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UNITED STATES PATENT & TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL & APPEAL BOARD

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TCT MOBILE (US) INC. & TCT MOBILE, INC.
Petitioners

v.

WIRELESS PROTOCOL INNOVATIONS, INC.
Patent Owner

_____

Case: IPR2016-01494
U.S. Patent No. 8,274,991 B2
and
Case: IPR2016-01704
U.S. Patent No. 8,565,256 B2

_____

THE DEPOSITION OF
STUART J. LIPOFF
Tuesday, April 18, 2017
9:00 a.m.
2300 West Sahara Avenue, Suite 750
Las Vegas, Nevada
June W. Seid, CCR No. 485

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APPEARANCES OF COUNSEL

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I N D E X

E X H I B I T S

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Deposition of STUART J. LIPOFF
April 18, 2017

Thereupon--
STUART J. LIPOFF,
was called as a witness, and having been first duly sworn, was examined and testified as follows:

EXAMINATION

BY MR. SLOSS:

Q. Good morning, Mr. Lipoff.
A. Good morning.
Q. You've had your deposition taken before, I presume?
A. I have, yes.
Q. Can you estimate how many times roughly?
A. Eight to ten, something on that order.
Q. Okay. When was the last time, again, roughly?
A. About a month ago.
Q. Okay. So can I assume you're familiar with the ground rules and we don't need to go over those in any great detail?
A. I think so, yes.
Q. Just begin to state, if you need to take a break, let me know and we will take a break. If you

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don't understand one of my questions, please let me know and I'll try to rephrase it. For the court reporter's benefit, let's try to talk one at a time rather than you anticipating me and the end of my question and me anticipating the end of your answer, so we can have a clear record. Do you understand that?
A. Yes, I do.
Q. Who are you retained by in this matter?
A. Retained by TC -- TCT.
Q. When were you first contacted about this matter?
A. I don't recall the exact date, but it would have been early in 2016.
Q. By whom were you contacted?
A. I believe my first contact was with Brad. I think he signed my retainer agreement.
Q. You said that was when?
A. Would have been early 2016, I think.
Q. Okay.
A. I don't have the precise date.
Q. And what -- in general what were you asked to do?
MR. CANGRO: Objection to form.
A. I was asked to review the two patents that are at issue here today and then to perform an

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objective analysis of the validity of the patents.
BY MR. SLOSS:
Q. And how did you go about undertaking that job?
MR. CANGRO: Objection. Form.
A. I read the patents, I attempted to understand them, drew back to my experience and what I thought might be related prior art, surfaced a number of potential candidates. I read the other documents that are referenced in my report, including the file history, to try and understand what other art had been looked at. I worked with some other attorneys at Morgan Lewis who had also performed some of their own prior art searching.
We merged together various candidates, I reviewed them and I picked out what are the ones that best read on the limitations that were in the two patents.
BY MR. SLOSS:
Q. So let me show you what has been marked as Exhibit TCT1001, and that's I believe -- well, they are both -- strike that.
You understand that we are here for two IPRs, correct?
A. That's my understanding, yes.

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Q. And you understand that the two IPRs are IPR2016-01494; do you understand that to be one of them?
If you don't remember off the top of your head, that's understandable.
A. Yeah, I don't remember the numbers. My reference key are the two patent numbers.
Q. Okay. So I've handed you I believe what we have --
A. '991.
Q. The '991 patent. Is that one of the patents that you were retained to offer opinions on?
A. Yes, that's correct.
Q. Okay. Let me also hand you another exhibit, TCT1001 from a different IPR, and that is the '256 patent. Do you understand that to be the '256 patent?
A. Yes, I do.
Q. And that's the other patent that you looked at in connection with the IPR?
A. That's correct.
Q. So these are the two patents that you received when you were first retained by Morgan Lewis; is that correct?
A. Yes. Yes, these are the two that I'm here to discuss today, which I was directed to look at by

