

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NINTENDO CO., LTD. and
NINTENDO OF AMERICA INC.,
Petitioner,

v.

AMERICAN GNC CORPORATION,
Patent Owner.

IPR2024-00667 (Patent 6,508,122 B1)
IPR2024-00668 (Patent 6,671,648 B2)¹

Record of Oral Hearing
Held: May 28, 2025

Before JENNIFER S. BISK, SCOTT A. DANIELS, and LISA L. TSANG,
Administrative Patent Judges.

¹ The parties are not authorized to use this style heading for any subsequent papers.

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The above-entitled matter came on for hearing on May 28, 2025, at the U.S. Patent and Trademark Office, 600 Dulany Street, Alexandria, Virginia.

1 P R O C E E D I N G S

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3 JUDGE BISK: Good afternoon. We're convened for oral
4 arguments in IPR2024-00667 and 2024-00668, which challenged claims in
5 Patents 6,508,122 and 6,671,648. I'm Judge Bisk and I'm joined by Judge
6 Tsang in the hearing room and also appearing remotely is Judge Daniels.

7 The first thing we're going to do is appearances for both parties.
8 I'd just like you to introduce who is going to be arguing today and if anyone
9 else is attending, you can introduce them as well. And then following the
10 hearing, if you can get with the court reporter and let her know how to spell
11 your names for the transcript. We'll start with Petitioner appearances,
12 please.

13 MR. BRIGHAM: Good afternoon, Your Honors. Matt Brigham
14 from Cooley on behalf of Petitioners. I will be arguing the '648 Patent.

15 JUDGE BISK: Okay.

16 MR. BRIGHAM: And to the extent there's an overlapping issue
17 on the RPI issue, I'll be arguing that as well.

18 JUDGE BISK: Okay.

19 MR. BRIGHAM: With me is my colleague, Patrick Lauppe, also
20 from Cooley, who will be arguing the '122 Patent.

21 JUDGE BISK: Okay.

22 MR. BRIGHAM: With us also is Jonathan McFarland and Bryan
23 Basso from Nintendo of America.

24 JUDGE BISK: Okay. Great. Welcome, everyone. And for the
25 arguments, we've given each side 60 minutes. How much do you want to

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1 save for your reply?

2 MR. BRIGHAM: Twenty-five minutes.

3 JUDGE BISK: Twenty-five, so we'll do 35/25, okay.

4 MR. BRIGHAM: Thank you.

5 JUDGE BISK: And Patent Owner.

6 MS. ENTZMINGER: Good afternoon, Your Honors. Brenda
7 Entzminger for American GNC. And with me is Corey Johanningmeier and
8 he will be arguing both.

9 JUDGE BISK: Okay.

10 MS. ENTZMINGER: Also on the line are our clients from
11 American GNC.

12 JUDGE BISK: Okay. Great, welcome. And for the split of your
13 time, what would you like?

14 MR. JOHANNINGMEIER: Let's say 20 minutes.

15 JUDGE BISK: So, I'll do a 40 and 20.

16 MS. ENTZMINGER: Thank you.

17 JUDGE BISK: Okay. All right, just some instructions for how
18 we're going to do this. The court reporter will provide a transcript and that
19 will become part of the record in the proceeding. To make sure that it's
20 clear, we ask that you speak directly into the microphone and identify slide
21 numbers that will also help Judge Daniels follow along with any
22 demonstratives.

23 Note that this proceeding is being streamed to the public. I don't
24 think that there is really any confidential information in this, but if anything
25 comes up, let us know before saying anything that might be confidential.

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1 Please remember that your arguments should be limited to those previously
2 presented in your briefs. We ask the parties to hold any objections until it's
3 your time to speak. Don't interrupt the other side.

4 I have a timer here that I'm going to set, and it shows up on there
5 and it will count down your time. It has some lights, I haven't quite figured
6 out when the yellow and the red come on, but if you keep a watch, I'll also
7 try to keep a watch and let you know if we're coming up on any of the
8 timing issues.

9 I guess we're ready to begin whenever you're ready.

10 MR. BRIGHAM: Thank you, again, Your Honor. And thank you
11 for taking the time today to hear us on this important matter. I was going to
12 open with any questions the panel has to start with. If not, I was going to
13 start with the 315 time-bar issue as a gating item, briefly touch on some
14 important issues, even though we recently submitted a brief on that and then
15 talk about the '648 Patent.

16 JUDGE BISK: Okay.

17 MR. BRIGHAM: As I mentioned, Mr. Lauppe will talk about the
18 '122 Patent. So, unless there are any questions, let's start with the 315 issue.

19 Plainly put, there is no time-bar here. Discovery would not
20 change that fact. The 315 does not apply, period because a complaint was
21 not served on Nintendo first of all. There's no dispute about that.

22 JUDGE BISK: The actual service, you're saying that STMicro
23 wasn't served, even under the Hague Convention?

24 MR. BRIGHAM: Yes, there are several levels and problems with
25 the 315 time-bar argument.

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1 JUDGE BISK: Yes.

2 MR. BRIGHAM: First of all, it's just the statute doesn't apply to
3 this situation.

4 JUDGE BISK: Right.

5 MR. BRIGHAM: STMicro was not accused of infringing these
6 two patents in a complaint. It's not disputed. Even if they had been, there's
7 an issue as to whether both STMicro entities have been served. They re-did
8 a summons and then dismissed the case a couple of days later.

9 JUDGE BISK: Okay.

10 MR. BRIGHAM: Even if you got past all those issues, there's just
11 no privity here. There was no coordination or anything. Happy to address
12 any of those three. We don't think you even get to the second two points
13 because the statute, 315(b), says a complaint has to be served against a party.
14 What they've done is created an ambiguity by taking that sentence out.
15 They've taken that one sentence out of 315(b) and said their position is it
16 doesn't matter if a party is accused of infringing a patent. Serving a
17 complaint on anyone that happens to have that patent in the complaint is
18 enough.

19 JUDGE BISK: Does this factual situation come up very often in
20 district court litigation where there are codefendants that have different
21 patents asserted against them?

22 MR. BRIGHAM: Yes.

23 JUDGE BISK: It does? Okay.

24 MR. BRIGHAM: And what's noteworthy here is it wasn't vague.
25 It was crystal clear what AGNC had done. If you pull up Slide 142, this is

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1 the complaint against OnePlus. This is the complaint at issue. It's clear
2 which patents AGNC is accused of, not the '648, not the '122. If there was
3 any doubt at all, we could pull up Slide 143. This is an underlying District
4 Court case here. They answered a counterclaim, and they said does not
5 include allegations of infringement of the '122 or '648 against STMicro.

6 So, it wasn't like there was any ambiguity. They were named in
7 that complaint, but not of these patents.

8 JUDGE BISK: But they had had a chance in district court
9 litigation, I would assume STMicro would have had a chance in the District
10 Court litigation to raise invalidity defenses about these patents?

11 MR. BRIGHAM: They weren't accused of infringement, so they
12 wouldn't have had a defense against that. That would have had to have been
13 something special. It wouldn't have been a defense against a cause of action
14 in that case.

15 JUDGE BISK: Okay.

16 MR. BRIGHAM: And I think this also highlights an issue with
17 their proposed reading of the statute. Under their proposed reading of the
18 statute, the PTAB would all of a sudden get in the business of being a
19 district court, would have to interpret federal rules, would have to interpret
20 what the intent was of different complaints and also would invite a flood of
21 new petitions because anyone who happened to be served with a complaint,
22 maybe a third party, maybe a codefendant, all of a sudden would have a
23 cloud over them and need to file an IPR within one year or face a bar under
24 their interpretation.

25 So, all of a sudden, the PTAB would be faced with increased

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1 filings and having to act as a district court looking at the intent and defenses
2 and pleadings in a case. That's just not read in context, the whole 315(b), the
3 315(b) in the context of 315 and just the overall intent of the statute, it's not
4 what was intended here.

5 JUDGE BISK: Okay.

6 MR. BRIGHAM: So, unless there are any other questions on that,
7 I'll move on to the '648. If we could pull up Slide 76. For the '648 Patent,
8 there's really only two issues. One relates to the preamble, the micro IMU
9 that's in the preamble and the question is, is it limiting? It's not, our position
10 is it's not. If it's limiting, is it still obvious to include MEMS sensors in the
11 IMU known in the prior art and our position, it is with ample evidence
12 showing it.

13 The second issue relates to this angular rate electrical signals,
14 whether that term needs construction as Patent Owners have proposed, we
15 don't think it does. We think it has its ordinary meaning, but if it is to take
16 on a construction, as Patent Owners propose, does the art still invalidate it,
17 and we think it does.

18 So before we dive into each one of these issues, I think it's
19 important to take a step back because there's a disconnect between the
20 arguments that they make in their briefs and their inventor declaration and
21 their expert declaration, and the claims of this patent.

22 If we pull up Slide 74. Slide 74 is Figure 1 from the '648 Patent
23 and the claims at issue, Claim 1 and 4, they just relate to that dotted box,
24 Items 5, 10 and 6. That's all the claims relate to.

25 If we can pull up the next slide, Slide 75. This is the Claim, Claim

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1 1, an angular rate producer, acceleration producer, an angular increment and
2 velocity increment producer. Those are the elements. You'll see in their
3 declarations and arguments talk about complicated control circuitry, about
4 advancements in gyroscopes, about a level of precision in the sensing and
5 output. None of that is in these claims.

6 So let's look at Slide 79. The question is, is the preamble limiting.
7 I won't spend a lot of time on this. I recognize in the institution decision it
8 was found to be limiting, but it's worth noting that it's a structurally complete
9 invention without the preamble and this preamble, micro inertial
10 measurement unit, it only states the purpose for intended use, but let's move
11 on.

12 JUDGE TSANG: Mr. Brigham, so the Catalina case which you
13 cited in the reply and which we also cited in the decision to institute, that
14 case states that where the claim is defining a structurally complete invention
15 and uses the preamble only to state a purpose or intended use for the
16 invention, then the preamble isn't limiting. So, there's that 'and' where the
17 preamble has to only state a purpose or intended use. So here the preamble
18 states a micro inertial measurement unit, how is a micro unit just an intended
19 use limitation or a functional limitation?

20 MR. BRIGHAM: The intended use is to use these
21 producers/sensors and these increment producers just in a device. The
22 intended use is to use it in a microdevice, but that's not a limit. There's
23 nothing about each one of these limitations that either improves size,
24 encourages size, improves performance that gives breadth and meaning to
25 micro inertial measurement unit.

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1 JUDGE TSANG: Thank you.

2 MR. BRIGHAM: If we go to Slide 85, even if it is limiting, it
3 would be obvious to use MEMS sensors in the IMUs of the prior art of the
4 primary references, Smith, Tingleff and Yamawaki. Why do we know this?
5 We provided expert testimony and a lot of it is undisputed. MEMS
6 accelerometers were widely known. MEMS gyroscopes were widely known
7 at this time and incorporation of MEMS devices into IMUs was also known
8 in the art.

9 If we go to Slide 86, this is the '648 Patent itself. We're not using
10 the '648 as a roadmap for prior art. This is the '648 Patent admitting -- it's an
11 admission that these sensors were well known. We also provided Slide 87,
12 Chan, which is a reference we rely on in our combinations for Grounds 1, 2,
13 3 and 4. MEMS were well known, used for acceleration and rotation.

14 Next slide, Slide 88, Bernstein, 1993, has MEMS gyroscopes. The
15 sensors were known. We also know that these MEMS sensors used for the
16 same purpose output the same type of signals as non-MEMS devices. If we
17 look at Slide 91, this is from the institution decision quoting our expert,
18 same purposes and provide the same types of velocity and angular position
19 information as their non-micro mechanical counterparts. And interestingly,
20 Patent Owner's expert agrees that they provide the same type of output.

