UNITED STATES INTERNATIONAL TRADE COMMISSION

WASHINGTON, D.C.

In the Matter of:

CERTAIN PORTABLE BATTERY

JUMP STARTERS AND COMPONENTS INV. No. 337-TA-1359

THEREOF (II)

_____/

VIDEOTAPED REMOTE DEPOSITION OF

BRYAN A. LEGATES

Monday, September 25, 2023

6:05 a.m. Pacific Standard Time

Reported by:

Janice M. Kocek, CSR, CLR

Job No. 5436181

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The videotaped deposition of BRYAN A. LEGATES, taken via Zoom videoconferencing, called by the Respondents for examination, reported stenographically by Janice M. Kocek, License No. 084-002871, Certified Shorthand Reporter, Certified LiveNote Reporter, and Notary Public for the State of Illinois, commencing at the hour of 6:05 a.m. Pacific Standard Time, on Monday, September 25th, 2023.

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THE VIDEOGRAPHER: Here begins Volume I in the video deposition of Bryan Legates taken in the matter of Certain Portable Battery Jump Starters and Components Thereof in the United States International Trade Commission, Washington, D.C., Investigation Number 337-TA-1359.

Today's date is September 25th, 2023. The time on the video monitor is 6:05 a.m. This deposition is being held remotely. The witness is located in Los Altos, California.

The court reporter is Janice Kocek on behalf of Henderson Legal Services. And I'm the videographer, Dewey Nelson, also on behalf of Henderson Legal Services.

Will counsel please introduce themselves and state whom they represent beginning with the party noticing the deposition.

MR. BOSCO: This is Stephen Bosco with Husch Blackwell representing the Winplus respondents as that's defined in the subpoena. And also on the deposition

is my colleague, Samantha Sweet.

MR. CANAVERA: Hi. This is Kyle Canavera from Perkins Coie on behalf of the Carku respondents.

MR. EVANS: John Evans of Jones Day here on behalf of complainant, The NOCO Company.

MS. COMFORT: Claire Comfort with the Office of Unfair Import Investigations at the United States International Trade Commission.

THE VIDEOGRAPHER: Will the court reporter please swear in the witness.

(Witness remotely sworn.)

THE VIDEOGRAPHER: Please proceed.

BRYAN AVERY LEGATES, called as a witness herein, having been first duly sworn, was examined and testified as follows:

EXAMINATION

BY MR. BOSCO:

Q. Good morning. Could you please state your full name for the record.

A. Full name Bryan Avery Legates.

Q. Mr. Legates, first of all, I just

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want to thank you for being here. I know it's extremely early where you are and I appreciate your time.

I wanted to go over a few ground rules. Well, I guess, first of all, I'll just ask, have you ever been deposed before?

A. No. Almost, but this is my first time.

Q. Okay. Well, then I think all the more importantly we discuss some of the fundamentals of depositions.

You understand that you're under oath, correct?

A. Correct.

Q. And you understand that I'll be asking you questions and, generally speaking, you're going to be obligated to answer those questions. The only reason you wouldn't answer is if there is a privilege issue.

Now, is it correct that you're not represented by counsel today?

A. That is correct.

Q. So I think there's unlikely to be a privilege issue. I guess it would only come up if there were some prior privilege matter

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that --

A. And if there was a question that related to my previous employer that I would consider still confidential, I wouldn't answer it, but that's my understanding of that.

Q. And then related to just the back and forth of the deposition, we're obviously doing this remotely. So it's all the more important I think that you wait for me to ask my question before you answer because otherwise we'll just talk over each other.

A. Understood. Understood.

Q. And related to that, counsel for other parties to this case may lodge objections at various times after I ask a question. Like I said, you're obligated to answer once they lodge their objection and get it on the record.

A. Okay. After their objection it sounds like?

Q. Yes. We want to give them an opportunity to get their objection on the record and then you proceed with your answer.

A. Perfect. Okay.

Q. Is there any reason you can't testify competently today?

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A. No. No reason.

Q. Anyone in the room with you?

A. No. Everyone is asleep here, so we're good. And I'm in a separate part of the house, so even -- it's fine, yeah.

Q. Do you have your phone with you by any chance?

A. Somewhere I do. I can get it out.

Q. If you can just make sure it's sort of inaccessible.

A. Actually, I'll just make sure it's turned off. No one should be calling me this morning. Okay.

Q. And I assume you're using a laptop or a tablet of some type?

A. Yeah, I'm on my laptop.

Q. Could you just make sure that any messaging feature is disabled, like IM feature, anything like that?

A. Yeah, I will do that. I'll close that right now.

Q. And then, as I said, this is going to proceed in a question/answer format. I'll try to keep it to blocks of an hour or less. And if there's any time that you need to take a break,

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please let me know.

A. Okay. That's fine.

Q. Okay. So first, I'd like to ask you some questions just about your employment background and educational background. And to sort of provide a framework for that, I put a copy of your LinkedIn profile in the exhibit share.

Do you see that?

A. I do.

Q. So I'll mark that as Exhibit 1 if it's not marked already.

(Legates Deposition Exhibit 1 was marked for identification.)

BY MR. BOSCO:

Q. Does what I'll call now Exhibit 1 look like a copy of your LinkedIn profile?

A. Yeah. That's it. Looking quick at the dates. That looks correct.

Q. And do you generally keep your LinkedIn profile fairly up to date with your employment history?

A. You know, yes. I don't do much social media, but that one I did because a lot of customers used to look at it before visits

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and after visits. So -- and I don't do a whole lot of LinkedIn, but I do keep it up to date, yes.

Q. Okay. Great. Well, let's -- I guess, first, I'll just start with your educational background. Could you give me sort of a narrative summary of your educational background after high school?

A. I went to undergrad at NC State. Most undergraduates are pretty broad but I specialized in kind of analog circuits at the end, senior year for course selection, and then went to Georgia Tech for my master's; also focused on analog electronics, specifically analog IC electronics.

Q. And when you say IC, what do you refer to?

A. Integrated circuits. So design at the transistor level of semiconductors, yeah. If that makes sense.

Q. Okay. And so at NC State, North Carolina State, you got a degree in electrical engineering?

A. Electrical engineering both for my bachelor's and for my master's, but I guess the

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specialization at both places was more targeted towards analog IC design.

Q. Okay. So you have a master's in electrical engineering as well?

A. Correct.

Q. And then so after you got your master's, what was your first job?

A. First job was the National Semiconductor, designing DC/DC converters, again designing integrated circuits here in Silicon Valley.

Q. So you mentioned DC to DC converters, and that's something we'll talk about a lot, but might as well, if you can, give a high level explanation of what that is.

A. It's really just a kind of voltage regulator that takes one DC voltage and steps it down or up to another or sometimes can keep it at the same, but basically converts one DC voltage into another DC voltage. And that's what I've spent my whole career working on as an IC designer and design manager director; and then now, I'm kind of on the business side of things but still involved on the technical side, too.

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So essentially just -- I mentioned my background was IC. So there's IC design and then there's system design. I've done a little bit of both, but most of my time has been spent designing the transistor level circuits and the little black squares you see in any box that are the center of a DC to DC converter basically.

Q. Okay. So how long has DC to DC converters been around to the best of your knowledge?

A. Well, long before -- actually I don't know. That's a very good question. At least a couple decades -- at least, at least a couple decades before I started looking at it, I'm sure. Because some of the papers were pretty old.

Yeah, so in rudimentary forms, they've been around a long time. 40 -- more than 40 years, I would guess, but I'm honestly not sure. Yeah.

Q. Okay. So how long were you at National Semiconductor?

A. About two and a half years.

Q. And then where did you start working after that?

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A. Then I went to Analog Devices I think also for about two and a half years doing the same kind of products.

Q. So can you give a kind of high level description of Analog Devices, the company, I mean what their business is, at least at that time.

A. At that time, and even still a little bit today, they produce a variety of analog semiconductors, some digital, too. But they make a lot of analog integrated circuits for a variety of end markets, if that makes sense.

Q. And these are the type of integrated circuits that consumers have in electronic devices that they use all the time, right?