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Morgan Lewis.
Q. If you would look at the '991 patent first, please.
A. Okay.
Q. I believe you said you reviewed that when you received it?
A. Yes, I did.
Q. What is your understanding of the field of the invention of the '991 patent?
A. Well, as stated in column 1 starting at line 25 of the patent, would you like me to read that?
Q. Yes, please.
A. Okay. Field of the Invention. This invention relates to point-multipoint communications; in particular, the invention relates to control, contention for data slots by customer premises equipment in a wireless point to point multimedia system.
Q. What did you understand that to mean?
A. I think the language is plain. It's referring to a point to multipoint communications, which means with respect to the use of customer premise equipment or CPE, there would be more than one CPE that would be the multipoints, and there would be something else, which is the device that in one embodiment that's

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designated as the base site controller and here would constitute the point, and it identifies it as being a wireless system.
Q. So what did you understand CPE or customer premises equipment to be?
A. I don't recall that there's any further identification of it in the patent, and it wasn't something that I felt was necessary that I would need to understand what the variations would be, beyond that it's a network element in a point to multipoint communication system. And as I'm further informed by the patent specification, I believe it's referring to the multipoint side of the point to multipoint, where the other network element that's identified that would constitute the point would be the base station controller, which is discussed in other embodiments in this specification.
Q. So what did you understand the base station controller to represent?
A. I think I would give you the same answer here as I did with respect to the CPE. It didn't have any particular meaning one way or the other to me, beyond that it was one of the network elements in a point to multipoint system, because it's -- it's a -- it's used in a block diagram, and as I pointed out in my expert

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report, the inventor in comp for the patent identifies these two components, the customer premise equipment and the base station controller, and I think in the text of that particular column starting around line 1 through pretty much the end of that section around line 37, he talks about these as being general, meaning illustrative, not limiting in any respect.
Around line 30, again he repeats that these are just illustrative. So I took it to mean a network element in the architecture as they are shown in figure 1.
The BSC is the network element that would constitute the point. And the multipoint network and the CPE would constitute network elements which are the multiple points.
Q. In your answer, you mentioned block diagram. Is that figure 1 of the '991 patent?
A. Yeah, that's one of the diagrams, figure 1.
Q. That's the block diagram, right?
A. Yes, I guess I would refer to that as a block diagram.
Q. Figure 2, in fact, is a state diagram, right?
A. Yeah. So column 4 at the bottom, line 60 identifies figure 1 as a block diagram, and it actually identifies figure 2 as a flow chart of a state machine,

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so I guess I'll use the words the inventor used.
Q. Now, when you read the '991 patent, did you read the claims?
A. Yes, I did.
Q. Can you describe the relevant technical experience in the field of invention that you have?
A. Well, I took some care in my expert report to identify what I thought were relevant aspects of my experience over the -- since I've been in professional service from 1969, so I think generally I've worked since graduation in the field of communications systems, and that would be I think the relevant experience. I listed specific things in my CV and in my expert report.
Q. Let me show you what is marked in both IPRs as Exhibit TCT1006. Do you recognize that document?
A. Yes, I do.
Q. Is this your CV?
A. Yeah. I tend to, in preparing these, I tend to try and pick some sampling of projects that I've done over the years which are relevant. So without actually looking at what was filed, I can't certify that this is the actual one that was filed here, but it certainly is at least -- appears to be one of the ones I've created over my career.

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Q. Okay. You'll see at the bottom right-hand corner of the first page, actually of every page, there's a designation TCT1006.
A. I see that, yes.
Q. Do you have any reason to believe that was not what was submitted in connection with this matter?
A. I have no reason to believe otherwise.
Q. Is it your practice when preparing a CV for work such as this to try to include the most relevant experience when you list the projects you've worked on?
A. Yeah, I generally try and find at least some things that are relevant. I don't know that I picked every project that I worked on that was within this field of interest, but I tried to pick at least some of them.
I'm sorry. To complete the answer, it would be helpful to me if I also had a copy of my report, because I know I attempted in the body of my report to also provide a summary of some of the other work that I've done.
Q. Sure. Let me show you what was marked as Exhibit TCT1005 in the '991 IPR. And that is entitled, "Declaration of Stuart J. Lipoff in support of petition for inter partes review." And it goes on to identify the '991 patent.