21 If we look at Slide 92, we asked him about different types of
22 sensors, and he recognized that there were ring laser gyros and MEMS. If
23 we go to the next slide, 93, and he notes that generally they all have some
24 mechanism for sensing rotation, creating rotation, taking that data and using
25 it. So, non-MEMS and MEMS, same purpose, same type of information.

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1 If we go to Slide 94, they also have the same benefits that the
2 primary references were seeking. Things like size, weight, cost and used in
3 the same field as the '648 Patent. The '648 Patent mentions avionics or
4 aircraft. They're used in the same type of field.

5 If we go to Slide 95, this is Smith, one of the primary references
6 plus Chan and Bernstein. Smith talks about wanting a small enclosure or
7 reducing costs and the MEMS sensors talk about being small and
8 inexpensive.

9 If we go to Slide 120, this is Tingleff, the other primary reference,
10 again talking about small and self-contained and this is used in the aircraft
11 industry. We have the final one, Yamawaki, Slide 129. Similar motivations
12 to look for small, inexpensive sensors and that's what MEMS provided.

13 We showed in the expert declaration in our Petition over and over
14 again examples of MEMS devices used in this field and used in IMUs. I
15 won't show them all, but Slide 96 was Doty from 1998, talks about
16 gyroscopes and accelerometers and MEMS.

17 If we go to Slide 98, this is Hulsing in 1998, talking about MEMS
18 IMUs. There was an issue raised by Patent Owner about wasn't known or
19 would have been difficult to put MEMS into IMUs together, but it was
20 known and used in the prior art before the priority date here.

21 Similar to Slide 99, which is Minor, another MEMS IMU known
22 in the prior art prior to the priority date.

23 So, the real issue seems to be about not whether MEMS were
24 known, not whether MEMS IMUs were known. The issue raised by Patent
25 Owner relates to like control circuitry around these MEMS sensors. But if

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1 we look at Slide 100, at the definition of a person of ordinary skill in the art,
2 this person has experience, multiple years of experience, whether you look at
3 Petitioner's or Patent Owner's. If you look at Patent Owner's definition, he
4 has experience in the development of control systems. This is a person of
5 ordinary skill in the art that would know how to design the circuitry around
6 these MEMS sensors.

7 If we look at Slide 101, their expert agrees. A person of ordinary
8 skill would know about a whole domain of control system mathematics and
9 theory and practices that were out there.

10 And so I end with where I started --

11 JUDGE TSANG: Mr. Brigham, I just want to be clear, are you
12 suggesting that we adopt Patent Owner's proposed level of skill?

13 MR. BRIGHAM: Our position is that it's invalid under either one,
14 certainly under Patent Owner's. Patent Owner's has an even higher level of
15 ordinary skill. We'd be happy if you'd adopted either one. We think it's
16 invalid under either.

17 JUDGE TSANG: Okay.

18 MR. BRIGHAM: So, I think what I started was, you'll hear a lot
19 of arguments from Patent Owner, but they're about non-claimed elements.
20 Things that aren't control circuitry feedback loops that is not in the claim.

21 Real quick on the other issue and I can talk more on reply if
22 needed, on the angular rate claim construction issue, we don't think it needs
23 construction. We think just -- signal has to relate to angular rate, it just has
24 to be able to be used to calculate it.

25 If we pull up Slide 80, the one thing I'll just note is Patent Owner

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1 has been very inconsistent on kind of what they feel this term should mean.
2 In the District Court, they felt that no construction was needed. In the Patent
3 Owner response, it had to directly measure and reflect and then in surreply,
4 there was a bunch of different flavors. We think none of this needs to be
5 adopted and as we set forth in our papers, even if it was, the prior art
6 discloses signals that we would even need these definitions.

7 With that, let me turn it over to my colleague, unless there are any
8 other questions on '648.

9 JUDGE BISK: Okay, sounds good.

10 MR. LAUPPE: Good afternoon, Your Honors. I'm going to be
11 talking about the '122 Patent. I'll start with the small handful of disputed
12 issues in the case.

13 Turning to Slide 6, there are --

14 JUDGE BISK: Can I ask a quick question --

15 MR. LAUPPE: Of course, Your Honor.

16 JUDGE BISK: Before you go on?

17 MR. LAUPPE: Yes.

18 JUDGE BISK: It seems to me that the second Ground kind of has
19 a subset of disputed issues as the first Ground. Do you know what I'm
20 saying?

21 MR. LAUPPE: Correct.

22 JUDGE BISK: Okay.

23 MR. LAUPPE: Yes, if you look at Slide 6, Your Honor, Grounds
24 1 and 2, there are two issues that Patent Owner appears to raise for -- both of
25 the grounds, the digital and the analyzing limitations, but then for Ground 1,

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1 that's the only ground for which they raise the low frequency limitation and
2 then also, there's this potential dispute about the capacitive pick up
3 excitation signals limitation for Ground 1; however, it appears Patent Owner
4 did not renew this challenge in their surreply. We're happy to address it
5 today on rebuttal if Patent Owner proceeds with that challenge, but our
6 understanding is basically that's not one that they're proceeding on. So,
7 anyway, yes, correct, Your Honor.

8 To start with, the two disputes that are in common between the two
9 grounds. First, there is the dispute about the digital limitations and Patent
10 Owner is asserting that it would not have been obvious to use digital signal
11 processing in prior art sensors. However, Petitioner has shown using RT in
12 the same field that such digital signal processing would have been obvious
13 and, in fact, would have made systems more flexible, allowed for more
14 calibrations and compensations.

15 JUDGE BISK: Can I ask and you're talking about Townsend here
16 or are you also talking about other --

17 MR. LAUPPE: Correct, Your Honor.

18 JUDGE BISK: Okay.

19 MR. LAUPPE: That's the combination, that's one of the references
20 we're combining with Fujiyoshi and Townsend, the primary references.
21 We're also saying that digital signal processing was established in the prior
22 art, including in similar sensors, but yes for our specific combination, we're
23 combining the primary references Fujiyoshi and Townsend -- sorry,
24 Fujiyoshi and Mitamura with Townsend.

25 And then for the analyzing limitation, Patent Owner argues that

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1 Petitioner has not shown analyzing of signals. However, Petitioner has
2 pointed to systems that involve feedback loops where motion is sensed by
3 capacitive sensors. It's then analyzed and used for the purpose of feeding
4 back into the system to control motion. For example, to keep a constant rate
5 of motion for certain proof masses. Petitioner has certainly pointed to
6 analysis or analyzing under the terms of the '122 Patent.

7 Then finally, just briefly on the issues limited to Ground 1, Patent
8 Owner is challenging that Petitioner has pointed to sort of low frequency
9 signals, but indeed, Petitioner has identified certain hardware limits, sample
10 and hold elements or low pass filters which filter out high frequency signals
11 and, therefore, create low frequency signals under the terms of the patent.

12 Finally, as I mentioned, there is this capacitive pick up. Excitation
13 signals are the issue, although we're not going to address that unless Patent
14 Owner decides to proceed with that challenge today.

15 Unless there are any further questions, I'm going to proceed to sort
16 of march through these issues in the order I've shown here, but feel free to
17 let me know if there are any specific questions you'd like me to zoom in on
18 up front.

19 JUDGE BISK: Okay.

20 MR. LAUPPE: I'm going to start with Slide 7 for the digital
21 limitations. Slide 7 just shows the challenged Claims here, Claims 1 and 3
22 of the '122 Patent. We have highlighted the specific limitations that are at
23 issue in the disputes that I just mentioned.

24 The digital limitations are what you see highlighted in green here.
25 There's digital low frequency inertial element displacement signals and then

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1 there is a digital signal processing system. And so those are what I'm going
2 to focus on first. The question here is whether it would have been obvious
3 to use digital signal processing within the context of the dither motion loop
4 of one of these vibratory MEMS gyroscopes, like Fujiyoshi or Mitamura
5 disclose.

6 Moving to Slide 17, as you can see here, on the left we have Figure
7 6 of the '122 Patent where we've highlighted these two motion feedback
8 loops, the dither motion loop and the inertial displacement loop and then
9 over on the right, we have a very similar architecture for the Fujiyoshi
10 reference, which also discloses these parallel dither motion and inertial
11 displacement loops. The question is the circuitry in blue here, highlighted
12 for Fujiyoshi, would it have been obvious to use digital signal processing in
13 that circuit. And Petitioner argues that indeed it would have been.

14 How do we know this? Well, first of all, Petitioner's expert, Dr.
15 Young, worked directly on inertial sensors, MEMS inertial sensors in the
16 1993-1994 timeframe. The priority date asserted here is in 1999, so it was
17 several years before. Dr. Young actually worked on mixed signal circuitry,
18 so analog and digital circuitry in a digital force feedback loop for a MEMS
19 accelerometer. Dr. Young worked on this specific area of technology
20 several years prior to the priority date asserted here.

21 Similarly, on the Patent Owner's side, Patent Owner's expert, Dr.
22 Larson, wrote an article as early as 1988, he cowrote that article, in which he
23 outlined various advantages of digital circuitry, so accuracy, flexibility,
24 programmability, modularity in addition to high levels of integration
25 achievable in modern digital integrated circuits. That's more than a decade

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1 prior to the priority date asserted here.

2 Then, if we move now to Slide 29, not only was digital signal
3 processing well established in the prior art, but it was well established in the
4 particular application for which Petitioner is using it in the combinations
5 here. For example, in the Clark reference from 1997, it disclosed the use of
6 digital signal processing including phase lock loop in the context of the
7 motion control loop for a vibratory MEMS gyroscope.

8 And similarly, you can see the same thing in Juneau. Juneau
9 further includes a digital signal generation module in this 1998 reference
10 which discloses a vibratory MEMS gyroscope. So, in the specific
11 application for which Petitioner is using digital circuitry in this combination,
12 that too was disclosed directly in the prior art.

13 Turning now to the specific combination of Fujiyoshi and
14 Mitamura on the one hand and Townsend on the other. So, turning now to
15 Slide 33, Townsend discloses the use of digital signal processing in the
16 context of a vibratory gyroscope. The references here really fit together
17 quite nicely. Fujiyoshi discloses a vibratory gyroscope which it calls a
18 tuning fork gyroscope and Townsend says, well, it teaches that you would
19 take such a gyroscope, a vibrating structure gyroscope, including a tuning
20 fork gyroscope and you would use a digital control system to help control
21 the motion of that sensor. So, these systems are on the same field as each
22 other and in the same field as the '122.

23 And then moving to Slide 37, Petitioner presented evidence that a
24 person of ordinary skill would have been highly motivated to use digital
25 signal processing like Townsend discloses in the context of a sensor like

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1 Fujiyoshi. For example, Townsend discloses that there is a need for a digital
2 electronic based implementation in order to facilitate basic developments,
3 system integration, and provide a route to higher performance by enabling
4 more complex and in-loop compensations to be applied. This is on Slide 38
5 with an excerpt from Townsend.

6 The case for Mitamura is similar. So, Mitamura is the other
7 primary reference for Ground 2 moving now to Slide 61. Mitamura, again,
8 discloses a vibrating structure gyroscope and it fits perfectly within the
9 context of Townsend's digital signal processing system.

10 JUDGE BISK: Can you talk a little bit about is there a difference
11 in how you combine Townsend with Fujiyoshi and Mitamura?

12 MR. LAUPPE: Yes, Your Honor. So, one difference is Mitamura
13 itself discloses an arithmetic unit 91, which we are saying based on that
14 module alone, a POSITA would have known to implement that either as an
15 analog or a digital system. Now, there's something similar in the Fujiyoshi
16 reference that talks about an amplitude control unit, which we were saying
17 would be similar. However, we are arguing that based on Mitamura alone, it
18 would have been obvious, based on the knowledge of a person of ordinary
19 skill to implement that arithmetic unit as a digital processing system.
20 However, we're also then combining Mitamura with Townsend in a similar
21 way to how I described for Fujiyoshi.

