20 43:22
47:19 59:16 60:9,13,14,16
64:3 69:6,7 72:3,21 77:21
77:22 92:9,10 126:10
165:16 184:4
pages
43:2 54:19 56:4,13 57:5,7
57:10

[paid - precontractual]

paid
101:18 110:12 151:1
158:22 160:13,18 164:21
164:25
paper
40:15,18 55:15
paragraph
38:20,23,23 57:11 59:17,19
60:11,13 64:4,10 66:6 69:6
69:8,8 71:25 77:16,20 84:8
92:6 93:9 99:5 101:6
102:11,19 104:12,21 105:7
106:5 107:20 108:11
109:13 110:15,20 111:2,2,8
111:12,23 112:4,10 113:8
117:24 118:3 120:9 122:3
122:11,13 123:3,18,23
125:15,18 128:18 129:5,22
131:12,19 137:25 138:23
138:25 139:16,23 142:3,11
142:15 144:21 146:10,13
146:14,15,23,24 147:24
148:12,15 149:23 150:6,15
151:4,21 152:1 153:2,12,22
155:22 156:18,23 157:11
157:22 159:10 161:22
162:1 163:18 165:17 166:5
168:6,8 170:18 172:24
174:7 176:16 177:5 178:15
178:17,25 179:14
paragraphs
112:5
paren
60:7,7
part
10:4 11:20 28:12,16 44:4
48:21 57:12 61:22 64:7
87:18 99:15 103:1 114:17
122:5 144:4 151:6 160:9,14
160:20 164:14 171:16
partially
172:16
participants
84:15
particular
42:6 43:6 46:17 47:11
49:11 53:14 68:21 77:9
83:5 94:6,7 121:23 122:21
127:21,22 150:14,22
152:25 153:19
particularly
11:19 118:4
parties
70:19 90:23,25 100:2,6
102:12 107:14 118:11,16
119:10,21 126:23 128:23

parties (cont.)
139:5 140:9,20 154:2 155:8
155:18 162:16 168:13
169:6 179:15 180:17
183:14
partly
138:16
party
47:5 50:15 68:23 70:4,11
70:13,15 80:24,25 81:7,11
81:14,16 82:2,3,4,4,6 98:17
98:18 100:24 105:24
126:14,16 128:19 154:24
154:25
pass
83:14
passing
148:11
paul
4:9
paulweiss.com
4:12,12
pause
8:2
pay
101:8 108:24 109:15
150:16 152:2,18
paying
102:1,9 157:13
payment
100:18 110:4 145:15,16
150:8 172:11
payments
109:25 127:8
payouts
65:20
pays
101:3
penalty
182:5
pennsylvania
4:4
people
19:14 32:15 68:16 70:19
74:3,8,12 78:24 80:9,11,11
127:21,23 154:9
percent
9:22,23 64:13 86:18,20,22
101:9 134:25 152:3
percentage
41:24 113:13,16,23 141:10
perfect
63:12
perform
46:22 66:11,15 85:5 125:8

period
13:23 100:13 118:11
120:12,20 121:4,18
periods
121:25
perjury
182:5
permitted
107:25
person
7:16 66:12,17 70:16 125:2
personal
89:7
personally
26:9,25 27:9 28:21 30:23
38:25 41:20 113:14 115:17
122:9,15 138:9,12,19
140:19
personnel
38:4
pfeffer
3:13
phone
18:2
phrase
92:14,19
phrases
50:19
physically
41:1
pick
35:10
picked
86:9
picking
138:2
pilot
151:23
place
6:9 11:3
plaintiff
1:5 2:5 3:3 6:23
platform
109:18 110:3
played
18:3
please
6:14,25 8:3 10:2 38:20
71:25 99:5 109:9 113:8
117:24 120:2,7 123:23
125:10 126:5 129:6 131:11
137:15 138:1 142:6 153:2
156:19 157:23 161:22
168:7 172:24 173:23
176:17

plimpton
2:5 3:18 4:16 6:10
plus
22:24 26:25 30:2,10 40:2
point
77:23 111:8,12,22 123:17
127:11,23,25 129:20
146:15 171:2
pointless
113:2
points
104:22 110:16,21 111:1
123:2 129:7,15 146:23,23
153:6,12,21
portion
11:13,16 135:3
posed
48:17
possession
162:25
possibility
45:25 47:3 172:8
possible
45:14 111:16
possibly
113:1
post
43:18 46:23 47:22 50:21
53:15,16 66:11,15 80:7
84:11
posting
38:3
posts
93:17
potential
179:8
practice
13:13,15 14:13,14 24:14
107:12
practiced
14:3,5
practicing
14:9
preamble
149:8,13
precise
84:25 87:2 90:5 104:10
preclude
11:12 91:5
precluded
85:25
precludes
68:1,6,12
precontractual
154:1

preparation
7:6,13,21 16:22 18:1 21:22
52:5
prepare
27:11 33:19
prepared
17:13,20 20:5,16,16 33:23
preparing
7:18 24:1 25:6 26:8 27:1
28:1 53:9,17 54:11 57:20
presence
67:5,19,25 68:5 91:3 105:1
139:24 140:6
present
4:14 7:12 104:17
preserve
107:13
press
38:2
presumably
77:18 78:18 79:5
pretty
42:22 171:14
prevailed
12:8
prevent
79:7
previously
113:21 131:4 163:12
price
66:2 70:24 71:3,10 79:7
80:1 88:9,12 89:4,6 100:25
102:7,13,17 105:25 110:7
122:1 123:10 135:9,14,18
136:5,12,18,21,25 145:13
146:5 170:21 171:4,8,17,18
171:22 172:2,20 173:14
primarily
70:9
prior
25:2 29:23 30:1,5 36:2
154:6
private
97:6 104:18 115:5
privilege
8:2
probably
8:22 22:20 29:19 74:14
89:5 133:1 143:3
problem
106:2
proceeds
134:17 135:3
process
31:25 114:17,18