A. Pretty much everything imaginable, yes. I would -- yeah, if you look at the full career, I mean, consumer, industrial, automotive, data center, I mean, pretty much every -- every electronic and, even in these days, a lot of mechanical things have a whole lot of DC/DC converters in them for sure.

Q. So when you were at Analog Devices, you continued to work on DC to DC converters; is that right?

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A. Correct. Correct.
Q. And then it looks like -- well, where did you go next after --
A. Next was Linear Technology where the bulk of my career was spent, I think almost 19, 20 years, something like that.
Q. Where was -- where's -- where was Linear Technology when you worked there?
A. It was based in Milpitas, California, which is the same, it's at the southern tip, kind of the San Francisco Bay. So one of the many towns and cities in Silicon Valley.
Q. And what was their business model in general?
A. In terms of business model, theirs was a little unique that they focused on the high-end products that we did. We're focused on the top kind of 3 -- 2 to 3 percent of the market. So we tended not to -- not to focus on commodity stuff but on kind of high margin, high value business, if that makes sense.
Q. Can you explain a little bit more what the difference is in that market segmentation? What are some of the applications for that high margin?

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A. Industrial and automotive were some of our biggest segments because they tend to be the customers that value features and performance and are willing to pay for it. So our job was to do -- I mean, they're at -- at the time, a lot of competitors in that space, but I think Linear was known for always coming out with things first and being really innovative and unique and kind of foreseeing trends before they happened. So being first to market, especially with a high performance product lets you price it above others.
So basically we try to do performance levels whether it's accuracy or efficiency or a dozen of different things that were always better than the competition and always constantly staying ahead of them and allowed us to charge more for our products. A lot of it was a mindset, too. We had leadership that was pretty firm on what we -- on staying in that market so we walked away from a lot of business that many people would consider low-margin business to keep our profit margins up, just kind of as a general business mentality.
Q. Okay. Can you give kind of some

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examples of the type of companies that would have been customers for Linear Technology? Not asking for, you know, you to confirm that any one company was a customer but just the types of companies.
A. No, they're all over the map. So if you look -- I meant to go look at the old financial -- but -- look at the old financial statements. It's all public knowledge even though the company is not around anymore. It's been acquired. But we had a really broad customer base and sold everything, like I said, automotive, industrial, even -- we would say high-end consumer, more the consumer. But we had customers, what we would call, automotive Tier 1s. We had newer automotive customers. We had cell phone customers for early in the -- kind of early up until maybe 15 years ago or something like that. We even did -- focused on high-end cell phones and things like that.
But it was extremely broad. Not one or two customers. For some of my products, there would literally be thousands of customers who would be using them because it's very broad. We sold a lot through distribution. That's

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another way you keep margins up. You sell in smaller volumes. You aren't always chasing huge volumes. And then you provide them really good technical support, and that was a way to grow business at really small to midsized customers.
Q. So thinking about the automotive sector, would the customer for Linear typically be like a Ford or would it be some supplier of Ford?
A. It typically would be a Tier 1. So later at my time at Linear, I think my LinkedIn profile shows I left in 2019, which -- after Linear was acquired by Analog Devices; but I'd say that last four or five-ish years between whatever, 2014, '15, maybe, and 2019, that's just a guess on the front-end date, we started having a lot of direct involvement with automotive companies because they were trying to do things that some of the Tier 1s maybe weren't doing fast enough.
But primarily the people that designed our products in and bought them and that we interfaced with were what you would consider a Tier 1 or a Tier 2. That's a Bosch, that's a DENSO, that's a Quikto (phonetic),

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that's a dozen other ones. So most often Tier 1s in the automotive space.

Q. Okay. And so Tier 1 is -- do I understand correctly that Tier 1 is not Ford or GM, but it's like they are top level suppliers?

A. That is correct. They break their systems up. They defined -- most auto companies define their cars kind of at a system level and then they break the pieces up and give it to Tier 1s often, some others, that actually design the electronic and mechanical systems for the car.

Q. And did you find that your customers were coming to you with capabilities that they wanted and -- and you, I mean Linear -- but capabilities that they wanted and asking Linear to help them with that?

A. Yeah, we would do customer visits. Myself and senior members of my team and actually as -- a broad number of people would do four to five weeks of customer visits a year. And partly it's looking at what they're doing with their currently released products and also looking at things they want to try to do for next generation products, and that's where we

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got new product definitions from.

So really hearing from them what they were trying to do and what they were doing today and what they didn't like about their application today and things like that.

But, yeah, they would share a lot of information about what they were trying to do and what they wanted to do.

Q. And this may be self-explanatory, but what's a new product definition that you just mentioned?

A. It's really looking at what kind of analog IC, in my case, DC to DC converters typically, that needed to be designed next. Meaning we have this, you know, 40 products released on the market. These two or three are similar to what they're looking for but not quite. How do we add features to them? How do we add performance? How do we reach a higher power level and make a new product out of that? That simple. Yeah. Next generation of products.

Q. Okay. And then just to sort of close the loop on your employment, you referenced this earlier, but how long did you stay at Linear

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Technology?

A. I can look directly. Through 2019. So I think it was just under 19 years at Linear and then two more years at Analog Devices after that that were still working on all the same products and the same teams, just under -- underneath Analog Devices after that acquisition.

Q. Okay. And when was the Analog Devices acquisition to the best of your knowledge?

A. March 2017.

(Stenographer clarification.)

MR. BOSCO: Quick with my questions, too.

THE WITNESS: No, you're fine. I'll just pause a little bit.

BY MR. BOSCO:

Q. So can you give just a high level overview of the different positions you had at Linear Technology? You kind of already did, but just lay them out one by one.

A. I started there in more -- as a straight IC designer. So just I think senior engineer and then section leader, design

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manager, design director. And then after the acquisition, I became a general manager.

The design director position the last several years were probably kind of 50/50 business and technical. Actually, maybe 75 technical, 25 business is a better description. But mostly technical roles up until the last few years, and then it was actually running the business.

Q. So I feel like it's safe to say you have personal knowledge of Linear Technology's policies with respect to interacting with customers; is that correct?

A. That's correct.

Q. Do you have familiarity with information that Linear Technologies would post on its website?

A. Yes. A lot of the technical content actually came from the design and app team, either my designers or the apps team that we worked really closely with. They were the main producers of technical articles, data sheets, white paper kind of equivalent things like that.

Q. But on that topic, what types of documents and information would Linear

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Technologies typically post on its website about its products?

A. The simplest one I didn't mention, we would do ads and things like that which would show up there and in magazines. But as far as the primary technical content, it was writing either design notes or application notes.

Design notes tend to be a little bit shorter. That's one of the articles that you shared that's -- let me make sure I have that right. Yeah. That was what we would call a design note. And that was usually done -- there was Linear Tech magazine that was produced I think it was two or three times a year. Gosh, I can't even remember now. And that was technical articles -- technical articles we would write about newly released products or sometimes older products that were meant to be very practical and trying to help end customers design our ICs in without having to do much work.

So we would do all the apps. We would do everything and give them a full circuit even with all the component names, efficiency curves, things like that. Especially valuable for small and midsized customers because it

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saves them engineering time. We basically developed a complete solution and just kind of hand it to them.

That was a design note. Those were done in kind of a magazine format.

And then there's something called an application note which is usually longer and it's self-contained. So a design note is included in a magazine with a bunch of other design notes and press releases. And then an application note, there's a lot of actually famous Linear Technology ones from those days that became kind of industry standard, but they usually were more of a deep discussion on a single topic or a single part, and it could be five to ten to 20 pages long but usually heavy technical content. The same goal of helping our customers design our products -- or show them how to do things that maybe they don't know how to do already using our products.

And then the last one was just a datasheet which is really the document that our customers use when designing anything with our ICs. It specified the parameters we guarantee, the temperature ranges, the package it's in, and

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also would typically walk you through how to design a typical circuit. That's the majority of the content that we provide.

Q. And all of this information would have been publicly available on Linear's website?

A. That is correct. We had very few datasheets that were maybe customer specific where it was kind of a custom and we never published it. And to my knowledge, I know less than five of those and none of them are my products. Everything else is publicly available.