22 JUDGE BISK: Okay.

23 MR. LAUPPE: Patent Owner argues that Petitioner is only
24 pointing to noise -- or reducing noise as a motivation to combine Fujiyoshi
25 or Mitamura and Townsend; however, that's ignoring, for example,

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1 everything you see on the left side of the screen here in Slide 37. All of
2 these motivations to combine outlined by Petitioner's expert, Dr. Young, and
3 then furthermore all these motivations to combine provided by Townsend
4 that I went over earlier in Slide 38.

5 JUDGE BISK: But noise is a perfectly reasonable reason to
6 combine, isn't it or is it not?

7 MR. LAUPPE: We agree, Your Honor. We don't think that even
8 if we were in a situation where noise was the only motivation to combine
9 here, in our view, that would be sufficient; however, we're just saying that's
10 not all we've provided. We've provided various motivations to combine.

11 Next, I'm going to move to the analyzing issue, so I'm going to
12 move to Slide 47. The analyzing limitation as you can see in the bottom left
13 corner of Slide 37, a digital signal processing system analyzing said digital
14 low frequency inertial element displacement signals, Patent Owner argues
15 that Petitioner has not adequately pointed to analyzing but look at
16 Fujiyoshi's disclosures alone and Petitioner has pointed to analyzing. For
17 example, Fujiyoshi discloses an amplitude control circuit that controls in
18 such a manner as to make the amplitude of the vibration constant on the
19 basis of the excitation control signal. And in fact, if you dig deeper into
20 Fujiyoshi what it's talking about here in terms of the amplitude control
21 circuit is actually something called Q analysis. This is laid out in column 15
22 line 60 to column 16 line 13 and --

23 JUDGE BISK: Those portions of Fujiyoshi, did you point to those
24 in the Petition?

25 MR. LAUPPE: Well, we did in that we pointed to this analysis

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1 that you can see on the screen here.

2 JUDGE BISK: Okay.

3 MR. LAUPPE: Which identifies this general control scheme and
4 so basically in further detail in Fujiyoshi, that discloses the Q analysis. For
5 example, if you look at the '122 Patent, Figure 7 of the '122 Patent, which
6 Patent Owner's expert, Dr. Larson, identified as providing examples of
7 digital signal processing. You can see over on the right-hand side of Figure
8 7, a block called Q analysis in selection logic, and this is on Slide 48. So,
9 even within the terms of analysis that the '122 Patent describes, that's exactly
10 what Fujiyoshi is disclosing and what we've pointed to in Fujiyoshi.

11 Furthermore, moving to Mitamura, Ground 2, so Mitamura within
12 this arithmetic unit that I was talking about earlier, Mitamura discloses the
13 amplitude information is calculated as modulation amounts of the dry
14 voltage based on a deviation from a set reference level for the amplitude
15 information. This is on Slide 62. And so, Mitamura in its arithmetic unit is
16 discussing analyzing input signals and then determining what signals to
17 output for the purpose of controlling the motion of these proof masses. So,
18 Mitamura too is disclosing analysis. So, for Patent Owner to argue that we
19 haven't pointed adequately to analyzing is, again, simply ignoring the
20 evidence in the record.

21 Next, I'm going to turn to the low frequency issue which I only
22 have a few minutes more for. The low frequency issue is something that
23 Patent Owner only raised for Ground 2 and so this relates to the combination
24 of Fujiyoshi and Townsend for Ground 1. Petitioner has provided evidence
25 that the sample and hold devices you can see on Slide 40, which are these

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1 green highlighted elements 27, those serve -- moving to Slide 41, those serve
2 to remove high frequency noise, therefore, leading to digital low frequency
3 inertial element displacement signals.

4 In response, all Patent Owner can provide is attorney argument and
5 that's simply not evidence, so essentially this expert testimony from Dr.
6 Young is unrebutted here. But furthermore, even if that disclosure of sample
7 and hold devices in Townsend were not enough, Petitioner has provided the
8 further combination with Cox, which discloses the use of resisted elements
9 in concert with sample and hold devices and the combination of resistive
10 elements and capacitors, or sample and hold devices, that leads to a low pass
11 filter which again serves to filter out high frequency noise. And the
12 motivation to combine here is clear. Dr. Young, Petitioner's expert,
13 identified the importance of reducing aliasing in an analog to digital
14 conversion context.

15 And indeed, moving to Slide 45, Patent Owner's expert, Dr.
16 Larson, also testified to this same motivation. He said before the signals
17 themselves get converted into digital form, these high frequency signals
18 have to be removed. Furthermore, the capacity of pickup excitation signals
19 issue I referenced before; I'm not going to cover this. I'll reserve my time for
20 rebuttal on that to the extent that Patent Owner wishes to raise that today.

21 So finally, I'm going to give a few words on secondary
22 considerations, although again I think we're going to reserve some of our
23 time on this issue for rebuttal. This is on Slide 68, just to give you some of
24 the headlines on this issue. Patent Owner suggests that there is some
25 commercial success to be considered amongst secondary considerations.

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1 However, Patent Owner has provided no evidence of commercial success,
2 no sales data, no licenses or evidence of any licensing and furthermore, even
3 if it had pointed to any evidence of commercial success, there is no evidence
4 in the record indicating that any product, for example, this core micro
5 product Patent Owner points to, that that embodies any of the challenged
6 claims or any of the limitations. There are no claim charts provided in any
7 of Patent Owner's papers.

8 Finally, even if there was some evidence of embodying the claims,
9 there is no evidence of nexus. So, there's no evidence that -- even if there
10 had been evidence of commercial success and even if there were evidence of
11 embodiments, there's no indication that any such commercial success is
12 attributable to claimed features. Patent Owner, for example, puts up a
13 picture of a black box, a device that allegedly is a product that Patent Owner
14 sold.

15 However, again, there is no evidence of sales and furthermore, all
16 it is is a black box. You can just see the chamber. You can't see anything as
17 to what's going on inside. So, as we've been talking about today, all of the
18 challenge claims relate to specific signal processing within these sensors and
19 so it's hard to understand how they're -- looking at a black box can tell you
20 anything about really what's happening inside those sensors. So, there's no
21 evidence, again, as to any of the elements of commercial success or
22 secondary considerations that Patent Owner would need to show.

23 It looks like I have a minute left, but I'm going to reserve the rest
24 of my time for rebuttal. Thank you.

25 JUDGE BISK: Okay, whenever you're ready.

1 MR. JOHANNINGMEIER: All right, thank you very much and
2 on behalf of my client, I wanted to convey that they appreciate your time in
3 these proceedings today. Please, if you have any questions or anything
4 comes up with what I'm saying, please interrupt me. I would rather answer
5 questions than just hear myself talk. Like I said, I'm going to reserve some
6 time for sur-rebuttal.

7 I will take these issues in the order that they did just because it's
8 easier that way, so I might jump around a bit in my slides. Just to start with
9 the 315 issue, I mean, there is -- the statutory issue is, I think, well briefed.
10 It's a question of first impression. Neither side has been able to find a case
11 exactly on point. The Click-to-Call case is as close as we can get and the
12 Facebook case sort of shows that the perfection and how it was accused at
13 the start of the case isn't necessarily the determinant.

14 JUDGE BISK: Can I ask you about what's in the record of service
15 to STMicro?

16 MR. JOHANNINGMEIER: Right, so we put in -- there was an
17 initial service in New York that they disputed. That is in the record at 2013,
18 I believe, and then there's some discussions --

19 JUDGE BISK: But that dispute was never really resolved or?

20 MR. JOHANNINGMEIER: Well, so the issue here is -- and it's
21 funny because counsel mentioned not making the PTAB be in the business
22 of the District Court, but he kind of wants to litigate the service dispute here.
23 The issue is STMicro, from what I understand, always contests service and
24 so there was a disputed issue. We weren't counsel at the time. I understand
25 that counsel at the time served in New York. They filed a motion to dismiss

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1 claiming that it was improper and then there was at least one or two attempts
2 to serve through Hague after that. Those are in the record actually in their
3 Exhibits. I think they put them in as 1070 and 1071.

4 JUDGE BISK: But we don't know if those were actually --

5 MR. JOHANNINGMEIER: Well, there's testimony and I think we
6 cited it in our footnote in the response that basically there was testimony on
7 the motion that the Hague service had been launched.

8 JUDGE BISK: Okay.

9 MR. JOHANNINGMEIER: And so, the cases say Rule 4 --
10 complying with Rule 4 is the touchstone here. It has to be proper under Rule
11 4. We think that the Hague service in the Netherlands would be. Now
12 would ST have disputed that? I'm certain they would have and so it comes
13 down to do we have to litigate? We clearly can't possibly litigate whether or
14 not service was proper in a dismissed case. The important thing is that the
15 cases say well, if you comply with Rule 4, then at the point of service that's
16 when this attaches and subsequent events don't matter.

17 In Click-to-Call that was specifically the ruling. So, the
18 subsequent dismissal of the case doesn't matter, if the service was properly
19 done and so we put in --

20 JUDGE BISK: But that's what we don't know is whether service
21 was properly done.

22 MR. JOHANNINGMEIER: Well, we believe it was. We believe
23 that the service in New York -- I believe their objection was something
24 about which things their officer was allowed to accept process for and we
25 think that was proper and so we put it in. We think the Hague summons

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1 were proper and those were sent. The record indicates they were sent before
2 the case was dismissed.

3 JUDGE BISK: Okay.

4 MR. JOHANNINGMEIER: And clearly, we know that ST got
5 notice. They participated and they filed the SOL.

6 JUDGE BISK: But they had notice that they were infringing two
7 other patents that aren't involved here, right?

8 MR. JOHANNINGMEIER: Yes, and we've never attempted to
9 dispute that.

10 JUDGE BISK: Okay.

11 MR. JOHANNINGMEIER: The issue was -- the suit was against
12 STMicro and OnePlus. OnePlus was a customer of STMicro, so there's two
13 Patents that were read on the OnePlus phones using the ST chip and then
14 there were two patents that were read on ST and so they were together, but it
15 was clear from the complaint --

16 JUDGE BISK: And these two were not read on ST.

17 MR. JOHANNINGMEIER: Right, these were not right.

18 JUDGE BISK: Okay. So, in that district court litigation, would
19 STMicro have been able to bring up defenses of invalidity for these two
20 patents?

21 MR. JOHANNINGMEIER: They would have, they also would
22 have -- I mean, the other thing that we know happened in that case because
23 of what's in the complaint is OnePlus reached out to STMicro for help even
24 before the complaint was filed. So, STMicro was, based on how the parties
25 behaved, clearly an indemnitor there. They were absolutely, 100 percent a

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1 real party in interest on that accusation in that case, so they could have --

2 JUDGE BISK: But that's a reference to OnePlus, which is not at
3 all involved in this.

4 MR. JOHANNINGMEIER: Oh, no, obviously not. So what --

5 JUDGE BISK: Okay.

6 MR. JOHANNINGMEIER: I guess what I'm saying is the whole
7 purpose of this is that the fundamental reason for this estoppel is that we
8 want people who have notice of potential liability to bring their challenges in
9 a timely fashion and not 25 years after the patent and it's almost at the end of
10 its life. So, we think that ST had very clear motivation in that case to
11 challenge those and to help OnePlus with their challenge just the same as
12 they have here.

13 We've not tried to stretch. We're being very clear about our
14 reading of the statute that this is a question of first impression. You can read
15 it either way, but the words themselves literally they were served, we
16 showed, with a complaint and that complaint alleged infringement of this
17 patent.