product
8:7 70:22 79:3 108:12,15
108:16,19,19 109:22
127:13 148:18 149:19
150:4,12 153:4,14 154:11
products
70:24 72:8 128:9 153:11
157:18
professional
9:19
professor
7:3 9:21 12:11,17 13:21
63:18 107:17 131:11 174:6
180:11,18
profit
61:25 62:12 63:1 85:7
144:1,6 166:13,21 171:9,25
179:9,12
profitable
101:19
profiting
101:12
profits
62:6,20 64:11,12,14,18
65:2,5,7,24 66:12,16 87:7,8
87:14,18,23 88:2,6,20
89:12,17 135:10,23
program
132:21 133:20 137:8,10,20
174:10,13,14
programmatic
47:25 49:1,16 105:8,11,17
105:21 106:6 110:17
111:14 131:13 132:1,10,17
132:18,22 133:4,21 134:4,9
135:1 138:4 139:1,11 140:1
141:13
promise
76:8,9,10
promised
175:12,17
promises
154:9
promissory
160:19 161:8,16
promote
84:12
promotional
72:5,10,17,18
proper
11:18
proportion
23:17 26:13
proportions
74:12,17

prospect
61:2
prostko
4:10 71:1,6 137:7 144:3
180:19
protect
77:18 78:7,11,19 79:4,6
provide
40:12 143:25 170:5
provided
40:1,14,15,18 52:4 53:19
108:23 132:17 144:5,9
158:24 159:2 170:15
174:19,22 176:8,12 178:13
provides
103:14 144:22 165:19
166:10,23
providing
61:1 101:17
provision
43:9,11 44:10 62:18 66:10
66:14 67:5,6,12,13 68:5,6
68:11,12 81:1 103:7 111:2
126:19 129:24 130:5
137:14 139:3,7 141:14
148:3 153:20 154:12,19
161:12 164:5 165:6 168:2
170:13 176:7 178:11
provisions
43:23 48:21 67:19,25 81:10
104:23 105:2 109:20
110:17,22 111:9,19,23
112:1,6,11,15,17 123:3
129:10 144:19 146:16,19
151:16 152:21 153:11,13
153:21,22 155:9 165:10
prudhomme
10:11
pte
162:11 163:1
public
2:9 6:18 97:6 104:18 131:5
167:4 175:3 176:12 183:7
purchase
5:14 74:3 86:23 100:23
101:7 105:23 109:5 118:17
120:3,8 121:5 125:20
126:16 141:22 150:10,13
152:13 170:20 171:2
173:13
purchased
86:19,24 118:13 119:9
123:14 125:1,2,20,24 130:5
130:7 141:15,17 148:4,5
152:3 154:13,15,20,21
155:4 162:22 163:12

purchased (cont.)
171:10 172:1
purchaser
38:6,16 77:13 85:6 98:5,17
99:15 119:3 124:25 127:18
155:2
purchasers
64:6 65:24 82:23 86:3
purchaser's
119:4
purchases
70:12,12,17 83:8 101:13
120:19 127:16 150:7
152:12
purchasing
83:11 99:10
purpose
83:4,5,8,11 99:11 126:19
126:21,23 127:24 144:12
149:6 155:11 159:21
162:19 169:21 175:15
177:12 178:3 179:2
purposes
68:17 71:14,22 82:24 100:2
100:14 119:4,22 127:19
158:19 163:23,25 164:2,7
pursuant
111:5 170:19 172:11
179:16
pushups
52:14
put
74:9 88:16 155:2 158:5,16
174:3

q

qualified
10:6 14:22 46:14
qualify
15:20
quantity
97:20,21 119:2
question
8:3,7 12:4 13:18 16:24
21:16 33:15 35:19 39:12
43:19 47:10,20 48:6,8,17
48:24,24 49:5,7,8 50:17
51:24,25 59:10 60:2 61:10
68:19 71:8 73:25 74:5,6
78:23 81:4 91:25 92:20
94:12,13,19,22 101:16
104:11 106:3 109:9,10
112:18 114:13 117:22
121:10 122:10 126:2,5
135:13,21 136:2,9,15 144:5
147:18,18 152:9 153:8
158:16 166:8 171:14,15

[questions - report]

questions
27:18 45:8 46:1 67:1 78:23
180:11,15,17,20,22
quite
94:19

r

r3
168:10 169:3,18,22 170:18
170:20 171:9,9,24 172:16
172:19,19 173:2
rate
25:21,23
rational
125:6
rc
173:6
reach
92:20
reached
107:12
read
20:15 21:4 24:23 42:4,8,13
42:14 43:7,8,14 44:12,16
53:15,24 54:1,16 57:21
59:15 78:16 86:2 94:13
109:11 122:23 126:6
129:20 147:20 149:24
175:25 182:5,7
reading
26:15 119:12 129:16
166:19 173:11
reads
38:24
ready
130:10
realize
63:4
really
26:13,15 50:22 80:6 89:1
120:24
realtime
2:8 183:6
reason
7:4 9:25 10:21 11:15 46:13
73:15 79:25 142:13 184:5,6
184:8,9,11,12,14,15,17,18
184:20,21,23
reasonable
45:3,6 46:6 126:15,25
127:2
reasonably
45:21
reasons
19:5
rebates
108:24 110:12 157:14,18