Q. Okay. So I think you were referencing a document that you had seen before. So let's pick up the second document that should be in the share folder. Let's mark that as Exhibit 2.

(Legates Deposition Exhibit 2 was marked for identification.)

BY MR. BOSCO:

Q. Do you have that one up?

A. I do.

Q. And just at a high level, do you recognize this document?

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A. Yeah. I assume you're talking about page 26 where it talks about the design feature?

Q. Well, just for the record, let's go to page 1. Just look at the complete document.

A. Sorry. Yes. I received this I think several weeks ago. It looks like the full document, yes.

Q. Just so the record is clear, this is a subpoena you received, correct?

A. That's correct.

Q. And then moving along to page 26. On page 26, what do you see?

A. That's the first page of an article I wrote about one of my -- one of the products I designed at Linear Technology called the 1618, LT1618.

Q. And what -- just so the record is clear, what's the title of this article?

A. "Current Limited DC/DC Converter Simplifies USB Power Suppliers."

Q. And then at the bottom right of that page, do you see a -- a kind of production number?

A. WINPLUS00041761, if that's the...

Q. So that's what you see on that page?

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A. That's what I see on that page, yes.
Q. Okay. So this article which begins with the Bates number -- we call that a Bates number -- WINPLUS00041761, when was this article published to the best of your knowledge?
A. February 2001 is the date the magazine went live. That's what's in the bottom right-hand corner of the same page. And it was written, I don't know, a handful of months before that, before published date. But that's the date it was published, February 2001.
Q. When Linear Technology published these journal articles in 2001, can you give a high level overview of all the different ways they would distribute it? Website? Or other means?
A. I'm trying to remember. This was 20 years ago. I believe -- actually, the most popular way, honestly, was still paper at that time. You -- they had -- we had -- I don't know what the -- what do you call it? Gosh. The number of people that received them but it was pretty high. But a lot of customers value these because they were, again, like kind of a technical magazine. Just like you'd get a

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magazine in the mail, we would ship these out to thousands of customers. I honestly have no idea how many.
But then they were published online and they were shared. A lot of other websites would repost them and things like that. I think even -- even though that was a long time ago. Just because they were heavy on technical content and that was a little unique. A lot of our competitors still would do more kind of call it marketing fluff, and we were known for doing heavy technical documents that were much more useful for customers.
Q. So in your experience, customers would look to this Linear Technology magazine as a resource for technical information?
A. Definitely so. Definitely so. For all of our technical documents actually. There are several that you can still see referenced now 30, 40 years later.
Q. That's pretty impressive.
Who are some of your competitors? You mentioned them a couple times.
A. At that time Maxim Integrated. Texas Instruments. Analog Devices did power briefly.

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I joined them I mentioned earlier in my career but they never did very well at it. So they had a really small piece. But my main competitors were Maxim and Texas Instruments.
Q. Okay. So going back to the article we've been referencing, can you give a high level -- well, first of all, how many pages is this article?
A. One, two, three -- looks like three pages.
Q. And so can you give a -- look it over if you need to further and then give a high level overview of what's being described in this article?
MR. EVANS: Object to form.
THE WITNESS: It's really just -- excuse me. It's really just a collection of circuits that we built and tested, and it's just showing the performance of each of them.
BY MR. BOSCO:
Q. And what types -- what type of circuits were these?
A. These are a variety of circuits. From my standpoint, one's a boost. One's a

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SEPIC. One's an LED driver. Another LED driver. These are pretty indicative of what customers were looking at the 1618 for at those times.
And I believe all of these may have come straight from the datasheet, which is always the first document that kind of goes out. But we would tend to reproduce some of them, sometimes with more data and other things; but also we would do new -- often do new circuits in these things, especially if we had gotten input from customers or things like that.
But these look like pretty indicative applications to what we had end customers doing.
Q. So the term "USB" is in the title of this article, right?
A. Correct.
Q. What does that stand for?
A. Universal serial bus, I believe.
Q. And as of February 2001, did you have customers that were looking for integrated circuits that they could use to assist with USB charging?
A. We did. I mean, that's essentially what the top -- well, the first resistive

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voltage regulator but it's powered from the USB bus. That's where the 100 milliamp, and 500 milliamp comes from. And it's even labeled such.

Q. What figure are you pointing to?

A. Sorry. Figure 1 on page 6 as labeled of the design note.

Q. Okay. And that -- that's still on page WINPLUS00041761, right?

A. That's correct.

Q. Okay. So looking at that Figure 1, how much voltage is coming into the circuit?

A. 5 volts.

Q. And how do you know that?

A. It's just labeled 5 volts.

Q. Where is that? For someone without a technical background again.

(Simultaneous speaking.)

THE WITNESS: Sorry. Say again. I'll need to pause.

BY MR. BOSCO:

Q. Where in the diagram does it say 5 volts?

A. Top left corner of Figure 1.

Q. And then how much voltage is coming

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out of the circuit.

(Stenographer clarification.)

THE WITNESS: Yes, top right corner, V out equals 12 volts, top left corner V in equals 5 volts.

BY MR. BOSCO:

Q. So why would a customer want to change the voltage like this having 5 volts come in and 12 volts come out?

MR. EVANS: Objection. Foundation. Sorry.

THE WITNESS: No. Go ahead.

BY MR. BOSCO:

Q. You can answer.

A. Okay. Depends on what they're powering from the output. So in this case, you would have a USB supply, but you may have circuits or motors or some other thing that needs more than 5 volts to operate. So you'd step it up to 12 volts depending on what you're trying to do with what is being powered by the 12-volt supply.

Q. Is 12 volts a common voltage level for applications?

A. It is. 12 volts --

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Q. Can you give us examples of applications that would use 12 volts?

A. There's still a lot of -- excuse me. There's still a lot of analog circuitry, amplifiers, things like that that like higher voltage, if they're driving speakers, things like that. 12 is -- I mean, we've talked about -- 12 is an automotive bus, 12, really 14, with a lead acid battery.

But 12 has just kind of hung around. I think 5 and 12 and 24 were the three main kind of industrial and any set-top box supplies, and they just kind of held up through time. So it was just a popular voltage for a variety of things. Motors do well at 12 volts better than they do off 5 in some ways.

For me, it's just kind of a legacy thing. I've been doing this for 30 years. It seems like they've always had 5-, 12-, 24-, and 48-volt supplies.

Q. Understood.

A. It's industry standard.

Q. So stepping back to your February 2001 when this article was published, I take it it was already possible to charge

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devices using USB and a 5- to 12-volt converter; is that correct?

A. Yes, it was possible at that point. I'm not even sure when USB came out, but USB was already being used to power -- that was the benefit of USB bus is it was one of the first ones that actually had power along with it. And it was originally, as you probably know, for a like a mouse or a keyboard or a variety of peripherals that you would attach to a computer, made it really simple. But people figured out really quickly if you had that power available, you could do other stuff with it. So...

Q. And so looking at Figure --

A. But yeah, even in 2001, it was pretty heavily used.

Q. Looking at Figure 1, since this has a 12-volt output, is it fair to say that's not being used for a mouse or a peripheral or something like that?

A. That is correct.

Q. And how do you know that?

A. A mouse or peripheral typically would run right off the 5-volt supply. They were all lower voltage applications. And anything that

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needs 12 would be very different, yeah.
Q. And so what was the name of the chip again that provided this boost conversion?
A. LT1618.
Q. And to the best of your knowledge, when was that LT1618 first introduced?
A. 2000 maybe. You know, I -- I can look up the datasheet and tell you exactly. Our datasheets show -- well, if I can find the original version. It was prior to 2000.
Q. Do you know if it's still being produced?
A. It is still being produced and it's actually still selling even -- what's that? -- 25 -- whatever, twenty-plus years later, it still sells.
Q. So based on that I assume it's correct that it was being sold continuously from sometime in 2000 at least until you left the company and possibly thereafter?
A. I know it's still sold today because some of my colleagues who are still there have commented that it still sells, which is -- yeah. Still in production today.
Q. Going back to your applications for

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the LT1618, you mentioned automotive. Can you think of any automotive-related applications that this chip was used for?
MR. EVANS: Object to form.
Go ahead.
THE WITNESS: We covered a broad range of applications. I don't know of any -- I mean, so I can't name you a single -- a particular customer or like this is what they were using it for. But we would know that the end customer would be automotive or industrial or something like that. But I don't have memory of like a specific customer or application that would be tiered -- or marked as automotive.
I know we had automotive customers looking at it doing similar applications to this and then we had industrial and otherwise. But as far as the complete details of their end use, I'm -- at this point, I'm not sure. Yeah. It was a long time ago.
BY MR. BOSCO:
Q. Okay. Looking at Figure 3, can you describe what's depicted in Figure 3?