18 So, the codefendant thing hasn't been litigated before. I mean, in
19 here, it's not only a codefendant, they're an indemnitor slash their own chips
20 are being accused in the OnePlus devices, so we think it's a good application
21 of the statute, so we've put in the evidence we have on that. Whether we
22 have to -- obviously, I'm not going to go through the motion for discovery,
23 we filed that, we checked the boxes. I think we're clearly entitled to the
24 discovery that we --

25 JUDGE BISK: Have you checked with either the district court or

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1 STMicro as to whether they would object to using the one contract you
2 pointed to?

3 MR. JOHANNINGMEIER: It's kind of late in on our motion, but
4 there was a whole debate. We asked the District Court to hold open
5 discovery in case we needed to get it from her and the Judge basically, on
6 their urging, declined to be involved in this. Basically, she said, if the PTAB
7 wants it, they can order it in the PTAB case. That was her take, you all have
8 the power to order discovery and have them produce that in this proceeding
9 independent of the fact that it has been produced before. That's basically
10 what we're asking for in the motion for discovery is to order them to produce
11 the very few -- the things we've listed, the communications and that
12 agreement in this case so that we can analyze the RPI issue.

13 And, obviously, the fact that they dispute it is not a reason to not
14 take the discovery. I mean if that were true then we would never have any
15 kind of case because the person giving discovery always disputes the merits,
16 but we think there's an entitlement to that. There's obviously the statutory
17 bar that they've raised, the statutory issue that may or may not moot it. We
18 think the most efficient thing to do would be to take the discovery so that we
19 have it in case this gets decided, but that's where we are.

20 JUDGE BISK: And how long would you need for that?

21 MR. JOHANNINGMEIER: Well, that would be a question for
22 them because we've been very clear with what we're asking for. So, it's like
23 how long will it take them to produce that agreement, I mean I assume zero
24 time to collect the communications we're asking for, potentially log them
25 that could take them a little bit longer, but this is coming late in the case, but

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1 I don't see it as being a long process.

2 I think we asked for very specific things that we think will show
3 that there's a relationship and so that's what we would -- we would rather
4 have it happen now than for this to somehow go up on remand and come
5 back with instructions that it should have happened, which is what happened
6 in the one case that we cited. I think it's more efficient to do it now. But to
7 get back to the actual merits, unless you have any other --

8 JUDGE BISK: No, go ahead.

9 MR. JOHANNINGMEIER: -- questions on that. I'll start with my
10 slides on the '122 Patent. The reason I'll start here is because -- I wanted to
11 actually start with the invention story here because I think it's actually really
12 relevant. What they're saying we're claiming we invented, isn't exactly what
13 we're claiming we invented. American GNC, they're a small company,
14 they've been around for almost 40 years. They have almost 80 patents in
15 this and adjacent spaces.

16 They have real products, lots of different products, but the one at
17 issue is this. Here on the slide, there's a picture of it. He called it a black
18 box. I actually have one here that I brought, that I borrowed from the client
19 to show this was a real product that they built, and they made and sold.
20 There is evidence in the record from Mr. McCall of that.

21 JUDGE BISK: But there's no evidence in the record that these
22 products embodied any particular claim.

23 MR. JOHANNINGMEIER: Oh no, there absolutely is, yes.

24 JUDGE BISK: What?

25 MR. JOHANNINGMEIER: If you will look, he said, no claim

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1 chart, we put this in in our surreply, well, it's in the response that's cited in
2 the surreply. But in the surreply at page 15, I put in a chart of Figure 17 in
3 the '648 Patent case. There's a description of Figure 17, which is a picture of
4 this thing exploded with the circuit boards inside, which he said we couldn't
5 see because it's a black box, but it's there in Figure 17. There's a description
6 of the micro IMU and then that's at column 17, so I mapped it against the
7 claim with color coding here on 15 to show that what's in the claim, the
8 claimed micro inertial measurement unit, element by element, lines up with
9 the preferred embodiment, which is disclosed as the core micro IMU
10 product.

11 JUDGE TSANG: How do we know that what's described in the
12 patent though is that actual product?

13 MR. JOHANNINGMEIER: Well, there's the fact that the patent
14 mentions the core micro IMU, the micro IMU of the present invention. Core
15 micro is mentioned in the patent in multiple places and then I have it on a
16 slide. Well, just to go off of what's here in the response, there are several
17 things that show this. There's the patent itself. There's the testimony of Mr.
18 McCall, which I believe is on Slide 26.

19 JUDGE BISK: I have a question for you. Aside from this table, is
20 there any new evidence post-institution about secondary considerations?

21 MR. JOHANNINGMEIER: Yes.

22 JUDGE BISK: Either sales figures or -- and where -- can you
23 point to that?

24 MR. JOHANNINGMEIER: Okay, so starting here, this is Slide 26
25 of the '648 Patent presentation. We have the declaration, so that's cited here

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1 2023, paragraph 15 to 20.

2 So, we had Mr. McCall, who is the inventor who is still alive, we
3 had him do a declaration to describe the work that he did in inventing it.

4 JUDGE BISK: Right, but he doesn't go through the claim
5 limitations and map them to any product.

6 MR. JOHANNINGMEIER: No, he says in his declaration that
7 these inventions were successfully implemented in the American GNC core
8 micro IMU product. He was there at the time. He was doing this. He
9 testified un rebutted; they didn't ask him any questions about this. He
10 testified in his declaration they were successfully implemented in the core
11 micro IMU product, so that is evidence from Mr. McCall, who was doing it.

12 Now, the other thing that's here is if you look at his notes, so we
13 cited Exhibit 2024 at page 16, he's got on the same page of his notes,
14 discussions of the -- go back to Slide 27, he's got the mentions of the MEMS
15 provisional patent work. He has weekly status reports where he lists
16 everything that he does, that's in Exhibit 2024 and he's working on it at the
17 same time, so he's doing the micro IMU development. He's working on the
18 provisional patent at the same time. And then we have disclosure in the '122
19 Patent about the core micro IMU that this invention enables that.

20 JUDGE BISK: So, is he saying that the product it contains all of
21 the claims, both of the patents?

22 MR. JOHANNINGMEIER: Well, I mean there's only really --
23 there's two independent claims at issue here, so yes, Claim 1 of the '648 is on
24 the IMU. That's Claim 1 of the '648, the micro inertial measurement unit,
25 which is structure, comprising the things. So, a micro inertial measurement

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1 unit that has all of these elements, that claim is basically a claim following --

2 JUDGE BISK: But he doesn't say that that's what all of the
3 product is, right? And are you saying it's both patents, because their claims
4 are quite different?

5 MR. JOHANNINGMEIER: Right, maybe if I could go back and
6 sort of walk through what I was going to explain about his invention work.
7 So, let's go to the '122 Patent Slide. So, Slide 3 of the -- the story makes this
8 make a little more sense.

9 American GNC was an existing company. Mr. McCall came to the
10 company while they were in the process of trying to build a commercially
11 and technically viable MEMS gyroscope. There were MEMS gyroscopes,
12 the patent itself says that as they've pointed out, but they weren't good. They
13 didn't work well at the time, so they had problems. So, he came specifically
14 for this purpose to American GNC. He had experience with DSP. He had
15 experience with sensors and so he started on this project of building a good,
16 navigation grade, MEMS gyroscope. So, the next slide --

17 JUDGE BISK: But he doesn't talk about any of the prior art that
18 we have in the record.

19 MR. JOHANNINGMEIER: Well, no, actually he does. One of
20 the things he was doing at this time is -- the Bernstein Patent that's in the
21 '648 is for Draper Labs. They had a MEMS gyroscope. Draper Labs is one
22 of the first people that patented a MEMS gyroscope. That's what he's talking
23 about when he's talking about the existing MEMS gyroscopes is the
24 Bernstein one. And when he's saying it didn't work well, it didn't have
25 navigation grade. It was analog only. It didn't work well.

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1 JUDGE BISK: But there's other prior art in the record.

2 MR. JOHANNINGMEIER: There is, yes.

3 JUDGE BISK: Okay.

4 MR. JOHANNINGMEIER: Mr. McCall came to American GNC
5 to build a viable MEMS gyroscope, one that actually worked that was good.
6 Other people were doing this at the time. JPL was working on one. Draper
7 Labs was working on one, that's in his testimony, all of this is laid out. He
8 basically figured out that well, number one, the dither drive loop is the most
9 important place, the most crucial thing to accuracy. Number two, that's
10 where we should use digital signal processing, which he knew how to do, he
11 has special, non-ordinary skills in that regard so that's what they did. They
12 applied digital signal processing to the low frequency inertial displacement
13 signals in the dither drive loop.

14 So, if you go to the next slide, Slide 5 --

15 JUDGE TSANG: Mr. Johanningmeier?

16 MR. JOHANNINGMEIER: Yeah?

17 JUDGE TSANG: It sounds like Mr. McCall created a better
18 gyroscope, right?

19 MR. JOHANNINGMEIER: Yes.

20 JUDGE TSANG: He improved the gyroscope, so for the '648
21 Patent, the claims don't recite any particular details of the circuitry of the
22 gyroscope. Is that correct?

23 MR. JOHANNINGMEIER: They do recite the exact thing, which
24 I'm getting to here, which is using digital signal processing to analyze the
25 low frequency inertial displacement signals, which are the signals in the

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1 dither motion control loop. This is not a patent on using DSP in a MEMS
2 gyroscope, it is using DSP to analyze and improve the performance of those
3 specific signals in that specific loop.

4 JUDGE TSANG: So, that's for the '122 Patent, right?

5 MR. JOHANNINGMEIER: No, that's the '648. I mean it's
6 basically Claim 1 of the '648. Oh yes, sorry, you're right, that's the '122
7 Patent. That's where they improved the gyroscope. So, the improvement to
8 the gyroscope is that very specific thing.

9 JUDGE TSANG: So, that's not --

10 MR. JOHANNINGMEIER: They built an improved gyroscope
11 and then they used that in this IMU. This IMU has the improved gyroscope
12 and it has the other elements of the '648 Claim and then they patented that as
13 well. And so, then they were basically the --

14 JUDGE TSANG: So, would you agree though that the claims of
15 the '648 Patent don't recite that circuitry?

16 MR. JOHANNINGMEIER: That specific circuitry, no. Yeah, it
17 does not.

18 JUDGE TSANG: Okay, thank you.

19 MR. JOHANNINGMEIER: But we started down this on a
20 discussion of whether or not this product embodies the patents and so what
21 I'm explaining is that the MEMS gyroscope that's in here, the control circuits
22 for it were designed by Mr. McCall.

23 JUDGE BISK: So, what's the evidence in the record of this? This
24 is just Mr. McCall's testimony?

25 MR. JOHANNINGMEIER: It's his testimony, yeah.

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1 JUDGE BISK: That's it?

2 MR. JOHANNINGMEIER: Yeah, I mean, he was there. It was 25
3 years ago and he testified to this whole story.

4 JUDGE BISK: What about the commercial success? What is the
5 evidence of that?

6 MR. JOHANNINGMEIER: Well, so the commercial success, I
7 believe -- is that going to be the -- let's go to slide -- sorry, do you have the --
8 basically, you know, he said it was commercially successful, right?

9 JUDGE BISK: Right.

10 MR. JOHANNINGMEIER: And then the other thing is that really
11 what we have here, the main thing, it's the success where others had not,
12 right? So, he was working with JPL and he was --

13 JUDGE BISK: And what evidence is that?

14 MR. JOHANNINGMEIER: Right, so it's slide -- my apologies.
15 I've got two presentations here and I'm doing this out of order, so apologies.
16 Okay, so basically, let's go to the '668 -- the '648 Patent presentation, slide,
17 let's start with 20. Well, yeah, no, here we are, 20 -- it's on this slide too
18 that's up, so this is Slide 29 of the first presentation.