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Do you recognize the TCT1005 as the '991 patent?
A. Yes, I do.
Q. You called it your report, but there was nothing other than this declaration that you submitted, correct?
A. Yes, that's correct. I probably should have properly identified it as my declaration.
Q. That's fine, just as long as we are talking about the same thing. Are you more comfortable calling it your report?
A. Either way is okay with me.
Q. In your declaration that is Exhibit 1005, you talk about your career history and relevant experience beginning on paragraph 5 and continuing through paragraph 15, correct?
A. That's correct.
Q. And it's your testimony that in that portion of the declaration, you identify what you believe to be most relevant experience for this matter?
A. I don't know I would characterize it that way. It was an attempt at least to summarize a little more concisely than what follows in the CV as to what I thought were relevant parts of experience. I haven't actually done a line-by-line check to see whether each

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item in the declaration also appears in the CV, but I know there's at least some overlap.
Q. All right. What wireless experience have you had?
A. Well, starting with the -- with the declaration in paragraph 6, I identify that I have -- hold a Federal Communications Commission general radiotelephone license, which is something that requires a fairly extensive detailed test administered by the federal government.
Q. What did that test cover; what kind of technologies?
A. It covered really all forms of two-way radio communications from -- and broadcast as well. It was a license you were required to hold if you were an engineer and responsible for maintaining a broadcast radio station, operating a two-way aviation communication system, navigation aid. Basically any engineering operations associated with licensed mobile two-way radio communications outside of amateur radio and CB radio, any other form of radio communications.
Q. When did you obtain that certification?
A. I probably obtained it initially in 1964, and at that time the certifications were broken down into first class, second class and third class. So the

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certification I obtained at the time was a first class radiotelephone license.
Subsequently, the FCC merged the first and second class into something called the general radiotelephone license, so when I renewed it, it was reissued as a general radiotelephone license.
They maintain the third class which didn't require a test, and I think they renamed that as a restricted radiotelephone permit that allowed a disc jockey to take the readings from a transmitter and didn't require a first class license at the time. But 1964 is when I was initially licensed.
Q. Is that updated periodically?
A. I believe they do update the test from time to time, yes.
Q. Do you have to retake the test?
A. You do not, no.
Q. Have you had any experience in dealing with wireless protocols?
A. Yes.
Q. What's that experience?
A. So again, just staying here for a moment on the declaration and then we can go to the CV, if you like. And I'm taking this chronologically in the order which it exists in my declaration. The next thing

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that's in here is the identification that I'm a registered professional engineer in the Commonwealth of Massachusetts, and I guess subsequent to me actually preparing this, I think last August -- July of 2016, I've also become licensed here in the state of Nevada, but that required taking a -- passing an engineer-in-training test, as well as a professional engineering examination, and the module that I chose was communications technology and engineering.
Just continuing down here, I was -- in paragraph 7 of my declaration, identifies me as a member of the IEEE, the Edgar Technology Society, and the past chair of the Boston chapter. That particular society has a focus on portable land mobile radio, and in connection with my activities there I was responsible for reviewing and soliciting presentations from various individuals on developing land mobile radio technology.
I guess it's not cited here, but I also chaired a fall conference of the IEEE Vehicular Technology Society in Boston, where I was responsible for putting together the program and soliciting presentations on that activity.
I identify in the same paragraph 7 that I was formerly the chairman of the society's Technical

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Activities and Standards Committee for the IEEE Consumer Electronics Society, and in that regard I had general oversight and involvement in standards development of a variety of wireless and broadcast technologies, including the IEEE 802.11 wi-fi protocol and standard, 802.16 wi-max, the Advanced Television Study Committee digital television broadcast standard, and a variety of other wireless communications technologies, including Bluetooth and ZigBee and others.