rebates (cont.)
160:14,20 164:22 165:1
rebuttal
24:20
rebutted
91:1
recall
10:22 11:9,19,21,25 14:2
26:13 31:14 41:9,15 54:23
54:25 57:7 68:24 69:4 83:9
83:9 87:1 103:14 113:16,17
118:3,14 119:6,12,17,24,25
123:1,15,20 129:16 130:9
133:1 135:13 141:24
144:20 145:10 146:25
149:17 151:15 152:21,25
155:9 159:20 161:19
162:18 166:18 169:6 173:8
173:11
recalling
113:24
receive
88:18
received
25:15 56:24 59:4 61:17
62:3
receiving
56:22
recess
63:15 107:6 130:14 174:1
recollection
51:17 86:18 90:9 114:8
121:21,23 123:21 133:12
135:7 150:2 176:9
reconstruct
133:14
record
6:2 7:1 18:11 27:8,10 28:18
28:20 54:16,20 55:12,25
57:4 59:15 61:9 62:4 63:13
63:17 107:2,3,5,9 109:11
112:23 114:3 126:6 130:12
131:9 147:20,22 173:23,24
174:2 180:5,7,8,25 183:11
records
29:22
record's
147:14
reduce
137:18
reducing
136:6,11,14
refer
19:24 38:18 55:1 59:16,18
64:3 72:2 92:8 125:23
134:16 148:12 157:10,22

refer (cont.)
158:13 172:23 176:16
reference
53:4 57:10 72:22 120:9
131:14 150:15 165:18
176:18
referenced
125:15 131:19 142:11,14
147:24 148:15 156:23
159:10 162:1,5 178:25
references
149:9 151:21,22 168:8
177:6 178:18
referencing
58:21
referred
22:4 95:5 147:7
referring
18:12 60:12 85:20 118:4
149:11 150:13
refers
26:22
reflect
36:7
reflected
36:11,19,20,25 37:11 56:4
reflecting
29:22 164:16
refresh
114:7
refreshed
150:2
refuting
167:21
regarding
30:9 103:7 175:23 176:3
registered
2:8 183:7
registration
15:21 179:17
regulates
103:9
reid
3:11 174:3
reimburse
160:23
reimbursed
161:4,7
related
24:9,13,17 108:19 118:1
139:4 160:4 164:9 183:13
relating
167:14
relationship
58:9 94:10 95:2,7,7,15
114:22,25 124:2 132:4

relationship (cont.)
142:20 148:21 157:3 160:4
160:15,21 162:8 164:10,16
169:22 170:1 176:23
relationships
160:10
relatively
44:18,19 90:10
relayed
49:23 51:1
release
38:3
relevant
21:13 22:7 31:24 35:9 44:3
74:12 104:1 122:5
relevantly
122:22
relied
19:25 35:9,24 61:5 138:12
138:19
rely
19:17 23:20
relying
129:25 138:8
remaining
26:24
remember
8:20 10:9 11:4 20:13 22:16
143:3,4
remittance
134:17
remotely
3:12,13,13,20 4:5,10,11,15
4:16
repeat
109:9 126:2,5
report
5:8 7:23 8:5 10:5 11:20
16:13,16,19,23 17:5,7,14
17:20 18:1,8,12,14,17,18
18:22 19:4,8,10,16,24 20:1
20:10,16 21:10,12,14 22:2
22:4,6,7,10,14,15 23:13,15
23:20,23 24:1,7 25:2,4,6,9
25:16 26:8,18,20,22 27:1,5
27:11 28:1,22 29:12,12,16
29:20,24 30:1,3,6 31:4 33:8
33:17,20 34:15,20 35:1,2
35:14,16,22 36:3,7,12,21
37:12 38:18,19,21 40:6
41:6,14,18 44:8,21 45:4,12
45:15 46:15 47:24 52:6
53:4,9,17 54:4,11 57:20
59:16 61:6 66:5 69:1,4 70:2
71:18,20 72:1,21 73:8
77:16 78:17,17 81:9 82:9

report (cont.)
83:2 84:9 89:24 90:3,13
91:19 92:7,21 93:9 94:24
95:3,6 98:8 99:6 100:9
101:6 107:17,20 110:15
112:5 114:8 118:7 120:9
122:3 124:9 125:16 129:6
129:14 131:12,19 133:10
138:1 141:14 142:11,15
144:21 146:11 147:24
148:12,16 149:11 151:21
154:12,18 155:18 156:19
156:23 157:11,23 159:10
159:19,22 160:9 161:17
162:2,5,17 164:14,18
165:10,17 166:6 167:23
168:6,16,21 169:1,12,13,16
170:13 172:24 174:7
176:17 177:5 178:16,17
reported
1:23
reporter
1:24 2:8,8 6:7,14 99:2
120:6 126:4 147:17 175:8
175:11 183:6,7
reporting
6:8
reports
24:24
represent
6:23 35:12 99:9
representation
99:15 129:25
representations
15:16 37:20,24 51:20 64:17
91:5,10 93:16
representative
31:1 35:7 39:15 113:10
114:15 115:12
representatives
56:25 57:13
represented
14:7 64:12 164:6
representing
163:22,24
represents
37:16 126:13
require
69:23 155:7,13
required
66:17 67:6,13,20 85:4 86:4
102:11 109:5
requirement
102:17
requirements
128:24