19 So, Mr. McCall was working with and talking to the folks at
20 Draper Labs and at JPL, also at the Army sites and, you know, Camp
21 Pendleton, so he's working with a lot of different people on this. That's all
22 reflected in his notes. So, we've cited here to Exhibit 2024, some clips at the
23 bottom of this slide from his notes showing discussions he was having with
24 JPL and with Draper, and he was aware that they had, you know, were
25 working on the same thing and --

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1 JUDGE BISK: So, how does this -- how is this evidence of
2 commercial success?

3 MR. JOHANNINGMEIER: This is evidence of technical success
4 where others had failed, which is also (CROSSTALK) --

5 JUDGE BISK: Oh, technical success where others have failed,
6 okay.

7 MR. JOHANNINGMEIER: Sorry. The commercial success, what
8 we have is the previous slide to this where he basically, he remembers that
9 the product was commercially successful for American GNC. Now, that is
10 not sales data, but it's also not rebutted, right?

11 It's also not -- you know, so it is testimony that there was
12 commercial success, but the more important thing here, and it's important for
13 the merits of this as well because Draper Labs, you know, no slouch in the
14 field of research, and JPL, was working on this problem, using analog
15 sensors that they had invented and the Bernstein reference hadn't got there
16 yet, hadn't achieved the navigation-grade work. He got there, and they
17 productized it, and they patented it, and he disclosed 20 columns of how to
18 do it in the '648 Patent, right?

19 The claims of the '648 Patent are broad, but there's 20 pages of
20 disclosure in there about how to build this system, right? So, they did
21 exactly what inventors are supposed to do in our patent system, come up
22 with something, be the first one there, be the first one to patent it and put it
23 out there for the world, teach the world how to do it, right?

24 JUDGE DANIELS: Counsel, is there actual evidence in the record
25 of failure of others or is your argument here that this evidence is that he was

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1 the first one to just get it done?

2 MR. JOHANNINGMEIER: Well, I mean, there's evidence that
3 they were working on it and had not -- they had significant problems, so.

4 JUDGE BISK: And the only evidence though that they were
5 working on it and had significant problems was this one sentence from the
6 inventor?

7 MR. JOHANNINGMEIER: Well, there's, I mean, there's also
8 actually, I mean, Professor Larson looked at this as well, you know, and he
9 looked at everything in the record and he -- so, Professor Larson is --

10 JUDGE BISK: But did he know at the time? Do we --

11 MR. JOHANNINGMEIER: He knew about American GNC at the
12 time, but I mean --

13 JUDGE BISK: Did he know about what Draper Labs and JPL
14 were doing though?

15 MR. JOHANNINGMEIER: Presumably. At the time, Professor
16 Larson was working in -- Professor Larson is one of the pioneers in RF
17 MEMS, I believe, at the time. He was very familiar with this field, and so
18 he opined about --

19 JUDGE BISK: And does he testify about this?

20 MR. JOHANNINGMEIER: Hm?

21 JUDGE BISK: Where does he testify about this?

22 MR. JOHANNINGMEIER: In his declaration, he testifies. Now,
23 in his declaration, he's not talking specifically about secondary
24 considerations.

25 JUDGE BISK: I looked at his declaration and it seems like all he

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1 talks about is basically says the inventors of this and he believes them. He
2 doesn't testify to any knowledge of what was (CROSSTALK) --

3 MR. JOHANNINGMEIER: Well, no, I mean, I think that he's
4 basically testifying that the inventor confirms his understanding from being
5 there at the time. And so, for instance, in Mr. Larson's declaration at
6 paragraph 81, I mean, you know, the declaration testimony of Mr. McCall
7 further confirms my understanding that it would not have been -- right, but
8 he also has independent -- in his understanding, which was confirmed by
9 Mr. McCall, ordinary engineers at the time did not have his experience both
10 with MEMS sensors and with digital signal processing techniques. Now,
11 before we get to paragraph 81 of his declaration --

12 JUDGE BISK: But is an ordinary engineer a person of ordinary
13 skill in the art?

14 MR. JOHANNINGMEIER: Yeah, in Mr. Larson's declaration,
15 yes.

16 JUDGE BISK: Okay.

17 MR. JOHANNINGMEIER: So, Mr. Larson went through and
18 talked at length about the state of the art from his understanding
19 contemporaneously at the time, and from reviewing the art, and explained
20 that this stuff is not obvious. It's just straight up not obvious to -- and I don't
21 want to get bogged down on the commercial success point because we have
22 the inventor declaration for that and that's what we have. The technical
23 success point, we have additional stuff there, right? I mean --

24 JUDGE BISK: What's the additional stuff?

25 MR. JOHANNINGMEIER: The inventor notes about working

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1 with all of the various people he was working with. Also, in his declaration,
2 he has a paragraph on work by others at the time, so -- well, he has multiple
3 things. He has a paragraph about, paragraph 19 of Exhibit 2023, talking
4 about all of the contacts he had with American GNC customers that were
5 interested in the IMU, right? That included the Air Force, Army, Navy,
6 United States Army Armament Research, Development, and Engineering
7 Center, NASA JPL, several universities, for example, USC Robotics Lab,
8 Lockheed Martin, and others.

9 So, Mr. McCall was, at the time, in contact with all of these people
10 about this thing that they were designing, so he's testifying to that here. He's
11 testifying about the, in the next paragraph, about the commercial success,
12 which is, you know, his statement from what he remembers at the time. He
13 has a section here about work by others at the time that he was aware of,
14 including NASA JPL, and it's not only that they didn't work.

15 He understood that it was not robust enough to survive the required
16 environmental testing. Draper Labs had funding from DARPA to develop
17 such a sensor, but I understand that it did not achieve navigation-grade
18 performance. I mean, this is contemporaneous fact testimony about what
19 was going on in the art at the time he was doing this work.

20 So, it's relevant to the issue of obviousness here when we have
21 essentially their expert, Professor Young, come in and say, as his motivation
22 for combining all of these things, well, this would be a reasonable -- this
23 would be a routine implementation, I think, were his words, right? He says
24 it would be routine, right? That was the -- if you look at their slide number
25 103.

1 So, their petition came in with motivation to combine MEMS and
2 non-MEMS sensors would have been regarded as a routine implementation
3 to a skilled artisan, and he just says that. He doesn't have any evidence of
4 that. He's just saying that, right? So, it was a paid expert they hired. This
5 would be routine. Mr. McCall finds that offensive. He said no, it's not
6 routine. This was hard work.

7 JUDGE BISK: Yeah, I saw that in the declaration and I -- you
8 know, this is a legal issue. It's not --

9 MR. JOHANNINGMEIER: Well, I understand, but this is also --
10 we are --

11 JUDGE BISK: It's a hypothetical person of ordinary skill. We're
12 not trying to --

13 MR. JOHANNINGMEIER: I --

14 JUDGE BISK: -- disparage any particular inventor.

15 MR. JOHANNINGMEIER: Well, but in the way --

16 JUDGE BISK: We're trying to figure out whether legally --

17 MR. JOHANNINGMEIER: I understand, but, I mean, the --

18 JUDGE BISK: -- the patent claims are obvious over things that
19 were already in the file.

20 MR. JOHANNINGMEIER: I understand.

21 JUDGE BISK: That's what we're --

22 MR. JOHANNINGMEIER: I understand, but I also understand
23 that we're in the Patent Office nine floors up from the Hall of Invention
24 Museum, and that, you know, people who have lots of patents care about
25 whether their inventions are deemed obvious, you know, 25 years after the

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1 fact by the Board, and so I've had to explain to my client how this could be.

2 Because they've had these patents for 25 years. They've licensed
3 them. They've been proud of them. They've put them on their website.
4 They've been talking about these for years and years, and now here we are
5 with, you know, five or six different references being jammed together on a
6 statement that --

7 JUDGE BISK: What about --

8 MR. JOHANNINGMEIER: -- this is obvious, right?

9 JUDGE BISK: What about, like Ground 2, there's only two
10 references.

11 MR. JOHANNINGMEIER: Right, so there's a reference that they
12 redesigned and then they basically said we're going to go to Townsend,
13 which just discloses digital processing, and they say well, it's obvious to
14 stick digital processing in here, but that isn't the invention, okay?

15 We're not saying that -- the invention of that patent, the '122, is to
16 use the digital signal processing to analyze the specific signals that are there,
17 and there is no disclosure of that in Mitamura. There is no disclosure of that
18 in Townsend. They don't cite anything for that specific thing. They want to
19 just say, look, everybody knew about TSP. Look, everybody knew about
20 TSP as a concept. I learned about it in engineering school as an undergrad,
21 right?

22 I mean, it was -- these things -- the problem with obviousness is
23 that this stuff is known, and if you're allowed to assemble an infinite number
24 of things or any number of things without a true motivation to combine, then
25 the assumption is what you are doing is hindsight because all of this is

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1 obvious to us now as we sit here, 25 years later? We look back just like,
2 yeah, well, of course.

3 It always looks obvious after you've heard it, and that's the
4 problem with so many different inventions, and that's why, all the way up to
5 the Supreme Court, they say you have to have a motivation to combine that
6 is, you know, reasonable and strong, and it can't just be a general thing like
7 noise, right? I mean, I went through that with Mr. Young and, you know,
8 the testimony is in here. We went through it at length with him and he's like
9 yeah, noise is an issue in every electrical circuit.

10 JUDGE TSANG: I think we have case law that states that
11 universal motivation that's known in a particular field can provide a
12 motivation.

13 MR. JOHANNINGMEIER: But they also have cases that, In re
14 Beasley being one, that says that it's not enough on its own, right? I mean,
15 so, it really -- I mean, like obviousness comes down to a judgment call, and,
16 you know, what they're pointing to, they're pointing to things which are
17 universal, like a concern about noise. All electrical circuits have a concern
18 about noise. Dr. Young's own patent had a concern about noise. All of
19 these --

20 JUDGE BISK: I think the inventor here also, doesn't he testify that
21 that was one of the concerns --

22 MR. JOHANNINGMEIER: Yes, it was a concern.

23 JUDGE BISK: -- that he was expressing? Yeah.

24 MR. JOHANNINGMEIER: So, but because you're worried about
25 noise, does it become obvious then to take an analog circuit that's disclosed

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1 in a patent that claims that -- you know, we have to put ourselves into a
2 person of ordinary skill. A person sitting here, they have Fujiyoshi. They're
3 looking at this. It's an analog thing. It says that it's good. It says it has high
4 noise rejection.

5 So, what's their motivation to say you know what? I'm going to
6 put a sample and hold circuit in here so I can convert to digital, and then I'm
7 going to put a DSP in here. Then I'm going to put another sample and hold
8 in here, and then, or another and convert it back to analog, and then put
9 another buffer in there, right? And then not only that, because for the '122,
10 that still doesn't get you the low frequency, the inertial displacement signals.
11 So, now they're like, well, now we have to put Cox into the sample and hold.

12 JUDGE BISK: That's only Ground 1 though, right?

13 MR. JOHANNINGMEIER: Hmm?

14 JUDGE BISK: That's only Ground 1.

15 MR. JOHANNINGMEIER: Well, no, it's -- there's a problem with
16 Ground 2 there as well, and the problem with Ground 2 is that the claim
17 language is analyzing, and they just said analyzing. It's analyzing said
18 digital low-frequency circuits. Mitamura and Townsend do not talk about
19 using Townsend to analyze those specific signals.