Continuing paragraph 8, I guess I mentioned that already, I was the general program chair for the IEEE Vehicular Technology Conference on advanced wireless. I've also organized a number of panel sessions and paper presentations at the International Conference of Consumer Electronics and was the program chair in 1984. About 30 percent of that content was wireless, about 75 percent was communications related.

Q. Let me ask you this, have you designed a wireless system?

A. Yes. Part of my career involved -- just skipping ahead here to paragraph 11, my first project out of school was for -- my first employment, I should say, full-time employment after graduation was with Motorola's communications division, where I designed

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and developed handheld two-way mobile radio equipment.

I worked on the Motorola walkie-talkie called the HD220, which was mainly designed for police two-way radio communications, and then I took full design responsibility for the Motorola product line called the Handycom product line, which was a successor to the HD220.

And then after I left Motorola, around the '72 time frame, I worked four years for Bell & Howell Communications Company, as I noted here in paragraph 11, where I started as a project engineer working in the audio intelligence division, which involved wireless two-way communication equipment that was used in police surveillance work.

Later on I transferred over to their radio paging group where I had responsibility for the design and development for some digital pagers, I guess colloquially called beepers, that were radio receivers with selective calling in it. I worked there for four years.

And then at Arthur D. Little, I joined as a consultant. By the time I left 25 years later, I had assumed responsibility for our laboratory based project R and D division, which did contract design and development of products for our clients, including a

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number of wireless alarm system products, communication systems, and some toys and games that had wireless remote control.

Earlier paragraph there, I guess I noted also just to kind of connect the dots, I've had a number of publications in the general trade press, but the one noted here, The Proceedings of the Frequency Control Symposium, was a detailed technical paper on the design of a frequency control system used in a wireless handheld communications system.

Q. Let me ask, have you had any -- done any work involving DOCSIS?

A. Yes. I indicated here in, again in this paragraph 13 of my declaration, that while I was employed at Arthur D. Little, I was one of several companies who responded to a request for proposal that was issued by the a group called the Multimedia Cable Network Systems, MCNS consortium. They were the group that developed what came to be known today as DOCSIS 1.0. At the time it was the first version of DOCSIS, so it was just called DOCSIS. But I led that project from the date of the project award in December of 1995 through the end of the standards development phase of the project in December of '96, and then took on a technology transfer of responsibilities from the end of

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1996 through middle to end of March of '97, where we were working with CableLabs in order to transfer responsibility for the maintenance of the specification, and for certification of the manufacturer of the cable modems to CableLabs who have subsequently been involved in it.

I continued to have a number of interactions back and forth with DOCSIS after I finished the creation of the DOCSIS, what's known today as DOCSIS 1.0.

I noted here in paragraph 14 of my declaration, the Next Generation Network Architecture project, NGNA, which was performed by -- for another consortium which had overlap with the MCNS -- members of the MCNS consortium, but that also involved developing overall architectures that included recommendations and concepts that were eventually incorporated into DOCSIS 2.0 and 3.0, which are the more recent ones.

And I've been asked by the National Cable Television Association to represent the cable industry in front of a workshop of the FCC on broadband systems that involved providing an overview of DOCSIS, as well as the likely evolution of it towards what today is known as DOCSIS 3.0.