requisite
62:11 69:24
resale
111:18 120:16
resell
101:4 118:12 126:13 172:7
reselling
176:11
reserving
180:24
resist
144:4
resources
13:2,8
respect
45:8 48:16 87:11 111:4,17
respects
140:6
responded
134:5
response
20:15,17,18 38:1
responses
20:9,21 21:11
rest
71:20
restatement
82:9,12,15,17
restrict
155:7 176:10
restricting
130:5 141:15 148:3 154:13
154:19 161:12 165:6,10
168:3 170:14 176:7 178:11
restriction
121:5 127:12 130:9 156:3
161:14
restrictions
118:2,20,22,25 119:2,8,17
119:19 120:15,16 124:19
124:21 145:7,10 155:2
161:17
result
35:13
resulted
65:24
resumed
131:4
retailer
154:3,4
retain
84:2 135:3
retained
10:23 31:24 51:25
return
61:2,14,18 63:3,4 66:12,16

return (cont.)
70:3,9 85:13,19 86:8 88:18
88:22 123:10 135:22 166:8
returns
61:12 76:9,11 88:13
reveal
21:21 27:19
revealing
32:6
revenue
80:5
revenues
69:17,18 80:2 101:21 102:3
102:5
review
7:21 8:4,8 22:5,15 23:1,23
26:9,11 30:7,10 39:8,25
41:20,25 42:1,20 44:14
50:2 51:20 54:19 78:4
84:18 113:14,18 114:5,10
115:17 118:21 119:1,7,14
119:18 120:18,22,25 121:9
122:9,15 130:1,4 132:21
134:10 135:1 138:9,12,14
138:19 141:6,21 148:13
149:15 152:23 156:8,12
164:15 167:18 169:11
172:23 173:5,9
reviewed
21:10,12 22:2,6,8,12,23
23:12 26:21,25 27:11,25
28:6,10,21 29:11,12,23
30:2 31:8,10,12 33:4 38:25
39:22,23 41:23 43:11,22
44:9,17,19 53:8 54:13
55:11 56:1,4,15 57:19 64:1
83:7 84:25 113:17,20,20
114:5,10,21 124:1 130:4
132:3,11,11,23 133:1
138:21 140:20 141:5
142:19,23 144:19 148:3,20
151:12 157:2 159:5 162:6
163:8 168:14 173:2 176:22
reviewing
20:20 25:8,14 26:17 30:22
31:18 39:18 49:21 54:12
56:7 57:8 78:3 99:18 118:9
126:1 148:25 152:25
rfigel
3:14
rhone
13:1,8
riffle
135:11
rifkind
4:9

right
16:9 27:25 30:20 34:21
49:17,18 52:23 55:3 61:10
65:2,7 77:8 79:22 81:12,23
87:14,20 95:9 102:20 112:7
112:8,10 133:14 138:16
139:17 140:11,17 144:20
145:22 147:9,16 159:16
165:15 170:20 172:13
174:13
rights
65:14,17 68:23 70:3 90:25
173:17,18
ripple
1:7 3:9 4:15 5:16,24 6:5
21:23 23:6 36:10,18,24
37:4 38:3 39:16 43:15,18
46:22 47:2,9,10 49:10
50:20 66:10,15 68:16 69:14
69:25 70:12,13,16,21 74:22
75:10,17,20,23 77:18 78:1
78:11,19,25 79:5,7,25 80:2
80:8,10,19 81:19,20 82:1,3
82:5,23 83:1 84:13 89:25
93:12 94:7,8,25 95:10,12
95:15 96:2,11,14 100:23
101:8 102:8 104:13 105:23
108:23 109:2,15 110:12
111:3,23 114:22 115:8,14
115:18 118:13,17,23
119:10,16,20 123:14 124:3
124:17 125:20,23,24
126:14,17 127:3 131:15,20
132:5,18 133:23 134:6,17
135:4 136:3,10 137:2
141:21,22 142:20 143:14
143:25 144:9,22 145:9
146:8,17 148:22 149:10,16
150:7,11,16 151:1 152:2,6
152:13,15,18,24 155:2,6
156:4,5,10,13 157:4,6,13
157:19 158:24 159:2 160:5
160:10,13,18,23,24 161:2,4
161:7,13 162:8,23 163:2,11
163:12,15 164:10,17,21,25
165:7 167:2,24 168:4,9
169:23 170:1,5,15,25
171:10 172:1 173:7,7,10
174:14,21 175:1,16 176:8
176:10,11,24 177:1,6,15,18
177:22 178:12 179:3
180:14 184:3
ripple's
15:20 17:8,10 28:2,12
31:20 32:3,9 36:7 37:20
44:23 65:23 69:1,10,17

[ripple's - sentence]

ripple's (cont.)
70:2,24 71:9 72:5,10,17
75:13,24 79:22 80:12,24
81:2,11,15,17 91:4,6 93:1
93:16,24 95:20 96:20
100:17,22 101:11,12 102:2
102:11 103:23 105:22
108:15,22 109:5,6,17,22
118:22 119:8,15,19 121:19
124:15 128:8 130:6 135:2,8
135:11,17,24 137:8,10
138:8,13,19 141:16 149:18
150:4 154:14,20 155:3,17
155:18 157:18 161:18
165:11 167:4 170:14 171:4
171:25 175:2 176:7
rippleworks
165:18 166:9 167:3,15,22
167:25 168:1,3
rise
137:1
risk
83:13,22 84:2
ritschard
4:11
rmoore
3:15
rmr
1:24 183:20
robert
3:12 17:17
robert's
7:15 30:17
role
18:3
rolex
72:22 73:2,20,21 74:1,2
rolexes
74:3
rolex's
74:2
romanette
163:21
██████
113:9 115:1,4,7,9,11,13,21
116:3,8 118:1,2,10,11,15
118:17 121:20 122:6,17
rough
71:11
rule
90:14
run
78:25