20 JUDGE BISK: Okay.

21 MR. JOHANNINGMEIER: It isn't just analysis, right? They want
22 it to be that that claim element is analysis writ large. It's not. It's using a
23 digital signal processor analyzing said digital low-frequency displacement
24 signals. So, there is a low-pass filter in there, so, for Mitamura, so we're not
25 disputing the low-pass filter part --

1 JUDGE BISK: Right.

2 MR. JOHANNINGMEIER: -- right, but they don't have disclosure
3 of doing that analysis of those specific signals, which are the things that Mr.
4 McCall figured out were the key points to do a digital signal processing,
5 right. Was the most useful and best place to do that work. He figured it out.
6 He applied that. He made it work and then claimed doing that, that specific
7 use of digital signal processing, which is what I have on the title of all of my
8 slides. The specific use of DSP was not obvious.

9 Even if you want to say that it was obvious to stick DSP in here,
10 which we would dispute because it's a purely analog-based system and
11 sticking DSP into that system requires massive redesign, but, you know, it's
12 what Mr. McCall did. He inserted DSP into what had been previously
13 analog sensors.

14 He put in DSP, and not only though put in DSP, he used it to
15 analyze those specific signals because he knew that that was what was
16 causing the problems with the other stuff. And this is the inventive process.
17 This is the thing that he came up with. This is why, when you tell him we're
18 debating whether this is obvious, he's like what the hell, you know? And so,
19 I put that in. You know, I realize --

20 JUDGE BISK: Well, it's obvious in a legal term. It's not obvious
21 in common sense.

22 MR. JOHANNINGMEIER: Well, I mean, but I don't know the -- I
23 don't know what the distinction to that is. I mean, you know, I have -- well,
24 the -- you know, I'll use this as just a demonstrative point to make this point,
25 but I have, you know, I have my copy with me of Edison's lightbulb patent,

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1 and, you know, obviously this is not in the record. I'm just trying to make a
2 point with this.

3 Edison's lightbulb patent claims an electric lamp in a glass -- it
4 claims a wire filament -- a filament of carbon, wire of high resistance, in a
5 glass bulb with the air evacuated. Every single one of those things was
6 known, right? It says, even the patent itself says carbon rods were known,
7 glass bulbs with the air evacuated were known, but there's invention in this
8 patent.

9 No one would say that there's not invention in this patent because
10 everything that it was made of was known, and it's the exact same thing
11 here. There is an inventive spark or element in these patents that we've laid
12 out in our brief. We've put on the inventor testimony that they didn't want to
13 address on cross.

14 We put it on to show what he did and why, and how he was the
15 first one, how he beat Draper Labs to a successful product, all of this, you
16 know. And so, to look at it now and say can we assemble a Frankenstein of
17 however many references to show this step, you know, Fujiyoshi, plus,
18 Townsend, plus Cox, plus Irwin, or in the other case, as you said, Fujiyoshi
19 and Townsend. You put all of those things together on the motivation that
20 they all talk about noise when every patent talks about noise? It just does
21 not -- well, we think it's --

22 JUDGE BISK: Then what about the other reasons that they
23 mentioned that Townsend talks about other than noise and --

24 MR. JOHANNINGMEIER: Right, so Townsend, the noise issue, I
25 think, you know, the -- well, I mean, the testimony from Professor Young

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1 admitted that noise alone is overbroad. The other testimony is basically
2 Townsend generally disparaging analog systems, right? And so, you have
3 Fujiyoshi saying our system is great. It reduces noise. You've got
4 Townsend who wrote a patent saying like basically, you know, analog is bad
5 and here are some things you could do, but there is -- and you want to talk
6 about nexuses and ties.

7 There is no tie to anything that they're showing, you know, about
8 Townsend to what I'm saying is the specific claim elements here, right? If
9 this claim was using DSP in an analog MEMS, they might have a point, but
10 it's not, right? This claim is about analyzing these specific signals, and so
11 just generally saying that, like, you can do all of this fun stuff if you go to
12 digital, does not get you a motivation to go there.

13 There is no motivation to go from a working analog system with a
14 very specific -- well, it's a wire in Fujiyoshi, a loopback wire that they're
15 changing, and then in Mitamura, it's an arithmetic logic unit that Professor
16 Larson said could be done with a simple analog subtractor. So, they want to
17 basically pull that out, stick in all of the blocks from Townsend, and even if
18 you get there, they still haven't shown the specific benefit of those particular
19 claim elements, so it just doesn't -- it is an after-the-fact hindsight.

20 It's can we build this from pieces from the prior art? And yes, you
21 can, because you always can. Even with Edison's lightbulb patent, you can,
22 but you have to show a motivation, and when they said motivation, they
23 said, you know, other than noise and small size, which again, everything
24 wants to be smaller.

25 Everything wants to be cheaper, right? If that's enough to

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1 combine, then we could combine any patent in this field with any other
2 patent in this field because they're all going to say some version of that. So,
3 putting that aside, what did they say? They said that this would be a routine.
4 And we get to the MEMS substitution issue with the '648, that it would be a
5 routine implementation to a skilled artisan. All right, so that is basically an
6 unsupported conclusory statement, so put on Mr. McCall explaining that he
7 had extensive work. He explained his work that he did, how it was
8 extensive, what he did. We have Professor Larson saying Mr. Young, or Dr.
9 Young is completely underestimating the work involved here. This was a
10 big deal. It was a big deal in RF MEMS. It would be an even bigger deal in
11 these harder inertial MEMS.

12 So, we have that testimony. It's unrebutted, right? And then we
13 have Dr. Young who, in his depo, I asked him about did he ever do this, and
14 this is going to be slide -- sorry, let me pull up the slide because -- on the
15 issue of whether this would be routine, Professor Young said well, you
16 know, I had this project where he was putting in conventional MEMS,
17 gyroscopes, and conventional MEMS sensors, and he worked on it for ten
18 years with his students and other professor, and that was starting in 2007.

19 So, literally seven years after this patent came out, they're working
20 on a product integrating MEMS sensors that are commercially available and
21 they spend ten years on it, right? That's not a routine implementation to a
22 person of ordinary skill. It's just not, right?

23 And that wasn't the only one. He had another one involving his
24 own patent where he was doing an implementation that involved some
25 digital signal processing and he took two years on that, and this is --

1 JUDGE BISK: You're going into your rebuttal time. I just wanted
2 to let you know.

3 MR. JOHANNINGMEIER: Yeah, okay, so, I mean, I didn't -- you
4 know, I think we laid out all of these things that I've pointed to very well in
5 my briefs. I would highly encourage the Board to look again at the
6 declarations from the inventor and from Dr. Larson here, which are, you
7 know, basically say all of the things I've been saying from the point of view
8 of someone who was there and someone who knows this art from the
9 perspective of being a pioneer and in MEMS himself. So, I'll reserve the
10 remainder of my time for rebuttal.

11 JUDGE BISK: Okay. Okay, I have that you have 26 minutes left.

12 MR. LAUPPE: Thank you, Your Honor. So, I'm going to give a
13 few remarks rebutting -- on rebuttal regarding the '122 Patent and secondary
14 considerations, and then I'm going to turn it over to my colleague, Mr.
15 Brigham, to discuss any further issues for the '648.

16 So, to start out my remarks, Mr. Johanningmeier was just speaking
17 to remarks made by Dr. Young, alongside remarks made by Dr. Larson.
18 One thing I'd just like to point out to give some context here, so when Mr.
19 Johanningmeier was discussing a project that Dr. Young had worked on in
20 2007, that's cherry-picking the projects that Dr. Young testified to.

21 And so, another project that Dr. Young testified to is, for example,
22 this one seen on Slide 3, which we were discussing earlier. So, as early as
23 1993, Dr. Young was working on mixed-signal circuitry for use with MEMS
24 inertial sensors, and he testified about this in his deposition and then he
25 provided further testimony about this in one of his declarations.

1 So, this is a project he worked on, you know, up to five, six years
2 prior to the asserted priority here, and it involved the exact area of
3 technology at issue in both the patents you're hearing about today. But then
4 compare this to testimony from Dr. Larson, Patent Owner's expert, who
5 testified that -- sorry, moving to Slide 71, he never designed a MEMS device
6 for inertial navigation applications, and instead, moving to Slide 72, he
7 discussed that his field is that of RF MEMS, but RF MEMS devices do not
8 perform inertial navigation. So, whereas Dr. Young worked on this --
9 directly worked in this exact area of technology, Dr. Larson's experience
10 was only in what he described as a different field.

11 And so, when Dr. Young testifies to, for example, something being
12 routine, that's based on his direct knowledge and experience in this area of
13 technology, whereas -- and so, from Petitioner's perspective, Dr. Young's
14 testimony as to this issue, particularly about the knowledge of a person of
15 ordinary skill and what would have been obvious to a person of ordinary
16 skill, should be given more weight than Dr. Larson's in this proceeding.

17 Now, further, to respond to some other points, oh, yes, so, I mean,
18 referring back to the project in 2007 that Mr. Johanningmeier was referring
19 to that Dr. Young testified to, I mean, if you look at the testimony that Dr.
20 Young provided, which we've cited to in our papers, Dr. Young speaks to all
21 sorts of different reasons, unrelated to the technology at issue in these
22 proceedings, that were the reasons for any delay in those projects.

23 For example, he talked about the fact that those projects involved
24 graduate students, and so part of the goal of those projects was training
25 graduate students. Furthermore, he discussed lapses in funding. You know,

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1 their funding ran out at one point. There were staffing issues.

2 So, and also, I mean, it's not like these were simply designing a
3 sensor that just existed on its own. These were very application-specific
4 sensors, for example, a sensor that was supposed to be mounted in the shoe
5 of a soldier, or a boot, or another sensor that was supposed to be inside of,
6 like, the inner ear in a human being.

7 So, these were very application-intensive circumstances, and so to
8 point to these projects as somehow reflective of the knowledge a person of
9 ordinary skill would have had around this time period, or in the difficulty
10 allegedly that a person of ordinary skill would have had, it doesn't really pan
11 out.

12 So, furthermore, I'd like to speak to a couple of points that Mr.
13 Johanningmeier discussed related to secondary considerations. So, let's see,
14 so Mr. Johanningmeier pointed to testimony from doctor, from Mr. McCall.
15 Sorry, I'm actually going to move over to their slides. So, this is Slide 27 of
16 Patent Owner's slides.

17 Patent Owner pointed to this sentence at the top of Slide 27 of their
18 slides. Inventor and McCall worked on the patents in the core micro IMU
19 together. That's not evidence, again, of anything embodying any claims.
20 That's just simply two things being worked on at the same time, so in our
21 view, that's not evidence. Again, there's no evidence that's been presented of
22 anything, any product embodying the claims of the patents at issue here.

23 Furthermore, again, Patent Owner pointed to this excerpt from one
24 of its papers where it places these two diagrams next to each other. Again,
25 when we see this black box on the right -- this is on Slide 26 of Patent

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1 Owner's demonstratives. On the left, they acted like this is a claim chart, but
2 in fact, this is just a diagram that appears in one of the patents. This is just a
3 diagram that appears in the '122 patent.

4 So, there's nothing to suggest that this reflects certain limitations of
5 the challenged claims. This is just a diagram they've pulled from one of the
6 patents. So, there's nothing, again, about this particular placing of one figure
7 next to another that is indicative of how any of the challenged claims
8 embody, or any product embodies any of the challenged claims.

9 JUDGE DANIELS: Counsel, I appreciate that he didn't go into --
10 McCall didn't go into great detail here, but isn't his testimony here entitled to
11 some type of weight as he's talking about the patents and his claims here as
12 they related to the core micro IMU?

13 MR. LAUPPE: Well, so, Your Honor, we would argue that this
14 shouldn't be entitled to any weight, and I'd like to point to some testimony
15 provided by Mr. McCall. So, for example, I don't have this on a slide, but --
16 or maybe I do, but Mr. McCall testified to the fact that -- and this is at
17 Exhibit 1048, Column 24, Line 8 to 19.