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Q. Did you work on DOCSIS 1.1?
A. There were concepts in the DOCSIS 1.0, which were -- we described them as hooks. That is, knowing that we needed to get a first generation of the specification out quickly, but also understanding that there needed to be some additional future capabilities that were not necessary to provide basic web browsing, but would be necessary to provide quality of service.
I prepared a companion document to the radio frequency specification called the operation support system recommendation in October of '96, which listed the capabilities that needed to be added to DOCSIS 1.0 that would eventually become the 1.1 system. And then during the period following the development of the DOCSIS 1.0 spec, from December of '96 through March of '97, I worked with CableLabs to partly develop the initial draft language that went into the DOCSIS 1.1, but I didn't have the full set of responsibilities for 1.1 as I did for 1.0.
Q. And DOCSIS 1.0 does not include a wireless protocol, correct?
A. I guess if I understand your question, the goal of designing DOCSIS 1.0 was not to support wireless operators, but as I indicated elsewhere in my report, the DOCSIS 1.0 protocols were widely adopted in

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the IEEE standards for wireless broadband, starting on page 36 of my report, the multimedia distribution services, MMDS, page 41, and also in -- you know, generally used -- many of the concepts in DOCSIS 1.1 such as of the various service flows were carried forward into some more modern wireless technologies.
So we took great care in the designing of DOCSIS 1.0, which followed through into DOCSIS 1.1 to follow the -- what's called the ISO layered model, which is a concept that also appears in both these patents, where the physical layer is separated from the higher layers. So the physical layer would represent the difference between wireless and cable, where all the layers above it, MAC layer up through the application layer, are indifferent as to what the underlying protocol was.
So although we weren't specifically designing for any one particular wireless application, we understood the need to layer the protocols, because in order to make the DOCSIS 1.0 cable modems inexpensive, including some feedback we were getting from the semiconductor vendors, we wanted to make certain that this protocol could be more widely used in things other than cable. Broadcom was a major contributor.
Q. Sir, could you please just answer the

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question. I think you're getting kind of far afield here.
MR. CANGRO: I think he's answering.
MR. SLOSS: No, he's not.
MR. CANGRO: Absolutely he is. You asked whether it was related to wireless.
MR. SLOSS: I didn't ask whether it was related to wireless. But go ahead.
A. I'll try to finish.
I guess to summarize, while the DOCSIS 1.0 specification itself does not mention wireless as part of the physical layer that's in that specification, it was a consideration in the design that it be capable of being used in a variety of different applications with physical layers other than cable, including wireless.
BY MR. SLOSS:
Q. Now, your work on DOCSIS 1.0, were you actually part of the technical design team or were you more of a manager of the work that others were doing?
A. I had overall project responsibility. Our team within Arthur D. Little was about six people. I would say that somewhere between 30 to 50 percent of my time was being spent on coordinating the activities of the other people, but I was also the primary or first author of every single draft in the document, and in

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the field I made a significant technical contribution as well.
Q. Do you have prior experience in LTE?
A. Other than some of the activities associated with my professional association work in the IEEE as a VP of standards and work in the Vehicular Technology Society, I have not been formally involved in any of the specification development, but I'm generally familiar with it. I've read the specifications, I'm aware of what the current developments and issues are.
I did have some involvement in the 802.16 work, which largely informed a lot of the concepts that are in LTE. And I've also worked with clients, including Comcast, who were interested in deploying their own wireless networks and had me evaluate some of the air interface protocols to see which of them would be more suitable for their use, and that included LTE.
Q. What were you doing in October 2000?
A. Well, I left Arthur D. Little in 2001, I believe, so I guess I was still at Arthur D. Little.
Q. At that time what were your particular responsibilities at Arthur D. Little?
A. Well, it would have been close to within a year or so of me leaving, so I had the title of vice president of communication information technology. I

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had a group of about 40 to 45 people that I was responsible for.
Q. That was a management function?
A. Well, we were not a -- I think like many professional services groups, we were not a hierarchical kind of organization with a strong set of controls. We really had kind of a dual kind of responsibility, so I did have responsibility for reviewing the people and problem resolution. But with respect to individual projects, we had a matrix structure where there was a project leader who had full and complete responsibility for all aspects of the project, technical, management, everything else, and I often served in both my line role in doing end of the year salary reviews, that sort of thing, but I also was often a member of a project team where I was a technical contributor, not the leader.
Sometimes the project leader was part of my group, sometimes they weren't. And in some cases, I was a project leader where I would essentially hire into the project temporarily the other consultants, so I performed both functions is the answer to the question.
Q. In that time frame what technologies were you working on?