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A. Figure 3 is a similar circuit except for it's -- this is in a case where the input voltage and output voltage is similar. So keep in mind when -- this is Figure 3, same page, when these schematics show V-in 5 volts, that's a typical voltage and the plus and minus could be 20, 30, 40 percent, even greater for some applications.
That just shows you kind of the typical range was about 5. But this circuit would work down to 2 volts in and up to 12 volts in easily. But this was a typical regulator where the input and the output voltage are close, but if the input voltage moves, you want the output to stay fixed at 5. Called a SEPIC.
But it's similar to the first application we discussed, just that it's regulating a different output voltage.
Q. What does SEPIC stand for?
A. Single-ended primary inductance converter. If you -- if you look at the circuit as it is, there's a lot of similarities that arranges some of the electronic components in a way that can actually step up or step down the output voltage. The previous circuit in

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Figure 1 can only step up the output voltage.
Q. So a SEPIC circuit could be used to step up, but it doesn't have to be used to step up?
A. That is correct. We had -- actually, yeah, I'm trying to think if I could remember for 16 -- I had many products that would do these two functions, a boost converter or a SEPIC converter, and the same IC can do both as you see. And some customers would choose a boost and some customers would choose a SEPIC.
The biggest thing of a SEPIC is it provides output short protection. So we would have customers that would use a SEPIC for, say, 5 volts in to 12 volts out, even though it was stepping up all the time because it has short-circuit protection built into it just with the way the components are arranged.
Q. Okay. That's very helpful.
So looking on the next page of this document, the page that's labeled WINPLUS00041762.
A. Okay.
Q. Do you see the heading USB to 12V Boost Converter?

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A. I do.
Q. And is that description there is describing what's depicted in Figure 1, right?
A. Correct.
Q. And then there's another section entitled USB to 5V SEPIC Converter with Short-Circuit Protection, right?
A. Right. That's the SEPIC I'm talking about, yep.
Q. Okay. And that material that then is under that heading, that's describing a circuit that could be used to step up voltage, correct?
A. Yes. If you change one component in that Figure 3 circuit, it could be a 12-volt regulator and it would work just find. If you just program the output voltage to 12, everything about that circuit would still be a 5-volt in to 12-volt converter. It would just now have short-circuit protection and have a couple more components needed to build it. But it would serve -- it could serve the same function as Figure 1.
Q. Okay. So we talked about the LT1618. What other integrated circuits do you recall from your time at Linear Technologies could

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provide similar step-up or boost capabilities?
A. There are I want to say hundreds. Many products can do -- those -- those basic functions of stepping up, like a boost converter, or an SEPIC, there are I'll say dozens. Many, many dozens that can do the same function.
But the unique thing about the 1618 and also the -- LT1618 and the LT3477, which I think I mentioned in an email back, the biggest unique feature about both of those is if they had a current limit loop that you could use at the input or the output. And for USB supplies using it as the input was really helpful to make sure you stayed below the -- the current limit that the USB was supposed to provide. And that's kind of what's shown in Figure 1 and Figure 2.
But to answer your question directly, there are -- from Linear, there are dozens and dozens of parts that could do these same functions, just without that input currently.
Q. Okay. So let me take that piece by piece. You mentioned the LT3477. Did I get that right?

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A. Correct.
Q. So that chip was produced later by Linear Technologies; is that right?
A. That was a follow on. Yeah, I think that was released in 2005-ish, I believe. I can confirm that if you want. But it was released a number of years after this one. It was meant to be a follow on to the 1618 and it had a lot of similar customers. And I designed -- I personally designed the LT1618 and then I became the design manager, and one of my engineers designed the 3477 based on a lot of customer inputs who were using the 1618.
Q. Okay. And were some of those customers who were using the 1618 interested in using it for USB application?
A. Many were, yes. That's why a lot of our earlier applications are kind of tipped that way.
Q. And so then was the LT3477 in some respects specifically designed for USB applications or at least to be compatible with USB?
A. I won't say it's specifically designed, but definitely it had a lot of USB

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applications.
Most -- both of those products I would consider very general purpose in that it can do a lot of different things. That's why you see LED driver applications. You see USB. You see other.
But I think it's safe to say that some of the earlier interests we received was for USB-powered applications because it was kind of new and there weren't a lot of ICs that could do them very well because they didn't have the current regulation loop. So we definitely had a lot of early customers that were looking at it for powering from the USB.
Q. You mentioned that current regulation loop and the current limits with USB. Where would you look to to understand what the current limits were for USB?
A. From the 5-volt input. So early specs said that you could -- you had two modes, kind of a low power mode and a high power mode. Low power could provide a 100 milliamps and then after some handshaking you could go to 500 milliamps. So 500 milliamps from 5-volt supply is about 2-1/2 watts. And 2-1/2 watts could do

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a whole lot, especially for a mouse or a keyboard. But that's kind of what got people using it is what can they use that 2-1/2 watts for.

The biggest advantage, it gets rid of wall warts. It does things like that. You can use your computer or your desktop as a small power supply to do a variety of low-powered things basically.

But that resistor that's shown in Figure 1 and Figure 3, there's a .1 ohm resistor. That's really measuring input current that's coming off the USB bus, the 5-volt supply. And it limits it to either 100 milliamps or 500 milliamps depending on which mode you're in. And that was the key part of the 1618 and later the 3477 that most other DC to DC converters, ICs did not have, and it made them really useful for USB input stuff.

Q. Okay. You mentioned a spec I think in that answer.

A. Uh-huh.

Q. What spec were you referring to?

A. Wow. U.S. -- anything that comes out as a standard bus whether it's Ethernet, USB,

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they typically have a long document that specifies what they can do and what they can't and how the -- USB also has a large digital component to it. It transfers data. I'm talking just about a simple part of the power spec.

So I haven't looked at that spec in decades. But the simplest thing to remember about it is that those were the two modes, either 100 milliamps with 5 volts in or 500 milliamps with 5 volts in, and it was one of the two -- you could be in one of the two modes.

Q. Do you recall looking at those USB specifications at the time you were designing these chips?

A. We did. We looked at them quite a bit but just for the power capability. Not for all the data stuff. At that time, we were only interested in what power could provide.

Q. In order to ensure that the LT1618 or LT3477 would work well with USB applications, was it necessary for you to consult those USB specifications?

A. I don't know if it was necessary. We got a lot of info directly from customers. I'd

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say it was thorough. Right. Due diligence to make sure you understand. If we have customers -- we had customers who were wanting to power from the USB, so logically, we should make sure that we understood the USB requirements so anything we built or showed them would work with it, if that makes sense.

Q. Okay. So I've go another exhibit that I want to go to, but I was thinking maybe we could take a ten-minute break now if that's okay with everybody.

A. That's fine.

THE VIDEOGRAPHER: We are off the record. The time is 6:49 a.m.

(Whereupon, a recess was taken from 6:49 a.m. to 7:02 a.m.)

THE VIDEOGRAPHER: We are back on the record. The time is 7:02 a.m.

BY MR. BOSCO:

Q. Welcome back, Mr. Legates. You should have some additional documents in the file share. If you could open up the one that has the -- is file name Legates several zeros and ends in 45.

A. Okay. Sorry. I closed that window

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before. I downloaded everything. It looks like you added something else maybe. Okay.

Q. I'm going to probably continue to add things here.

A. I'll keep this up the whole time then. That's perfect. I apologize. Let me pull that to a separate window. Okay. I see it. So Legates 45. Got it. And --

Q. Okay.

A. Okay. Go ahead.

Q. All right. Let's mark this as Exhibit 3.

(Legates Deposition Exhibit 3 was marked for identification.)