s

sale
37:11 43:18 46:23 50:21
53:21 55:8 56:20 65:5
66:11,15 77:19 78:7,12,20
80:7 84:11 86:3 117:9,13
117:13 120:20 125:20
126:12
sales
9:12 15:20 33:1,5 34:6,10
34:13 36:7,10,17,25 37:5,6
39:15,16 47:1,11,24 49:1
49:15,16 50:10,11,13 51:2
56:22,24 57:5,12,14,16,19
58:1 59:4,12,13 62:3,5,18
62:24 64:19,24 84:13,22
93:2,3,18 95:11,12,13,18
95:20 97:9 98:7,10,22 99:8
99:14 100:10 101:25,25
102:23 103:1,8,23 104:13
104:17,23 105:8,21 106:6
108:8 113:10,13,18 114:19
115:13,16 117:8 118:20
120:12,15 121:6,19,19
122:4,9 123:4,6,9,11,12,24
123:25 129:13,23 130:3
136:7 140:24 141:13 154:2
sample
32:1,1 35:8 141:11
samples
36:1 114:15
sarah
4:10
sat
12:24
████████
████████
████████
save
67:2 182:9
saw
39:20,20 43:7 133:13
saying
68:20 83:10 118:3 122:8
138:24 153:10,13 155:9
165:22 166:9 174:13,17
says
40:7 57:11 59:24 60:1,1
64:10 66:8 72:5 84:10
92:18 93:11 121:13 122:13
125:19 132:16 139:15
146:16 159:4,5
sbi
5:24 177:2,7,12

sbih
177:25
sbih's
178:1
schedule
41:15 132:17 133:3
scheduled
41:16
schedules
132:22 133:21 134:5,10
scheme
92:23
school
12:11,17 13:22
schwartz
1:13 2:4 5:2,8 6:4,15 7:2,3
16:16 63:18 107:17 131:3
131:11 174:6 180:11,18
182:4,17 184:2
scope
61:6 124:9
search
39:24 114:16,18 125:4,6
searched
44:7
searches
125:8
season
64:13,15
sec
6:4,23 20:14,15 53:5 78:16
91:13 104:6 184:3
sec.gov
3:7,7
second
99:7 125:18 139:19
secondary
95:23 141:23
sec's
20:6,8 21:1,10 24:21 72:12
section
126:9,18,24 128:19 132:15
134:16 151:4
securities
1:4 3:4 5:10 9:14 14:20,24
15:3,6,10,15,22 58:11,17
58:22 62:15,17 63:21 66:18
66:24 67:8,15 68:13 72:19
82:14,19 83:12,13,21,23
84:2 91:14 92:25 93:3,5,8
95:24 96:20 97:1,6,10,12
97:19,20 98:11,14,15,15,16
98:23 103:8,11,12,13,16,17
103:20,22,23 104:4,18
105:4,12,18 106:11,18
107:23,25 108:3,6,9 115:23

securities (cont.)
115:23 116:4,5 117:9
128:14,15,23,25 143:10
179:17,21,22
security
84:3 95:25 96:15 103:10
104:8 116:9,17,20 117:2,4
117:7,7,14
seeing
48:6 151:15 161:19
seek
179:9
seeks
77:18 179:12
seen
33:2 141:8
selected
39:7,11 45:2
selecting
46:19 48:9 49:3
sell
68:16 69:11,13,15 72:8
82:23 85:10,22 96:19,20
97:1 98:15,16 100:24
102:12 105:24 115:23
116:4 118:18 119:20
128:15 144:1 152:18
155:10 172:4,14 179:5
seller
70:21 79:18,18 84:2 89:5
113:1 137:17
sellers
62:8
selling
56:25 60:24 69:17,21 70:10
72:18 79:16,22 80:2,6,8
95:24 96:2,5,5,11,12,22,23
106:4 113:4 116:8 119:9,15
125:24
sells
79:3 80:19 82:1,4 83:12
172:1
sen
69:7
send
120:1 142:5
sending
27:14,14
sense
32:4 42:14 51:14 100:22
105:22 172:18
sent
28:8
sentence
38:23 59:19 60:16,17,19
66:8 72:3 77:17 78:5 84:10

[sentence - structure]

sentence (cont.)
85:2 92:9 93:10 99:8
109:15 122:11,13 138:3
139:15,19
separate
121:12
series
67:1 123:11
serve
107:13
service
47:6 50:14,15 51:2 55:9
65:10 85:3,23 86:16,19,23
87:2,3,22 101:17 110:22
158:24 159:1
services
46:23 47:2 56:20,23 58:2
59:12 62:19,24 64:21 86:12
102:8 108:20 111:9,20
112:2,25 149:9,15 150:7,10
150:13 152:13,24 157:1
159:24 170:5,6,8,10 174:16
sessions
7:6,13
set
28:13,16,17 39:1 85:3 88:9
89:4 108:7 118:11,16
183:10,16
sets
158:13 170:19
setting
121:4
settlement
168:9,13,17,25 169:2,7,11
170:12 172:11,15 173:2,3,5
173:9,12
setup
75:13,14,16
share
16:11 65:2,4,7 73:14,18
76:18 77:2 86:8 96:23
shareholder
77:8 115:14
shareholders
65:21 75:6,8,11,18,21,24
76:8,9,19,23
shares
75:25 76:25 179:5
sheet
182:11 184:1
shifts
136:18
ship
154:3
shock
89:8