18 Mr. McCall testified to the fact -- so, we asked him, he's not
19 offering any opinions in his declaration, is that correct? And he said no. We
20 asked him if he's giving any opinions about the validity of the claims. He
21 said that's correct, he's not offering any opinion. And then finally, he's not
22 offering any opinion about the validity of the claims at issue in this
23 declaration.

24 So, Mr. McCall is not offering any opinions. So, again, any idea
25 that this claim that he -- that these -- either of the '122 Patents or the '648

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1 Patent were successfully implemented. Again, here, I mean, he's not
2 actually talking about the claims, like he's not pointing to any specific claims
3 of the '122 Patent or the '648 Patent. He's just saying these were
4 successfully implemented in this core micro IMU product.

5 So, again, this is not actually evidence of any embodiments of
6 claims, and again, even if this were, this is not an indication that any, well,
7 first of all, any commercial success or that any commercial success was tied
8 to any claimed features.

9 And so, Patent Owner also pointed to Slide 29 where Mr. McCall
10 testifies to certain activities by NASA and Draper Labs. As we pointed to in
11 the papers, Mr. McCall testified he never worked at either of these
12 companies, and also, I mean, you know, just look at what he's talking about
13 here. He's not actually talking about failure of any product.

14 He says I understand that it was not robust enough. He also says I
15 understand that it did not achieve navigation-grade performance. So, again,
16 there's nothing here to suggest any failure of any product, and there's also
17 nothing to suggest that any failure was due to, for instance, the lack of
18 implementation of any of the claimed features here. So, then moving to --
19 let's see --

20 JUDGE DANIELS: Is this a hearsay problem? I mean, is he
21 testifying to the truth of the matter here or is this just his --

22 MR. LAUPPE: Well, so, I think from our perspective, he doesn't
23 have any clear basis for -- I mean, for example, you can see that he says I
24 understand that it was not robust enough. He also says I understand that it
25 did not achieve navigation-grade performance. So, there's no particular

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1 indication that he knows any of these things or really has any basis for these,
2 I mean, I need to call them opinions even though he said he wasn't offering
3 those.

4 So, I don't think -- I mean, we certainly didn't advance any hearsay
5 objections, but I think just from the perspective of having a basis for these
6 opinions, we don't think that this is really entitled to really any weight at all.

7 And then, I mean, this is an issue that comes up in various claims
8 that Mr. McCall makes. So, for example, Patent Owner appears to rely
9 heavily on this statement by Mr. McCall. He says I understand that this
10 product was commercially successful for American GNC, but again, there's
11 no indication as to why he understood this or what really commercial
12 success meant to him, and again, he said he's not offering opinions in his
13 declaration here.

14 So, from our perspective, I mean, this testimony from Mr. McCall,
15 you know, I mean, it's baseless. It's really just ipse dixit. It's ultimately, I
16 mean, opinions offered by Mr. McCall even though -- and, I mean, you
17 know, at one point in time, we were talking about this ordinary engineer
18 standard.

19 Mr. McCall, in addition to all of the other deficiencies in his
20 declaration, applied the wrong standard. He didn't provide a person of
21 ordinary skill in the art standard. He just applied something he called
22 ordinary engineer, which if you look to the deposition testimony he
23 provided, just did not correspond to anything offered by either party as to the
24 definition of POSITA in this case.

25 So, Mr. Johanningmeier also discussed the -- sorry, I'm jumping

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1 around a bit, but one thing I wanted to loop back on is for the '122 Patent,
2 the substance, Mr. Johanningmeier suggested that Townsend does nothing
3 but generally disparage analog circuitry, and therefore, it's not actually
4 teaching, you know, something that a person of ordinary skill would have
5 applied in a combination.

6 However, if you look to, for example -- sorry I'm on the wrong
7 slide deck, Slide 38 of Petitioner's demonstratives, we were talking about
8 this earlier. If you look on the right side of Slide 38, Townsend specifically
9 teaches that there is a need for a digital electronic implementation of loops 1
10 and 5, which refers to a vibrating structure gyroscope, and this is in order to
11 facilitate ASIC development, system integration, and provide a route to
12 higher performance by enabling more complex and in loop compensations to
13 be applied.

14 And again, this is not about just sort of any general system.
15 Townsend is talking about a vibrating structure gyroscope, the exact type of
16 gyroscope disclosed by Fujiyoshi. So, there's nothing general about
17 Townsend's disclosures here. These are highly analogous references, both
18 referring to a specific type of sensor, a tuning fork sensor, and Townsend is
19 teaching the use of digital circuitry in concert with that sensor.

20 Mr. Johanningmeier also, on the analyzing limitation point that we
21 were talking about earlier, Mr. Johanningmeier suggested that somehow the
22 Mitamura reference is not, that neither of the grounds that Petitioner has
23 provided includes teaching of the particular type of analyzing of certain
24 signals as the '122 Patent requires, but if you look at Slide 59, for instance,
25 this is the Mitamura ground. We have identified exactly where the low

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1 frequency inertial element displacement signals are.

2 You can see that in these orange elements in Slide 59, and so that's
3 this orange element right at the input of the digital-- what we're asserting is
4 the digital signal processing system, the arithmetic unit 91, and that's right
5 after a low pass filter 84. That low pass filter appears to be why Patent
6 Owner is not challenging the meeting of the low frequency elements in the
7 claims for the Mitamura ground.

8 But so, I mean, for Patent Owner to somehow claim that we
9 haven't identified specifically analysis of those particular signals, that's
10 simply not true. We've identified them here in this diagram, you can find
11 this in our papers, and we've gone on to show why this digital -- this
12 arithmetic unit 91, why that performs analysis of those signals, and I've
13 pointed to the relevant point of Dr. Young's testimony here in Slide 62.

14 So, I think that covers all of the issues that I wanted to cover for
15 secondary considerations and the '122 Patent, so I'm going to turn it over to
16 my colleague, Mr. Brigham.

17 MR. BRIGHAM: Just very quick, Your Honor, on the 315(b)-
18 issue, I think Your Honor zeroed in on one of the primary flaws and it's that
19 service issue. All we heard today was attorney argument. So, even if you
20 put aside the statutory interpretation and the lack of privity, all we heard was
21 attorney argument. What we do know is that they attempted service again,
22 there was no proof of service filed, and the case was dismissed against
23 STMicro a couple of days later, so that's what we have.

24 And what we have is notice is not enough. The case law is clear
25 that just -- what I heard today was that STMicro had notice, and that's just

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1 not enough. So, unless you have any questions on the '648 or any other
2 questions, we appreciate your time.

3 JUDGE BISK: I don't have any more.

4 JUDGE TSANG: None from me.

5 MR. BRIGHAM: Thank you.

6 JUDGE BISK: Thank you. Okay, I'm giving you 20 minutes for
7 your rebuttal.

8 MR. JOHANNINGMEIER: Thank you very much. So, I want to
9 address what they started with, which was Mr. McCall and his testimony.
10 So, obviousness is a fact question ultimately. Does a person of ordinary skill
11 in 2000, would they find this obvious? It's a fact question. Mr. McCall is
12 providing factual testimony about what was going on, and what he was
13 doing, and the work he did.

14 Obviously, he's not providing opinions. I wouldn't put on an
15 inventor to provide opinions. I mean, he has an opinion, which I let him put
16 in his declaration, about this being non-obvious, but we're not asking the
17 Board to decide based on his view that this is non-obvious. We are though
18 pointing to the very specific facts that he offered about what was going on at
19 the time and the work that he was doing with all of these various
20 organizations, the fact that, you know, they had existing sensors. They were
21 trying to make them work.

22 He was working with them both to get information collaboratively
23 on research because that's where this field was at this time was in research,
24 and JPL and Draper Labs were doing research and he was working with
25 them, and he came to American GNC, applied his digital signal processing

1 knowledge, and actually was able to produce something that worked.

2 And he's very proud of that, and, you know, and at the same time,
3 got a patent and that patent has, you know, it's expired. It's almost at the end
4 of its assertion life. This is 25 years ago. It had a successful run. Now
5 there's basically one party left, well, two if you count ST, that care about it at
6 this point other than the inventor and my client, but that's where we are.

7 I mean, like there is testimony from Mr. McCall generally about
8 how they disclose license, but we're not relying on secondary considerations.
9 It's just one of the things here. We have Mr. McCall's fact testimony on
10 everything that was going on and how this was not obvious, how much work
11 it was for him at the time.

12 We have Dr. Larson's testimony as someone who was very familiar
13 with this field, in the adjacent field of RF MEMS, where he was a pioneer.
14 And, you know, Professor Larson has had a very distinguished career. I
15 mean, recently he was the provost at Brown, the interim provost at Brown. I
16 mean, he's --

17 JUDGE BISK: But what is your take on the other side saying that
18 he wasn't in the same field? He was in this RF field, which was slightly
19 different.

20 MR. JOHANNINGMEIER: Well, I mean, so he never built an
21 IMU out of this because he was building, you know, gigahertz-level RF
22 MEMS for satellite switching, right? I mean, he was doing an adjacent
23 application of MEMS at the same time at Hughes, but this is a relatively
24 small field. What was going on at this time in the field was a lot of people
25 were excited about MEMS and doing a lot of work in MEMS.

1 In the late '90s, that was the thing. There were a lot of companies
2 and a lot of people trying to do a lot of stuff, and Professor Larson was
3 focused on RF MEMS. Mr. McCall did some MEMS work, but also had
4 done some RF digital signal processing work, so, and they were all in the
5 aerospace field at the time, so --

6 JUDGE TSANG: Mr. Johanningmeier, I wanted to ask how
7 Professor Larson's RF MEMS, or I guess just his experience in general sort
8 of fits in with your articulated level of skill? So, in the response, you say
9 approximately five years of relevant experience in the development of
10 control systems for inertial navigation and then semiconductor processing
11 and analog circuit design.

12 But as Petitioner pointed out and to my recollection as well, during
13 the deposition, Professor Larson said a couple of times that he didn't have
14 experience as it related to certain projects that he worked on. He didn't have
15 experience with the inertial navigation, control systems for inertial
16 navigation, and I don't recall seeing where in his declaration he talks about
17 any experience there as well. Can you point me to or, you know, describe to
18 me his experience there?

19 MR. JOHANNINGMEIER: Well, I think his experience, I mean, I
20 believe it's correct that he never personally designed an IMU with Misso,
21 but, you know, I'm not sure that that's, you know, that's a reason to discount
22 the entirety of his testimony given that, you know, he was in this field, in the
23 field of MEMS doing like -- I think he has something like 25 patents in this
24 space, and was aware of what was going on, but further has looked at --

25 JUDGE BISK: Would he have qualified as a person of ordinary

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1 skill in the art under your definition?

2 MR. JOHANNINGMEIER: Yes.

3 JUDGE BISK: Okay.

4 MR. JOHANNINGMEIER: To control systems, yes.

5 JUDGE BISK: Okay.

6 MR. JOHANNINGMEIER: I mean, they're making the point --
7 they have his Paper from 1988 about digital and analog. I mean, in their
8 record, they put in front of him an old paper from 1988 where he's talking
9 about using digital signal processing in combination, mixed signal in a
10 communications context, all right, so.

11 JUDGE TSANG: Right, and in his deposition, he did testify that
12 he worked with control systems at Hughes --

13 MR. JOHANNINGMEIER: Yes.

14 JUDGE TSANG: -- but he did say that that was not an inertial
15 navigation system.

16 MR. JOHANNINGMEIER: Right, right, he wasn't directly
17 working on gyroscopes, and he was working on, you know, control
18 systems --

19 JUDGE BISK: But isn't your definition of a person of ordinary
20 skill in the art someone that worked for five years in control systems and
21 inertial navigation?