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A. It was pretty wide-ranging, but as the name of the group which was called communications information technology might indicate, it was not focused on any industry vertical, but on the communications technologies that cut across. So I worked on sonar transmitters for torpedoes, worked on games like electronic Battleship, door openers, wireless alarm systems, everything from military, scientific, industrial, through consumer with a common thread of communications information technology that cut across it.
Cable and wireless were important verticals because they happened to be areas where there was rapid development of new technologies, so many of the projects involved either cable television or wireless communications.
Q. You mentioned that you've been deposed eight to ten times; is that correct?
A. I think that's right.
Q. How many times have you served as an expert?
A. A few times more, because in some cases things were settled before they went to deposition, but roughly just a few times more than that.
Q. In your CV, you mentioned a few times that you're a damages expert; is that correct?

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A. Yes. I don't know if I mentioned it two times. I know -- I guess I've been a damages expert at least once, maybe twice.
Q. Did that involve technical work?
A. Yeah. See, I'm just looking here. On page 4 of my CV, your Exhibit 1006 or TCT Exhibit one-oh-six [sic], I mention the Echostar, IPPV Echostar, so although I do have an MBA with a concentration in finance, I'm not normally thought of by many clients as being the most appropriate individual to use for damages, but this was a special case, because this required some understanding of the actual industry practices within the multichannel services, which would include cable and direct broadcast satellite that Echostar was in.
And the particular damage theory here involved that there's an understanding that when you sign a contract, the industry has a concept called churn, which is something that's carefully monitored. It indicates that although the contract may only be for a year, you often have -- you can count on a certain legacy percentage of your previous customers staying on. And so the damages theory involved the calculation of what winning a customer in one year might result in out-years, and applying some of the industry knowledge

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about what typical churn rates were.
So the financial models I developed were as I indicated here, rather sophisticated, that incorporated aspects of knowledge of the operation in the industry and the rate at which the technology which had been deployed was likely to remain relevant, so there were technology predictions in there as well as industry knowledge brought to bear, which made me a suitable damages expert.
Q. Your CV mentions that you have -- I believe seven U.S. patents; does that sound right?
A. I think that's correct.
Q. So you believe that patents are valuable, correct?
A. I understand they can be, yes.
Q. What is your understanding of when a patent is anticipated?
Sir, you're referring to your declaration now?
A. Yeah, I want to -- I have included in my declaration the legal principles that are used in the analysis, and I want to be clear that I'm giving you a complete informed answer.
Q. So the portion of your declaration that discusses the legal standards for anticipation and

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obviousness, did you write that part of your declaration?
A. I did not. At least I didn't do the first draft of it.
Q. That came from the lawyers at Morgan Lewis?
A. That's correct, although I read it and I attempted to understand it and I think I may have made some edits in it.
Q. So other than what's written in your declaration, do you have an understanding of when a patent is anticipated?
A. Well, I think what's written in my declaration is consistent with my understanding.
Q. And the same question regarding when a patent is obvious. Other than what's written in your declaration, do you have an understanding of when a patent is obvious?
A. Well, I think it's the same answer. I think my understanding of what constitutes obviousness comports with what's written in the declaration.
Q. Can you please take a look at the '256 patent? I think I handed it to you a little while ago.
A. Yes, I have that.
Q. Is it your understanding that field of invention for the '256 patent is the same as the field