shopping
141:2
short
120:23
shorter
59:1
showing
28:18 52:5
shown
21:21 33:5 94:2,4
shrunk
136:8
si
72:12
sic
168:10
side
12:6,8
side's
11:12
signature
16:20 180:25
signed
21:11 22:15 25:3,4,15
34:20,25 35:16 41:6,14
169:16 182:17 184:24
significant
67:2 171:3,8,17,22
signing
22:2,6 23:12 28:22 29:11
29:12,23 30:1,5 34:14 36:2
similar
62:4 67:1 93:17 95:20
98:10,22 99:15 105:11,17
111:24 122:5,17 138:4,14
139:1,11,16 140:5 143:9
144:19 153:8,14,16 163:7
164:5
similarities
138:20
similarity
96:11 139:22,23 153:18
single
20:17 66:9 97:7 129:20
sir
6:22 13:11 21:2 60:20
147:21
sit
12:22 143:5 167:21
sitting
16:9 74:2,2 121:17
small
31:12 32:1 42:22 44:18,19
49:21 90:10
sn
1:6

social
38:3 93:17 165:20 166:11
166:17,24
software
100:18 109:7,22
sold
13:8 37:4 39:16 47:9,12
83:1,3 84:3 86:15 96:14,24
100:6 101:9 116:13 143:22
152:4 154:3 171:11 179:16
179:20
solely
85:14
somebody
51:17
sophisticated
140:9,20
sorry
25:11 27:9,16 38:23 47:18
55:14 69:7 71:6 94:21 99:3
99:23 118:7 133:24 147:21
158:9 165:16 175:8 177:4
sort
32:18 40:19
sought
52:2
southern
1:2
speak
59:8
speaking
9:8 140:4
specialization
14:15
specific
26:20,22 28:19,21 51:11
85:3 94:23 95:2 168:23,24
specifically
11:9 19:24 129:8 139:2,20
153:4 177:20
specified
109:18 125:21 152:16,16
speculate
17:18
spend
7:18 9:20 25:14 34:18
spent
26:14,14
spills
60:13
split
8:22 49:14
spoken
38:6
spread
144:15

sprostko
4:12
ss
183:3
standard
25:23 83:16 84:21 92:12
154:4
stars
64:5
start
7:25 8:13 24:2,4 39:21
started
39:18 50:1
starts
64:4
state
2:9 6:18,25 183:3,8
stated
98:16
statement
18:23 90:24
statements
37:20,23
states
1:1 119:10 179:16
stating
139:3
statute
91:24 92:2,19
statutes
11:17
statutory
91:19 92:14
staying
138:23
steen
4:4
stenographic
1:24
step
34:18 56:18
steps
78:11,19 88:20 176:10
stipulated
56:9,15 107:15
stock
96:23 97:13,13,14
story
69:12
street
3:4,10
strike
19:18 28:19 79:6 107:23
138:24 164:14 167:12
structure
89:23

[studied - title]

studied
140:16
stuff
29:19,21
subcategories
39:1
subject
11:18 122:25 129:3 132:18
subjective
78:24
subjects
11:6
submit
47:14
submitted
16:14 20:15 23:3,4
subsequent
97:9
subsidiary
170:24
substance
27:21 32:6 60:7 106:8
122:5,16 138:4 139:12,16
153:14
substantial
62:20 63:1 64:11,18
substantially
163:7
substantive
121:6
sue
155:16
sufficient
88:18
suggest
68:22
suite
3:4
summaries
121:6
summary
5:14 120:3,9,19
supervise
32:21,23
supplement
18:15,18
supplied
27:4
supply
88:10,11 89:4 136:6,8,11
136:17,21,25 137:3
support
43:17 47:7 68:25
supported
121:12

supposed
170:4 179:4
supreme
5:10 53:5,8,20 54:12,17
55:2 56:10 57:25 58:2
62:25 63:2,3,21,25 85:11
85:14,17,19 87:12 92:17,18
sure
12:3 27:24 33:11,14,16
34:4 42:17 43:23 47:19
48:5,15 49:6 51:12 55:20
60:8 94:12,19 106:24
109:10 133:9 143:4 147:19
159:13 169:20 174:12
180:16
surprise
51:17
sus
50:19
suspicion
33:25
sustain
49:10 50:20 123:16
swear
6:14
sworn
6:17 131:5 183:10
systematic
114:6

t

taken
2:4 63:15 107:6 174:1
184:2
talk
32:14 56:24 57:5,13,16,19
59:4,13 62:3,5 63:9 64:24
69:1 83:2 93:18 98:7
102:19 105:7 108:11,14
109:14 123:24 131:12
155:22
talking
47:21 48:13 81:7 92:21
95:18 120:16 166:20 174:7
talks
89:24 107:17 144:15
task
11:17
technically
76:16
technologies
15:25
telephone
3:6,14,20 4:6,11
tell
10:2 22:1 62:9 70:9 129:25
137:24 138:8,13,20 172:10

ten
8:21 25:17
tend
140:25
tender
151:10,13,18
tendered
16:8 55:24
term
14:23 15:5 47:4 58:16,19
58:21 65:19 82:13 83:17
84:21 97:24 98:2 121:6
153:19
terms
44:15 47:15 48:20 50:18
77:7 97:8,15 104:13,17
108:8 117:17 118:1 123:7
123:13 126:12 129:15
132:19 155:14 163:11
170:19
territory
177:15
testified
6:19 9:9,17 11:2 12:5,7
33:19,22 49:20 79:21 94:14
113:21 131:6 138:10
testify
11:5 17:23 33:25
testifying
62:16
testimony
7:4 8:16 9:4,13,24 10:20
11:6,13,16,18,23 14:22
21:22 24:20 89:2 182:6,9
183:11
thank
16:12 107:16 148:1 174:5
175:11 180:10,20 181:3
thanks
117:23
theory
136:24
thing
21:4 96:2,6 112:9 116:11
117:1,3 133:13
things
27:14 28:8 32:14 42:7
47:11 88:21 89:23 105:1
113:6 136:14,17 154:25
think
7:8 10:14 11:14 12:10
13:19,21 14:18 17:15,17,17
20:19 22:13 23:24 26:10,22
27:12 31:12,21 32:5 35:19
39:12 41:13,14 46:2 49:5
49:18 50:9 57:3,3 58:5 62:7