22 MR. JOHANNINGMEIER: The official definition is -- well, the
23 other thing about this is that he, in his declaration, he applied their version as
24 well. So, I mean, it certainly fits under their definition, but -- I'm sorry. I'm
25 trying to remember where exactly the paragraph on that was.

1 But Professor Larson, you know, has also looked at all of this art
2 and all of the testimony, and he had understanding of American -- I mean, he
3 remembered them. Actually, Professor Young remembered them as well.
4 He knew of them at the time and knew what was going on in the art.

5 JUDGE BISK: So, I have the paragraph that's on page 18 of the --

6 MR. JOHANNINGMEIER: Oh, yes, thank you.

7 JUDGE BISK: -- response.

8 MR. JOHANNINGMEIER: I'm sorry, yeah.

9 JUDGE BISK: That's okay.

10 MR. JOHANNINGMEIER: So --

11 JUDGE BISK: There's a lot of paper here.

12 MR. JOHANNINGMEIER: I'm sorry, did you say Paragraph 18?

13 JUDGE TSANG: Page 18.

14 JUDGE BISK: Page 18, around the middle of the page, it says a
15 person of ordinary skill in the art with at least a master's degree in electrical,
16 or electronics engineering and approximately five years of relevant
17 experience in the development of control systems for inertial navigation,
18 MEMS semiconductor processing, and analog circuit design.

19 MR. JOHANNINGMEIER: Right, I mean, I don't think he meant
20 necessarily -- well, I mean, I don't think he meant five years in each of those
21 things, but, I mean, you know, I think he meant as a grouping.

22 JUDGE BISK: Okay.

23 MR. JOHANNINGMEIER: But, I mean, the bottom line is that,
24 you know, his qualifications are listed here. His expertise in MEMS is very
25 relevant to this, and he's capable of reading all of this prior art and forming

1 opinions about what was known at the time and what was going to be easy to
2 do or hard to do at the time. I mean, I believe he made the point in his
3 deposition that the MEMS stuff was hard enough and that this would be
4 even harder from his understanding, which I think probably everybody
5 would agree with, you know.

6 And again, so we have his testimony. We have Professor Young
7 when -- you know, and he accused me of cherry-picking the example. I
8 mean, what happened there is in his deposition, I asked him if he'd ever done
9 it, if he'd ever built a MEMS navigation system, and he told me all about his
10 experience building this with what he agreed were conventional MEMS
11 sensors and that it took him 10 years to do starting in 2007.

12 So, I mean, there it was just on Slide 15. You know, he worked on
13 it for 10 years starting in 2007. There was a team on it for a brief period. I
14 guess they lost their funding, and he continued to work on it. So, you know,
15 I'm assuming, as a person of ordinary skill, the fact that it took him 10 years
16 to do a similar project seven years later kind of rebuts the point of it being a
17 routine implementation.

18 I mean, if it was routine, why is it still interesting at that point?
19 Why is it taking them years to do, right? He's teaching graduate students,
20 persons of ordinary skill under his definition, so. And I think on the next
21 slide, Slide 16, there is sort of -- you know, he, in his own initial declaration,
22 said it would have required a change to the manufacturing process, and it
23 would have required a change to the signal conditioning electronics.

24 So, he's basically admitting that you have to change the
25 manufacturing, you have to change the signal conditioning, and you're

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1 basically replacing a ring laser gyro or a gimbal gyro with a MEMS circuit.
2 It's a completely different application that requires a complete redesign, and
3 then he just, after saying that, says but that would be routine.

4 Well, that's not credible testimony in our view, and it's not credible
5 when put up against his experience, it's not credible when put up against
6 Professor Larson's opinion, and it's not credible when put up against the
7 facts from Mr. McCall or the secondary considerations evidence.

8 And the other thing is there's another one actually, you know, one
9 of the references that they mentioned that we had objected to because it
10 came in super late, but actually in our surreply brief, we talked about it
11 because they mentioned this Minor reference as being another thing, but if
12 you actually read the Minor reference, and this is at 13 and 14 of our
13 surreply, it says because of the relative immaturity of the technology,
14 MEMS inertial sensors have low precision in comparison to inertial sensors
15 of a larger size used in existing tactical missile navigation systems.

16 It also says given the current state of MEMS technology, providing
17 navigation adequate for the application is very challenging. It also says
18 there we no gyros found which had the measurement ranges necessary. This
19 was a research paper that they put into the record to show that this was
20 known, and it's agreeing with all of the experts that this is hard and it was
21 hard at the time.

22 And so simply substituting technology, there has to be a reason to
23 do it and there to be -- you know, the only reason they gave for substituting
24 that technology that isn't just a generic presentation of a word like noise or
25 size, is to say that it would be easy, and that's just not -- you know, they have

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1 the burden of proof on this. They've got a conclusory statement from Dr.
2 Young, arguably rebutted by his own testimony about his own work.

3 We have Dr. Larson. We have Dr. McCall. We have the
4 secondary considerations. We have their own prior art Paper saying that this
5 stuff is hard. So, the technology substitution issue, I think, is clearly --
6 they've failed their burden of proof on that for the '648 Patent.

7 Now, to talk briefly about the '122, Counsel put up a bit from
8 Townsend talking about the use of loops, but this goes to the point I made
9 earlier. There is no disclosure in Townsend of doing the specific thing that I
10 explained was the inventive spark of whatever that Mr. McCall came up
11 with of actually using Townsend on those specific signals to actually
12 improve the performance of the digital low frequency inertial displacement
13 signals.

14 There is no -- they haven't pointed to anything, even here today, on
15 that, and so the whole thing falls down on that point. Both combinations
16 don't do that. You know, this combination, which is complex, even if you
17 get to Townsend, you do not get to the language of the actual claim, which is
18 a digital signal processor analyzing -- here it is on Slide 13.

19 We've got a box that's the digital signal processor, but what does it
20 have to do in the claims? It has to analyze digital low frequency inertial
21 element displacement signals into the control loop basically is what has to be
22 done. It's not suggested you can put together Fujiyoshi, Townsend, and Cox
23 to get low pass filtering, Irwin to know about anti-aliasing, and then you still
24 don't get there. So, even if you combine, they still fail in their proof for the
25 Townsend combinations.

1 The other thing I wanted to point out about the aliasing, they
2 brought up that. Well, aliasing is something that happens when you put in a
3 digital signal processing, or if you sample. You get aliasing when you
4 sample, and Dr. Larson talked about that in his testimony on Slide 45 of
5 their slide, but you can read that to know that this isn't just attorney
6 argument.

7 But basically, what they're suggesting with this combination is
8 that, you know, somehow the need to -- because Townsend talks about anti-
9 aliasing, that that's somehow motivation to combine. You don't have an
10 anti-aliasing problem unless you are already building this system, right? It's
11 not a motivation. It's a problem that's created by the addition of Townsend.

12 There's no aliasing problem in the wire of Fujiyoshi or the ALU of
13 Mitamura. It's just basically their own combination has created a problem
14 with sampling where they need sample and hold, and then they need low
15 pass filtering and that, but all they're doing there is they're removing
16 aliasing, which is created by the sampling process, so they're not -- it's not a
17 true motivation to combine because it's a problem created by the
18 combination itself, and so that is --

19 Again, the testimony from Professor Larson explained that, that
20 essentially when you put in digital signal processing, you start to have to
21 then worry about corrupting the signal with aliasing, but again, that can't be
22 a motivation to add all of this stuff, you know. Basically, it's hindsight, like,
23 oh, we need Townsend because we need digital processing in this analog
24 circuit.

25 Oh, but if we have Townsend, we have an aliasing problem, so we

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1 need a filter. You know, what they're doing is basically walking backwards
2 in hindsight and they haven't shown the motivation for someone who is
3 sitting there with a perfectly good analog implementation to plug this in.

4 So, like for Mitamura -- so if we go to our Slide 23 on the '122.
5 Yeah, so, because I think that's the -- sorry, that was it. Yeah, there you go.
6 So, Mitamura, they've -- yeah, Slide 23, the next one. So, this has got the
7 same problem with the digital signal processing not being disclosed, but
8 Counsel put up, you know, a figure.

9 Now, this is the figure actually from Mitamura. The one that's in
10 their briefs is a redrawing of several figures in order to make it look like a
11 complete system, but anyway, what's here that they're pointing to is this
12 arithmetic unit 91, which is how it got translated from the Japanese.

13 You look at the diagram and it's just simply a threshold reference.
14 There's a reference voltage and it's basically triggering off of an amplitude
15 threshold. So, this is a very simple circuit that, you know, Dr. Larson, being
16 a distinguished professor of electrical engineering for years and years, can
17 recognize, well, almost anyone with an electrical engineering degree might
18 recognize is a very simple analog function or can be performed very simply
19 as an analog function, which is consistent with all of the other disclosure of
20 Mitamura, which is all analog on their own admission.

21 And then it was the same as in Fujiyoshi where there was a wire
22 that basically was feedback, you know, from one node to another in a control
23 loop. And so, there is no -- looking at that, you know, there is no motivation
24 to add all of the things that they're saying you need to add here to get to
25 essentially the claim, right? They're doing this in hindsight.

1 They're building the invention out of pieces that are known in the
2 art, but you can't just do that. I mean, you can do that for any invention, but
3 it's not correct under the law. It's not obvious. You need motivation to
4 combine and there is none. Why would you take that simple circuit -- and
5 then if we go back a slide or two, sorry, two slides.

6 Why do all of this on Slide 21? Mitamura says that its circuit isn't
7 susceptible to noise, acceleration, and other types of noise, and that it
8 achieves high sensitivity and high precision. So, I'm a person of ordinary
9 skill and I read that. I think great, but now what Nintendo is suggesting is
10 we're going to pull Townsend and we're going to stick sample and hold
11 devices, buffers, digital signal processors, and analog to digital converters in
12 order to get a digital signal processing function, and then once we get there,
13 we still haven't disclosed or taught the actual elements of this claim.

14 So, this essentially all falls down on that point. Townsend doesn't
15 teach it. This invention is not using digital signal processing in an analog --
16 we're not claiming that, right? It has specific limitations. It has a very
17 specific signal that has to be analyzed and they don't have it. They haven't
18 shown it.

19 Now, the only other thing I'll say because I'm running out of time,
20 there was some question about the -- we didn't reach the analog rate
21 electrical signals, or the angular rate electrical signals. I would call the
22 Board's attention to Claim 4, where the Claim 4 language says it has to be
23 directly proportional. They haven't shown in any of their combinations
24 directly proportional. It's on the angular rate, right? We basically think
25 that --

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1 JUDGE BISK: This is of the '648 Patent?

2 MR. JOHANNINGMEIER: Yes, so Claim 4 there. It's a separate
3 ground to uphold that claim, we think to uphold both claims, because we
4 think angular, detecting angular rate signals isn't met by the ring laser gyro
5 detection of something that, you know, has to be calculated in order to get
6 there.

7 That's all well in our briefs on both sides, but I wanted to highlight
8 that even if you don't agree that you should construe the angular signals, that
9 the plain language of Claim 4 says directly proportional to angular rate,
10 which can't be met by Smith because it's directly proportional to frequency,
11 and for the other two references, there is just no disclosure about what that
12 signal is at all, so there's no teaching. And if it's possible for it not to be the
13 thing, then, and if there's no teaching, then you can't simply say it must be
14 the thing.

15 So, with that, unless there's any other questions, I will -- I've got 19
16 seconds left, so thank you very much for your time, everyone, and my client
17 really appreciates your consideration on this, and we'll anxiously await the
18 decision here. Thank you.

19 JUDGE BISK: Okay, thank you very much. We're adjourned.

20 (Whereupon, the above-entitled matter went off the record at 3:00
21 p.m.)

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