BY MR. BOSCO:

Q. Mr. Legates, at a high level, what is this document?

A. This is an e-mail I think I sent in response -- sorry. It's really slow. It's an email I sent in response after you and I had a phone call about when I received the paperwork basically.

Q. And when you're referring to paperwork, you're referring to the subpoena you received, correct?

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A. Sorry, the subpoena, yes. When I received the subpoena by FedEx, you and I had a phone call. I looked up a little bit based on our discussion trying to remember what I might have or might not have in terms of documents since I left Analog Devices a number of years ago.

And this was the only thing -- one, I found a document that was still on my personal computer that dealt with the 1618 and even some 3477 stuff. And I looked up a little bit about -- since I knew both parts had similar applications, I just expanded a little bit on some of our discussion I think.

Q. Okay. So let's -- looking at the first page of Exhibit 3, there's a heading in your email that says LTE3477, right?

A. Correct.

Q. Can you just quickly review that paragraph -- actually, strike that. Well, no, I'll go back to what I was going to do before.

Can you read that paragraph and let me know if you see anything inaccurate in that paragraph.

A. Just read it to myself? Is that

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okay?

Q. Yeah.

(Witness reviewing document.)

THE WITNESS: To my knowledge, everything there is accurate, correct.

BY MR. BOSCO:

Q. And so the first sentence says (as read): On our call, I mentioned that LT3477, essentially a higher-power LT1618, that also had many customers using it for USB-input applications.

Correct?

A. Correct.

Q. Do you remember any specifics about the USB input applications for the LT3477 and apologize if I've already asked this?

A. No, no. The biggest one with 3477 is we were trying -- we were looking at doing much higher power. If you -- if you look at the 3477, it's capable of doing almost double the output power, double the power, output power of the 1618. And some of that came from customer interactions who were already using the 1618 and were trying to see could they actually do more power than what the spec said it could. Right?

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We talked about this 100 milliamp and 500 milliamp limit that was written into the USB spec, but we had many customers that found 2-1/2 watts, right, 5 volts in, 500 milliamps is 2-1/2 watts of input power available. We had customers trying to do more power than that. Actually, a lot of people it was well known were trying to do more than that.

So some of the 3477 was talking to those customers, trying to see how much power we could do. So there was a lot of discussion with customers. You kind of asked the question before. It's been a long time. But we had lots of different customers and lots of different spaces that were looking at running from USB. It's hard to remember all of them.

But I can definitely say a lot of them were not happy with the 500 milliamp limit and were trying to do more, and that's where the 3477 definition actually came from. You talked about new product definition. We realized the 1618 couldn't do enough power for some customers, so we did the 3477 basically.

Q. So were any of these 3477 customers trying to charge lithium-ion batteries?

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A. Yes, they were.

Q. And so using the LT3477, they could boost voltage from 5 volts to 12 volts and charge a lithium-ion battery; is that right?

A. They could do any voltage they wanted to with the 3477. Right? It's whatever -- whatever battery stack you chose. Typical lithium cell is 4.2 volts. If they're doing a single cell, it would be a 5-volt in to 4.2-volt out SEPIC. If they were doing two cells, it would be a 5-volt in to 8.4-volt SEPIC or boost depending. Or three cells would be 12.6 volts if it was a lithium-ion, yes.

Q. And do you recall any customers doing that last configuration you mentioned, three cells, 12 volts?

A. We had customers -- yes. I mean, we had customers doing all those things. Like I said, I can't tell you the name and where they were. But that's one of the reasons I shared this schematic is -- that's the reason that schematic is in there. It's -- sorry, it's not labeled, but in this same document, I show a 800 milliamp 5-volt to 12-volt boost converter with accurate input current limit, and that's trying

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to do more power from a USB input than its -- the spec says it could and doing 12 volts out.

I don't know if this was for lithium-ion or lead acid or DC/DC converter guys. Sometimes we don't care about those things because the voltage -- as long as we can give you the right output voltage, no matter what the load or battery or whatever it is, the DC/DC converter looks the same to us.

But do I remember we had lots of people looking at different kinds of batteries, even nickel metal hydride and everything else was really popular back then.

Q. What was the last one you used?

A. Sorry. Nickel metal hydride. It was a common battery technology. It still is, but lithium-ion has pretty much replaced it, in my opinion, for usability.

Q. And you were --

A. The summary statement is we had a lot of people looking at a lot of different applications in a lot of different spaces that would be taking USB to 12 volts, 5 volts, and that included batteries as well.

Q. And just to put a little temporal

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framework on your testimony, what time frame are you referring to when you say a lot of customers were looking at USB application?

A. So the 1618 I think I -- actually, I couldn't find a press release for that which would have marked the date. I'm not sure why that's not on the website anymore. But that was I think pre -- that was 2000-ish when the 1618 was released.

And then I mentioned the 3477. The date of the press release was May 2006.

So in that time frame, it would not be hyperbole to say we had hundreds of people talking about these kind of applications. Just because they were taking off and lots of small and big customers were doing it. So the time frame after the 1618 was released and lots of activity with customers, getting ready to define the 3477.

So -- and the 3477 we would tend to show a new product -- any -- any Linear Technology product typically would be shown to important customers or any customer who had reasonable interest usually a year or so before release. So we would wait until we had first

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silicon, good working products where we could show efficiency curves and give them a Demo Board. But we would typically show a product a year or even sometimes a little more than the released -- the press release date.

So it means we would have been working with customers on the 3477 back in 2005, already doing a variety of these kinds of apps. And a lot of these applications that made it in the datasheet and the design notes and things, design, were -- came straight from working with customers and seeing what they wanted to do and assuming they -- others might want to do the same thing. So...

Q. Understood. So looking at the first page of Exhibit 3 again, you see the sentence that says (as read): I found the original version (Rev A) archived online here?

A. Correct.

Q. And then it goes on to say (as read): Which shows the same circuit (but on page 15) with a release day of May 2006. And then there's a parenthetical, right?

A. Correct.

Q. And the parenthetical says (as read):

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See page 20, bottom right footer - "LT 0506 Rev A" is May 2006 date, first revision when the LT3477 was first released.

Correct?

A. Correct. We would periodically add new schematics or new technical commentary or even update electrical characteristics and things like that.

And as we updated the datasheet, which is kind of the legal -- I say -- it's a document we give to our customers that says this is what we stand behind in production, again, this is our temperature range, this is our pinout, things like that. For many products, we update those were small changes through the years. And the website would take off the old version and only include the new version so that they had the latest and greatest in case a spec changed or something else.

So the original version is not on the Analog Devices' website now, but I found that archived. And looking through it, it looks correct from what I know from that part.

Q. You talked about --

(Simultaneous speaking.)

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THE WITNESS: Sorry. It was mainly distributed. The date was really earlier than the current version of the datasheet shows on the Analog Devices' website.
BY MR. BOSCO:
Q. So in your exhibit share folder, do you see the documents that's labeled Legates and then it ends with 01?
A. I do.
Q. If you could open that one up and we'll mark that as Exhibit 4.
(Legates Deposition Exhibit 4 was marked for identification.)
BY MR. BOSCO:
Q. So can you take a look at that and let me know what it is.
A. That is the 34 -- LT3477 datasheet. It looks like the one I sent you that's the original Rev A.
Q. So this is the original Rev A that you're referring to in your email that has a May 2006 publication date; is that right?
A. Correct.
Q. And can you just give -- you've done some of this already -- but another summary of

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all the different ways this datasheet would have been published as of 2006.
A. On the website, datasheets in those days were still provided as paper copies as well. Like a little booklet, a little stapled booklet. Those were the two main ways. At trade shows, they were handed out. All kinds of things like that, even handed directly to customers.
But typically put on the website, electronically available through there. They would be on our distributor websites I think at that time. I know today you can go to DigiKey or Arrow or Mouser or others. And when you are looking at parts, it actually has our datasheet link on it as well. So I believe that was done quite a while ago.
So basically you could find it electronically or get -- get it mailed to you or handed to you by an LTC employee.
Q. And you testified earlier that a datasheet like this would likely have been given to high-level customers even before the official release day, right?
A. Yeah. Yes. It would be a

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preliminary -- it would be stamped plainly preliminary and it would have NDA stuff on it, you know, for specific customer use. But they would -- when we gave them a Demo Board and started talking to them, we'd always give them a preliminary version of the datasheet, that's correct.
Q. And so then in your email, you -- Exhibit 3, you referred to a circuit on page 15. Can you locate that in Exhibit 4.
A. Yes, I'm there.
Q. And so at page 15 has two different circuits, correct?
A. That's correct. The one at the bottom was the main one I was -- that I sent. But if you look, these two circuits are almost identical to the previous two we talked about with the LT1618. One's a SEPIC and one is a boost.
So similar functionality to the two we talked about before. But the one I sent is the bottom of the page of number 15.
Q. And, again, the difference between this primarily and the LT1618 circuit is the current limit; is that correct?