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for the '991 patent?
A. I'm going to verify that, but yeah, they appear to be the same, and I understand the specifications of both patents are the same, although the column and line numbers are different in different places.
Q. Right. So it's your understanding that the two specifications are virtually identical, correct?
A. Yes, I understand the same words at least exist in the specification part.
Q. Let me hand you what was marked as Exhibit TCT1005 in the IPR relating to the '256 patent and ask you to take a look at that.
A. Okay, I see it.
Q. Is this, in fact, the declaration you prepared for the IPR involving the '256 patent?
A. Yes, it appears to be.
Q. What was the process for preparing the declarations used in the '991 and '256 IPRs?
A. Well, I guess generally speaking, as I indicated earlier, prior to actually writing any words, I attempted to understand the patents and the background associated with them and the file histories, identified candidates for prior art that read on the limitations of the patent.

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Q. Excuse me. Let me ask a different question. So when it came to the actual preparation of the declaration itself, the writing of the declaration, what was the process for that?
A. I worked with counsel to develop an outline. I believe I may have provided them with an outline from a declaration from an unrelated report. And I think I did in this case or maybe not, I don't recall, but we jointly developed an outline.
I did provide -- I did fill in the outline with some of the -- I'll call it non-analysis, just background material, like educational background and that sort of thing, scope of the assignment, compensation. I think I wrote that.
The legal principles used in the analysis, I may have in the course of providing the portions of an earlier expert report of declaration to counsel, they may have adopted some of that or they may have written it, but I would say they were largely blessed or responsible for the content of the legal principles.
We -- I wrote a draft -- actually, I think we discussed by telephone, the draft of the level of ordinary skill of the art, what I thought was reasonable. I believe that was adopted by counsel. They may have helped me in wordsmithing it, but not in

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substance.
I wrote the technical background of the patents as a first draft and summary. We jointly worked on a draft kind of claim chart, went through a variety of different iterations of that, of what different designations within the most interesting candidates of prior art references were, and then turned that into prose.
There were a variety of drafts exchanged back and forth where we each marked them up and discussed it, and ultimately when I was satisfied that the document represented my opinions, I -- I attached my signature.
Q. Okay. Could you please pull out '991 declaration. I'm going to be bouncing back and forth between the two.
A. Okay.
Q. Turn to page 5, paragraph 16.
A. Yes.
Q. Do you see that?
A. Yes.
Q. The first sentence of paragraph 16 you state, "I've been asked to provide my opinions regarding the validity of claims 1 and 3 through 5 of the '991 patents." That's what you wrote, correct?

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A. I see that.
Q. So you have not offered an opinion as to claim 2 of the '991 patent, correct?
A. I have not.
Q. If you look at paragraph 16 on page 5 of the '256 declaration --
A. I'm sorry, what paragraph?
Q. Paragraph 16, page 5.
A. Okay, I see that.
Q. The first instance states, "I have been asked to provide my opinions regarding the validity of claims 1, 4 and 7 of the '256 patent," correct?
A. Yes, that's correct.
Q. So you've not offered any opinions as to any other claims in the '256 patent as to this particular proceeding, correct?
A. I have not.
Q. Now, paragraph 19 of the two declarations are -- strike that.
Let's go to the '991, paragraph 19, that identifies the materials you have reviewed in connection with your work on the '991 IPR, correct?
A. Give me just a moment to --
Q. Sure.
A. Yes, that's my attempt to list the documents

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on paragraph 19, page 6 through 8, yes.
Q. And the '256, paragraph 19, again, contains a chart that lists the materials you reviewed in connection with that matter, correct?
A. Yes, page 6 through 8, I believe you're correct, yes.
Q. And these materials were the ones you reviewed as of the date you signed the declarations, correct?
A. Correct.
Q. You signed the '991 declaration on July 27, 2016, correct?
A. That's correct.
Q. And you signed the '256 declaration on August 31, 2016, correct?
A. That's correct.
Q. So at the time you signed each declaration, you had not relied on any other materials other than those listed here, correct?
A. Well, I think I testified earlier that I also brought into the creation of these, my general background and experience.
Q. But my question was directed to whether you reviewed any other materials that you considered material.