think (cont.)
63:2,3 65:4,12 71:17 81:4
82:15 83:16 84:5,24 85:23
86:6,7 87:1 88:9 90:6 96:10
96:19 98:20 99:16 101:15
103:9 106:2,23 109:14
113:6 116:25 118:20
122:10 124:12 125:17
132:8,14,23 133:11,15,22
134:3,5 135:6 137:11,14
138:10 140:23 141:8,8,19
142:2,9,12 147:7,9 151:20
155:9 156:7 159:23 163:5
164:8 165:23 168:15 169:5
170:17 173:22 177:25
179:12
thinking
26:14 61:5
thinks
104:1
third
2:6 3:19 6:10 47:5 50:15
68:23 70:4,11,13,15 80:24
80:25 81:6,10,14,16 82:3
98:17 100:1,6,24 102:12
105:24 119:21 128:19
155:18
thirds
77:17
thorough
50:1
thought
31:2 35:9 45:7 48:18 61:20
80:12 86:10 99:23 140:5
thousand
23:14
three
7:8 26:1 110:21 112:15
thresholds
109:18
time
6:3 9:19 13:23 14:4,11
18:20 25:3,4,14 26:14
31:10 34:25 47:14,14 52:10
58:25 63:10,14,17 67:3
71:7 100:13 107:4,9 118:11
130:13 131:9 138:7 140:17
146:5 173:24 174:3 180:6,9
180:12,21 181:5,6
times
8:19,23 9:4
timing
133:23 134:6
title
83:13,22 84:2

[today - voting]

today
7:4 121:17 143:5,6 167:21
180:21
today's
6:2,7,9 7:7,19 181:4
todd
3:10
told
53:25 61:7,9,24 62:2,6,7
73:7 86:10,13
top
60:9,16
torres
46:5,9,12,13,18
total
7:18 22:13
trade
115:3 144:6,9
traded
127:24
traders
144:9
trading
71:14,21 143:14,22 151:22
152:7 167:5,5 175:3,4
177:22
tran
111:4
transact
79:20 132:16
transaction
92:23 98:17 158:7
transactions
53:21 79:17 103:10 109:17
109:22 110:2,6 127:6,13
149:3,6,6 150:23 152:16
155:14 158:22
transcript
5:12 6:13 54:16,20 55:21
55:25 71:11 182:6,8 183:10
transcripts
8:8
transfer
37:11 109:6 111:5 118:2
transferred
111:15,17,18
transferring
106:4
treat
151:12
trial
11:2,5
tried
60:3
trouble
113:24

true
182:8 183:11
truthfully
114:13
try
35:20,20 149:22
trying
27:7 28:5,7 29:13 45:9 49:9
49:19 50:17 60:14 114:12
114:12 158:9
turned
43:2
turns
172:1
tv
117:7
tvs
154:3
type
50:5,5,6,8,8,8,10 51:7 67:5
67:12 68:5,11 81:6 83:17
110:16 112:10 120:25
139:7 149:5,5 161:20
types
48:19 51:11 104:22 112:6
112:14,15,16,17 129:9
typical
32:19 57:12 72:6 75:14
84:13 87:3 129:17,19 154:2
typically
83:14 91:25 104:14 123:4
129:9,18 140:21 153:5

u

u.s.
97:21
ucc
102:19,23 103:1,4,4,7,17
103:22 104:3,8
ucc's
103:11
uh
59:20 72:4 92:11 108:13
122:7 151:25 153:7 157:12
163:20
ultimate
96:7 98:5,17
ultimately
12:8 29:6
unchanged
136:19,20,25
understand
21:16 28:15 33:14 58:20,23
94:12,19
understanding
31:20 32:2 36:5 56:17
62:10 86:21 98:2 100:4

understanding (cont.)
134:19 163:13 179:8
182:12
understood
13:10 170:24
underwriter
97:25 98:3,4,11,15 105:12
106:11
unfortunately
27:6
uniform
103:4
unilateral
85:5,9,21 87:6
unit
79:16 170:21 171:3,8 172:5
172:20
united
1:1 119:10 179:16
units
123:14 170:20
universe
35:11,12,22,23 36:1 41:10
41:12 90:11
untrue
21:7
use
58:19 68:17 77:3 79:17
80:9,13 86:11 95:10 97:3
119:21 127:18,23 145:3
150:25 152:15,15 154:8
155:7 157:17 160:1 175:14
175:17 178:1,4
user
149:18 150:4
users
110:11
uses
71:13,21 78:17 93:12
100:13 128:5
usual
140:24
usually
76:9 166:14

v

vague
44:10,15
value
65:23 66:12,16 75:24 76:12
76:24 77:2,4,19 78:8,10,12
78:20 79:12 80:7 81:20,22
82:6 84:12,14 85:4 87:11
152:3
variety
9:10 69:24 102:7 104:13
153:23

various
19:14 31:22 38:19 48:22
49:12,14 51:4,16 107:18
114:15 127:13 129:9 149:4
176:18
vast
69:16
venture
5:23 70:20 115:5 176:18,22
177:1,6,9,13,21 178:6,10
178:11
ventures
165:20 166:11,17,24
verbal
25:12
verify
32:24 33:8,17 34:2,8 35:1,5
35:17 36:3
versus
6:5 10:24 53:5
vesey
3:4
viable
110:11 150:25 157:17
video
6:3
videographer
4:17 6:1,7 63:13,16 107:3,8
130:12 131:8 173:24 174:2
180:5,8 181:4
videotaped
1:12 2:4
view
32:16
views
94:3 134:14
violate
93:3
violations
9:15 91:14 103:15
virtual
84:16 151:10
virtue
81:1
visited
20:13
volatility
137:18
volume
109:18,21 110:1,2,6 121:4
121:25
volunteering
154:23
voting
65:14