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A. It's mainly the power level, correct. The internal power device of the LT3477 is about twice as big as the 1618 so it can do more power in -- at a high level, this circuit is really similar to what the 1618 does. It just can do it at a higher power level.
Q. Now, on this page 15, I don't see the word "USB." Could these circuits have been used for USB application?
A. Yes. Anything with a 5-volt typical input could be used to USB.
I don't know why we didn't choose to use USB. Maybe because we're violating the USB spec here. If you look at the amount of output power, it's about 2 watts -- sorry. This is -- no, this is more than double that. That's -- this is 10 watts out.
So if you look, this power level is about 10 watts out which is higher than you should be able to draw from the USB. So my guess is maybe that's -- that's a guess. I shouldn't guess. But this -- we didn't have USB in the title, that's correct.
Q. But your customers, to the best of your knowledge, knew that this could be used for

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USB applications?
A. Yes, because they were already trying to do more than 2-1/2 watts from the USB.
Q. Okay. So going back to Exhibit 3, your email, you -- there's a second heading that says, "One other document."
Right?
A. Correct.
Q. And do you see, there's a paragraph underneath that, do you see anything in that paragraph that's inaccurate?
A. That statement is correct.
Q. And then you should have in your -- well, strike that.
So the document that you reference in that paragraph was attached to the email you sent me, correct?
A. Correct.
Q. And you should have it in your ShareFile a document with -- that ends in -- sorry, has the Bates number Legates and ends in 50.
A. Yep. I have that. It's open now.
Q. Let's mark that as Exhibit 5.

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(Legates Deposition Exhibit 5 was marked for identification.)
BY MR. BOSCO:
Q. Can you take a look at Exhibit 5 and let me know what that is.
A. So this is a bunch of measurements I did. Again, the 1618 had been released. The 3477 was already in development at this point. We maybe even had silicon on it judging by the date. But we were having so many people asking about USB applications and trying to do more current that I basically built a little test circuit that you see at the bottom.
Twice a year, Linear Technology would have technical presentations. Basically all our sales force, our technical sales force would travel in from all over the world, and we presented them new products that are in development that are going to be released like in a year. And that's, as I mentioned -- and then go out and start showing them to the customers, start getting interest, start trying to find sales before it's released.
And that was a really good place to look at laptops from all over the world, since

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laptops were the biggest user of USB supplies at that time. A lot of these people I knew really well, and a simple request was, hey, if you're okay with it, we're seeing a lot of USB stuff, and I'd love -- we're seeing stuff that wants to do more than the 2-1/2 watts, would you be willing to let me just see what your laptop can provide off its USB port.
And I said, if you're okay with that, leave your laptop up. If you're not, close it. And when we took a break for lunch, I went around and I plugged my little test circuit into every laptop that's shown here. And I did it, you'll see, at 0 milliamps, 500 milliamps, and 750. And 500 was the limit of what the spec says.
And in hindsight, I would have done even more current. I wish I would have.
But the point of this was to see could we really start doing these applications at higher power levels and they would be able to work with existing hardware in place. That was the goal of this.
Q. And so at the top of the spreadsheet there it says, "April 2004 FAE Meeting."

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Do you see that?
A. That's correct.
Q. Where was the FAE meeting at?
A. That's what I mentioned, field application engineers. So Linear and many analog semiconductor companies, they have two kinds of customer engagement, direct customer engagement. One would be a sales engineer. That would be the typical function you imagine. And the other is an FAE, field application engineer. And that is the first line of technical defense to our customer.
So if there's a problem, if they're trying to get something working, if they're using a new part and want to understand it, the FAE would be the first person at Linear Technology to help the customer with that.
They reside all over the world. They go visit customers three to four days a week. And like I said, they're the first line of defense.
And this is a list of mostly FAEs but a handful of other technical people, designers and such, that traveled in for the meeting. But, in general, the names on the left -- let me

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look quickly -- more than three-quarters of them are, quote, "FAEs." These technical salespeople that travel to the customer and they came to Milpitas for this meeting where we're introducing new products to them basically.

Q. And were any of the people on this list customers --

A. No.

Q. -- or were they all --

A. These are internal LTC employees.

Q. But so is it fair to say that everyone on this list at this time and at this meeting was discussing the possibility of using USB for charging applications?

A. I don't know about everyone on this list. They let me use their laptop to take data points. But definitely we talked a lot about how USB is taking off as a power supply and that we were doing new products that would try to focus more on the higher power USB we thought was coming, which eventually did come but much later.

So I don't know if all of these had customers doing it. I know I can look at the regions they're from and I know a lot of them,

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those parts of the world were definitely looking at it.

Q. Looking at this list and the list of names, can you think of any customers that were specifically interested in USB-charging applications at this time?

A. I mean, the biggest one which I mentioned before, the biggest first opportunity for the 3477 was actually a cell phone backup battery that was charged from USB and you would carry it around. It's -- I mean, they're ubiquitous now. You can buy them on Amazon, hundreds and hundreds of them. But the first time I remember seeing it was a customer using the 3477 to do a USB to lithium-ion cell, and then they gave that out as a feature on one of their high-end phones.

Q. So sort of -- what year did you leave Linear Technologies again?

A. 2019 I left Linear Technology or left Analog Devices who had acquired Linear in 2-17 but...

Q. So this may be a little challenging. It's a little artificial. But thinking about the decade that passed between this -- this

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meeting that's reflected in Exhibit 5, the -- over the following decade, how did USB charging applications evolve over time?

MR. EVANS: Object to form and foundation.

Go ahead, Mr. Legates.

THE WITNESS: They came -- it was prolific. Just how many different kinds of applications were done. How many different industries started looking at them. It just became -- I mean, and even today, you don't even think about -- you don't even think about it, but everything charges off your USB, whether it's the old one or the USBC from your phone, to AirPods to whatever else.

So definitely this kind of started back in this time but it's been just growing from then. I guess that's the easiest way to say it.

BY MR. BOSCO:

Q. Would it be fair to say that as of 2014, most electronics manufacturers would consider USB charging as an option?

MR. EVANS: Object to form. And

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foundation.

Go ahead.

THE WITNESS: My opinion it was, yes, very widely known. And again, we had already been talking about it for -- since 2000, 2001. So it's logical that it would be pretty widely used by that time, just in broad terms.

BY MR. BOSCO:

Q. Can you think of, you know, at any time up to 2014 any USB-charging applications that you're familiar with relating to power tools?

A. I know we did have customers looking at it for both of these products, but I would not -- details I wouldn't be able to provide.

(Simultaneous speaking.)

THE WITNESS: Maybe elaborate. We would see some specific -- we would visit customers directly. And we would get input from the FAEs, the ones we mentioned here. And we got so many things -- you can kind of remember general things, but I wouldn't be able to name a customer and definitely not 20 years ago.

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But it is true we had customers from automotive space, from power tools, from medical equipment, from cell phones, from pretty much anything imaginable looking to power from USB. I think that's safe to say.

BY MR. BOSCO:

Q. And would it have been challenging for these customers who wanted to power using USB to use one of Linear Technology's boost converters?

MR. EVANS: Object to form and foundation.

Go ahead, Mr. Legates.

THE WITNESS: You could use any of the applications we showed in the data sheets and do it at a basic level pretty easily, I think.

BY MR. BOSCO:

Q. Sorry. I'm just reviewing a couple things quickly.

I'm going to put another exhibit into the share.