[vs - yup]

vs
  1:6

w

w.j.
  5:11 53:6 63:22 65:7
waive
  128:24
want
  16:11 17:18 27:24 33:25
  35:20 38:22 48:5,15 52:13
  55:16 59:18 60:8 72:2 77:2
  79:5,7,11 80:1 92:8 98:6
  106:23 125:1,5 127:12
  134:15 154:3 158:13 175:6
wanted
  26:24 31:23 32:1,16,17
  33:1 40:4 50:11 51:15
  85:16 124:24,25 127:3
  134:1 162:23 178:3
wants
  79:3
warns
  84:13
warrant
  99:10
washington
  3:11 4:5 10:14,16
watches
  73:21
waxman
  3:6 55:14
waxmand
  3:7
ways
  46:6 81:14
website
  37:21 93:16
wednesday
  7:10
weeks
  7:11
weiss
  4:9
went
  23:2 43:1 52:5 61:21
  121:22
we've
  52:10 53:2 106:22
wharton
  4:9
whereof
  183:16
whichever
  133:6
wholesale
  5:15 47:25 49:1 98:7,10,22

wholesale (cont.)
  99:8,25 100:5,9,21 101:2
  118:25 123:24,25 125:11
  125:15 128:1 129:8,13,23
  130:3
widget
  116:15,20
willed
  81:25
willingness
  84:15
witness
  6:14,16 8:12 9:17 24:3 26:6
  27:20,23 48:15 52:18,21
  53:2 55:15,17 56:7 57:8
  63:9 76:20 78:2,3 99:18
  106:25 112:21 118:9 126:1
  126:4 130:11 147:16
  148:25 173:20 175:10
  180:13 182:1 183:9,12,16
word
  43:5,5 78:18 82:16 85:14
  92:8,13 94:14 129:17,19
words
  43:6,16,19 44:3,12 126:21
  158:21 166:22 172:9
work
  8:7 25:1 29:15 32:21,25
  34:14 36:3 52:5 122:18,19
  122:19
worked
  16:5
working
  9:20,21 29:17 89:21
works
  89:2 134:20
world
  72:25 74:8 89:19
worth
  145:24 150:17
write
  17:5,10 59:22 60:4,21 70:2
  77:10 85:2 91:19 92:12
  99:7,8 100:9 138:3,25
  139:2,15 153:3 166:22
  179:14
writing
  26:14 114:8 129:8 152:1
written
  17:7 20:11 36:25 37:5
  122:24 154:10
wrote
  11:21 21:9 35:22 60:6
  138:7

x

xpring
  174:8,10,13,20 175:1,24
  176:3,6,11
xrapid
  108:16,23,25 109:5 110:11
xrp
  5:14 15:20 36:8,10,18,25
  37:4,11 38:6,8 39:16 43:19
  46:23 47:5 48:21 65:23,24
  66:2,12,16 68:16,17 69:14
  69:17,21 70:10,13,17,24
  71:3,10,15,21 74:23 77:14
  77:19 78:8,9,12,20 79:8,10
  79:10,19,22 80:1,3,14,20
  80:20,22 81:21,21 82:1,4,6
  82:23 83:1,3,8,11 84:12,14
  93:2,12 95:20 99:10 100:1
  100:5,14,23,24 101:9,13
  102:6,12,17,23 103:1,23
  105:23,24 106:4 109:5,17
  109:21 110:6 111:4,15
  113:10 115:12 116:8,11,12
  116:15,16 118:2,12,16,23
  119:2,9,15,20,21 120:3,8
  120:19 121:5,19 122:1
  123:10,14 124:16,25,25
  125:2 127:3 128:6,9 130:5
  130:6 132:16 134:7 135:4,9
  135:18 136:11,21,21 137:3
  141:15,16,23 143:14 144:1
  144:6,10,23 145:2,8,11,13
  145:21,23 146:8 148:4,5
  150:17,17 151:10,13,17
  152:3,7,15,18 154:13,14,20
  154:21 155:3,4,7 156:5
  160:1 161:13,18 162:22
  163:2,11,14,22,25 164:2,6
  165:7,11 167:4,5 168:3
  170:15,21 171:2,9,11,25
  172:2,20 173:13 174:16,21
  175:3,4,13 176:8,11 177:18
  177:19,23 178:1,6,12 179:7
  179:9
xrp2
  170:19,24
xrp's
  38:16 110:7 175:14

y

yale
  12:11,17
yeah
  20:3,18 22:13,22 44:22
  49:17,17 53:2 55:17 60:13
  61:13 65:4 69:15 77:25

yeah (cont.)
  78:2 88:4,7,8 101:24
  112:22 118:6,14 123:8
  134:12 135:16,20 138:10
  139:22 143:2 150:1 168:22
  170:23
year
  121:22 140:13
years
  8:20,21 12:20 26:1 74:13
yesterday
  7:10
york
  1:2 2:6,6,9 3:5,5,19,19 4:10
  4:10 6:10,11,19 13:19,25
  14:4 29:15,17,20 89:24
  90:4 91:8,9 180:25 183:3,4
  183:8
yup
  110:25