(Legates Deposition Exhibit 6 was marked for identification.)

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BY MR. BOSCO:

Q. Do you see a document that has a file name ADP1612_1613?

A. I do.

Q. Could you open that one up.

A. Downloading now. Give me a minute. I don't know why that's so slow.

Yeah, there it goes. Okay.

Q. Are you familiar with this document, taking a quick look at it. I understand it has a lot of pages.

A. Actually, this is a part that I believe was released after I left Analog Devices, but I'm maybe vaguely familiar would be the term. I know the product number because it -- it was meant to try to copy some LTC parts that my boss actually designed years ago. That's the reason I recognize it.

Q. What parts was it designed to copy?

A. I believe it was 13 -- gosh -- 1615. It may -- it may be the actual 1612 and -13 name that's used here. That's what I'm trying to -- can I look to confirm that or no?

Q. Absolutely. Look at any page you want in the document.

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A. I can tell -- I can tell you quickly. Analog Devices -- like I said, I was at Analog Devices for a couple years and left and went to Linear. And in the handful of years after, they actually started copying some of Linear Technology's parts that they saw in high-volume applications. And -- but sometimes they would slightly change the part numbers. I'm not really sure why because part numbers are not typically an issue. Hang on.

And I was just trying to see -- I believe it might be via actual just a different -- no, it is -- I don't know if they're pen for pen compatible but 1611 is the name -- is the part that -- wow, sorry. This video has my -- the LT1611 and LT1613 were two very popular boost converters that preceded some of mine. That's why the names are really similar. Things in the 1600s were done initially by my boss and then by me and some others on my team.

And so this part is kind of in that space doing similar products. So this is not a second source; but, yes, I'm roughly familiar with this product because we had seen it at some point competing with our kind of family of

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products is maybe the way to say it.

Q. Okay. This datasheet that's Exhibit 6, does it -- is it a datasheet for a boost converter?

A. Yeah. It's a basic boost converter.

Q. And could this be used with USB?

A. Let me look at the input voltage range and whatever else. Give me a minute. Their datasheets are set up a little bit different. Yes, it could be.

Q. Is there anything in this document that would give you an indication of the date that it was available?

A. Let me see how their --

MR. EVANS: I'll just object to form and foundation.

Go ahead.

THE WITNESS: This one does not -- Analog Devices has a very different datasheet format. I'm not sure when this was released, but I know it was -- I'm not sure when it was initially released, but it was definitely after the period we talked about. But reasonably in the early 2000s.

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Petitioner ADC (IPR2024-00671)

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BY MR. BOSCO:
Q. Okay. So if you look at the second page of the document at the bottom, do you see where it says, "Revision History"?
A. Oh, there we go. Yeah, they do theirs -- oh, yeah, there we go, yep. But it doesn't -- does it have dates with that? Revision history 4/11. Yes, I see it. Sorry. We only started including this much later.
Q. When you say "we only started including this," you mean Linear Technologies?
A. Yes. Linear Technology, typically we did not publish a revision history when we updated the datasheet. I think near the end of my time there, we started including something like this on the very last page. And this -- Analog Devices obviously did this earlier.
Q. You were an Analog Devices employee for a couple years; is that right?
A. Yeah, kind of book-ending my time at Linear. I joined Analog Devices before Linear, and then I worked at Linear for 19 years and was acquired. And then I've worked at Analog Devices for two years after the acquisition.
Q. Okay.

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A. So kind of the bookended my time at Linear.
Q. Just based on your experience as an Analog employee, at the bottom of page 2 where it says, "Revision History," what's your understanding of the different dates that those revisions were released?
A. That the data sheet --
(Simultaneous speaking.)
MR. EVANS: Hold on -- hold on a second. Sorry.
Objection to foundation.
Go ahead.
THE WITNESS: Just that the datasheet was released in April of 2009. And then the other dates show that when changes were made to the datasheet updates or corrections or things like that. But this would suggest the part was released in April 2009.
BY MR. BOSCO:
Q. Okay. Thanks. You can put this one aside.
We can go back to Legates 01.
A. Okay.

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MR. BOSCO: I'm sorry. Which exhibit -- which number did we mark this as, just for the court reporter?
THE STENOGRAPHER: The last one was 6.
MR. BOSCO: The 01.
THE STENOGRAPHER: Let me search.
MR. BOSCO: My fault.
THE WITNESS: Exhibit 1 was my LinkedIn profile. I remember that. I think this was the second one, but I haven't been writing them down.
MR. BOSCO: Not your job.
THE WITNESS: Sorry.
(Whereupon, a discussion was had off the record.)
BY MR. BOSCO:
Q. So looking at Exhibit 4, Legates 01, when you look back through this document and provide any information you can on indicators of when this document was published, I know you've already testified some about that but anything intrinsic to the document that shows you when it was published?
A. It's really just the final page 20,

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bottom right corner, the LT0506, that's a May 2006.
Q. So that's at the bottom right, the final page of the document?
A. Yeah. This is for the 3477 again. That was -- the bottom right page shows this is Rev A, which is released when the part -- product is initially released. And that's the date that the datasheet was released and the part was released.
Q. Okay. So --
A. The datasheet was released. Datasheet was released.
Q. Just so the record is clear, you're looking at the page that says LEGATES and then it ends with 20, the Bates number, correct?
A. That is correct. And it's page 20 of that datasheet. So the big 20 is on the left-hand side of the page. It's LEGATES 20 referenced. And the bottom right corner shows the LT0506 date Rev A I talked about.
Q. And this is a document that would have been created in the ordinary course of business at Linear Technologies, correct?
A. Correct.

EXHIBIT 1026
Petitioner ADC (IPR2024-00671)

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Q. And based on your almost two decades of experience at Linear Technologies, your understanding of the label LT0506 is that that means this document was released on -- in May 2006; is that right?
A. Correct.
Q. And insofar as you know, was that dating scheme used throughout your time at Linear Technologies?
A. Yes.
Q. So I'm going to change gears a little bit.
Okay. Are you familiar with a term called passive cell balancing?
A. Yes.
Q. What's your understanding of what that term means?
A. When you stack a number of battery cells together, they don't match perfectly, and if you charge them all with the exact same current, eventually some cells in the string will reach their max charge voltage. And you don't want to charge it past there for damage of shortening the life of that cell or damaging it or catching on fire or something else.

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So when you have a lot of these stacked up in a -- in series, you want to divert current around the cells that are already fully balanced -- sorry, that are already fully charged.
And there's two ways to do that. One is passive cell balancing, meaning if you -- I'll use an example. Three battery cells and you stack them up and let's say the one in the middle reaches full charge first but you want to keep charging the top and the bottom, you need to divert current around the one on the bottom to keep the cells balanced. That's where the passive balancing.
And active balancing just means you have fancier circuitry and sensing to do that. But it's to keep -- it's for a safety mechanism and also battery life and things like that when you're charging a number of cells in series.
Q. So based on your experience, was passive cell balancing known before, say, 2017?
MR. EVANS: Objection. Form. Foundation. Calls for expert testimony. Go ahead.
THE WITNESS: Yes. Based on my

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experience, customers were talking about active and passive cell balancing prior to that time.
BY MR. BOSCO:
Q. Did Linear Technologies have any integrated circuits that were used for passive cell balancing?
A. No. They were looking at active cell balancing pretty early. I can -- I -- first -- I can probably look up the dates with some time and find it, but passive cell balancing didn't require any real semiconductor content or not the kind of things we were looking at. But active cell balancing we had a lot of interest in for a while. Because it's a big power saver. Has real power problems. Anyway.
Q. Does passive cell balancing, is it fair to say that that's kind of a less sophisticated technology than active cell balancing?
A. I'm not sure I think of "less sophisticated" is the right word. From my standpoint, it takes less of a semiconductor content that we would want to provide. But typically, yeah, it requires less semiconductor

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components. It's usually resistors and some of the things like that. Really simple bypass circuits.
Q. Do you think that passive cell balancing -- strike that.
Based on your personal experience and knowledge, did passive cell balancing exist as of the year 2000?
A. I don't know about the year 2000.
Q. How about the year 2010?
A. Yes, based on my experience.
MR. BOSCO: Okay. I know we've only been going 40 minutes. I'm getting close to I think what will be the end of my exhibits. But I'd like to take maybe another ten-minute break if that's okay with everybody and review things.
THE VIDEOGRAPHER: We are off the record. The time is 7:41 a.m.
(Whereupon, a recess was taken from 7:41 a.m. to 7:52 a.m.)
THE VIDEOGRAPHER: We are back on the record. The time is 7:52 a.m.
BY MR. BOSCO:
Q. So Mr. Legates, let's look back

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quickly to Exhibit 2 which was the subpoena itself.
A. Okay. All right.
Q. And then, as you'll recall, on page 26 is the article you authored, correct, that we discussed earlier?
A. Let me get there.
Q. Page 26 of the PDF.
A. Yep. That's correct.
Q. Okay. So -- and I apologize if this is redundant, but this article, to the best of your knowledge, was published on -- at least as of February 2001; is that correct?
A. That is correct.
Q. And at least either in 2001 or sometime thereafter, it would have been posted on Linear Technology's website; is that correct?
A. That is correct.
Q. And would you agree that it would have been posted on the Linear Technology's website before 2014?
A. Definitely before 2014.
Q. And this describes a chip called the LT1618, correct?
A. Yes.

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Q. And is it correct that you personally designed that chip?
A. That is correct.
Q. And you -- earlier in your testimony you discussed the chip called LT3477. Is it correct that although you didn't personally design that, you had input on the design of that chip?
A. Correct. I defined that chip and then one of my engineers designed it. But I did the definition for it.
Q. And the article on page 26 of Exhibit 2, that's a document that Linear Technologies created in the ordinary course of business, correct?
A. Correct.
Q. And I believe you testified to this earlier, but this document would have been conveyed one way or another to hundreds or thousands of Linear Technology's customers; is that correct?
A. That's correct.
MR. BOSCO: So at this time I have no further questions for you, Mr. Legates. The attorneys for the other parties may

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have questions. And then depending on that, it's possible that I may ask some follow-up questions.
THE WITNESS: Okay.
MR. BOSCO: Thank you very much for your time.
THE WITNESS: Uh-huh.
MR. CANAVERA: I don't have any questions at this time.
MR. EVANS: Claire, how about you, why don't you --
MS. COMFORT: The staff doesn't have any questions.
EXAMINATION
BY MR. EVANS:
Q. Okay. Mr. Legates, my name is John Evans. I'm with Jones Day representing NOCO, the complainant in this investigation. I have just a couple of questions for you.
A. Okay.
Q. In the share folder, there's the document beginning with LEGATES and it ends in 45.
Could you bring that up, please. And let me know when you have it.

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A. I have it.
Q. Okay. In the way that emails get produced in litigation, it puts the first email in the chain all the way down at the bottom. So I'm going to ask you to go to the second-to-last page which has the number LEGATES48 on it. And can you let me know when you're there.
A. I'm there.
Q. All right. And at the bottom there, it says, "From LinkedIn Message, Tuesday August 8, 9:44 a.m. Patent Litigation Consultation."
Can you see that?
A. I can.
Q. And that's a message from Mr. Bosco to you dated August 8th, 9:44 a.m.?
A. Correct. He messaged me in LinkedIn and I just copied it over here because it's easier e-mailing than going back and forth on LinkedIn messenger.
Q. Did you discuss whether you would serve as a consultant in this litigation?
A. No.
Q. Okay. So you're not serving as a consultant for any party in this investigation?

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A. I am not.
Q. Are you being compensated for your time in response to this subpoena or for testifying today?
A. I am not.
Q. All right. Let's go to the first page here. It's the 1:45. Let me know when you're there, please.
A. Okay. I'm there.
Q. And under the heading where it says "LT3477," it says, "On our call."
Do you see that?
A. I do.
Q. And did you have a call with Mr. Bosco regarding this case?
A. We had a phone call -- he reached out to me initially on LinkedIn. I replied back to him through email and we had a -- I don't know -- maybe ten-minute phone call, maybe shorter, just kind of covering the history of the 1618 and some other stuff. But yes, I had a phone call with him after that.
Q. Okay. And did you discuss the subject matter of your testimony with Mr. Bosco during that phone call on September 7th?

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A. I did not discuss the subject matter.
Q. Okay. You only talked about the LT1618?
A. I talked about the 1618. Talked about the article that was -- we mentioned before that was included on the subpoena document. And then I think that's when I mentioned the 3477 and I said there's another part very similar. I said I don't think I have -- I've left Linear Technology Devices years ago. I don't know that I have any real documents to offer. And that was the one piece I found. And I felt like given the date, the 3477 release date mattered and the original datasheet.
So literally we talked kind of in those same terms. And then I just followed up providing documents that I could find and thought might be relevant.
Q. Okay. And apart from your email here on LEGATES45 and the other emails in this exhibit, have you had any other communications with any of the parties in this case?
A. No.
MR. EVANS: All right. I have no

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further questions for you. Thank you, Mr. Legates.
THE WITNESS: You're welcome.
MR. BOSCO: I'm happy to go off the record.
THE VIDEOGRAPHER: We are off the record. The time is 7:59 a.m.
(Whereupon, a discussion was had off the record.)
THE VIDEOGRAPHER: We are back on the record. The time is 8:00 a.m.
MR. BOSCO: So Mr. Legates, I have no further questions, and thank you for your time today.
As we were discussing during the break, you do have the opportunity to review your transcript if you'd like and correct any errors and you'll receive a copy of the transcript from the court reporter at some point.
THE WITNESS: Okay.
THE VIDEOGRAPHER: We are off the record. The time is 8:01 a.m.
(Time concluded: 8:01 a.m.)

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STATE OF ILLINOIS)
) SS:
COUNTY OF COOK)

I, Janice M. Kocek, CSR, CLR, No. 084-002871, do hereby certify:
That the foregoing remote deposition of BRYAN A. LEGATES, was taken at the time and place therein set forth, at which time the witness was put under oath remotely by me;
That the testimony of the witness and all objections made at the time of the examination were recorded stenographically by me, were thereafter transcribed under my direction and supervision, and that the foregoing is a true record of same.
I further certify that I am neither counsel for nor related to any party to said action, nor in any way interested in the outcome thereof.
IN WITNESS WHEREOF, I have subscribed my name this 3rd day of October, 2023.

_____
JANICE M. KOCEK, CSR, CLR
CSR NO. 084-002871

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ACKNOWLEDGMENT OF DEPONENT

I, _____, do hereby acknowledge that I have read and examined the foregoing testimony, and the same is a true, correct and complete transcription of the testimony given by me, and any corrections appear on the attached Errata Sheet signed by me.

_____ _____
(DATE) (SIGNATURE)

NOTARIZATION (If Required)
State of _____
County of _____
Subscribed and sworn to (or affirmed) before me on this _____ day of _____, 2023, by _____, proved to me on the basis of satisfactory evidence to be the person who appeared before me.

Signature: _____
(SEAL)

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STATE OF ILLINOIS)
) SS:
COUNTY OF COOK)

I, Janice M. Kocek, CSR, CLR, No. 084-002871, do hereby certify:

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That the testimony of the witness and all objections made at the time of the examination were recorded stenographically by me, were thereafter transcribed under my direction and supervision, and that the foregoing is a true record of same.

I further certify that I am neither counsel for nor related to any party to said action, nor in any way interested in the outcome thereof.

IN WITNESS WHEREOF, I have subscribed my name this ^ DAY day of September, 2023.

_____
JANICE M. KOCEK, CSR, CLR
CSR NO. 084-002871.

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ACKNOWLEDGMENT OF DEPONENT

I, _____, do hereby acknowledge that I have read and examined the foregoing testimony, and the same is a true, correct and complete transcription of the testimony given by me, and any corrections appear on the attached Errata Sheet signed by me.

_____ _____
(DATE) (SIGNATURE)

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State of _____
County of _____
Subscribed and sworn to (or affirmed) before me on this _____ day of _____, 2023, by _____, proved to me on the basis of satisfactory evidence to be the person who appeared before me.

Signature: _____
(SEAL)

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