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A. I don't recall anything that's not listed here that I may have looked at.
Q. Since you signed the declarations have you come across any materials that you think are material to the opinions you expressed in each of the declarations?
A. So I read the institution decision, I read the patent owner's response. I guess I'm not taking the right order. I read the petition that was filed by TCT, which I had not actually seen before submitting my declaration. I read the patent owner's response and patent owner's expert's report, and I read the institution's decision.
Q. As to each of the IPRs?
A. That's correct.
Q. Based on anything you reviewed in the patent owner's preliminary response, did that change any of the opinions you stated in your declaration?
A. No. I don't think I found anything that was surprising or persuasive.
Q. Okay. Did you -- I think you said you read Dr. Lomp's declarations?
A. That's correct.
Q. One for each of the two IPRs?
A. I did.

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Q. Did you see anything in Dr. Lomp's declaration that made you reconsider any of your opinions in your declarations?
A. I did not find anything that made me reconsider anything.
MR. SLOSS: Can we mark this as an exhibit, please, a document which is the decision in the '256 IPR proceeding, it's actually case number IPR 2016-01704. So that will be Exhibit 1, please.
(Exhibit 1 marked for identification.)
MR. SLOSS: Let's mark as Exhibit 2, the decision in the other IPR, which is IPR 2016-01494.
(Exhibit 2 marked for identification.)
BY MR. SLOSS:
Q. Mr. Lipoff, you've been handed what have been marked as Exhibits 1 and 2 to this deposition. Looking first at Exhibit 1, do you recognize that as the decision issued by the PTAB in the IPR relating to the '256 patent?
A. Yes, this appears to be the document that I've seen.
Q. And same question with respect to Exhibit 2, do you recognize that as the decision in the IPR for

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the '991 patent?
A. Yes, it also appears to be the '991 decision, yes.
MR. CANGRO: For the record, this is the decision without the errata.
MR. SLOSS: Yes, correct. Thank you.
BY MR. SLOSS:
Q. Did you read these decisions?
A. I did read them, yes.
Q. And in reading these decisions, did you see anything that made you reconsider the opinions that you have in your declarations for each of the IPRs?
A. No, my understanding is that in instituting these for trial, the PTAB basically found the -- at least the initial documents that were put in front of it, to be persuasive enough to bring the trial and did not feel that the counter arguments that were made by WPI to be persuasive, at least at this stage.
Q. Okay. Could you please take a look at Exhibit 1.
A. Okay.
Q. And turn to page 10.
A. Okay.
Q. I would like you to look at the first full paragraph on that page.

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A. Is this the page that begins, "WPI's arguments are not persuasive."
Q. Yes. Do you recall reading that paragraph?
A. I do. I mean, I read the entire thing. I don't necessarily have recall that this stands out in my mind though.
Q. Please look at the second to the last sentence of the paragraph on page 10, begins with, "Rather." Do you see that?
A. I do see that.
Q. The sentence says, "Rather, we instruct the parties to brief the issue at trial to provide a sufficient record for us to interpret the limitation as needed to resolve the dispute." Do you recall reading that?
A. I do see that, yes.
Q. Have you considered the board's directive there to consider the issues that are discussed in that paragraph?
A. I see that, yes.
Q. I'm sorry?
A. Yes, I see that they are specifically referring to operating the CPE in an idle state, if no new data arrives at the CPE within the first period of time. They are quoting a term that's in the claims.

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Q. Have you been asked to provide an opinion on the board's instruction of parties to brief the issue discussed in that paragraph?
A. I have not been asked.
Q. Have you formed an opinion prior to today?
A. I formed an opinion about what these claims meant.
Q. My question is a little different than that.
A. But I don't think I focused -- I have not -- my opinions that I've formulated have not changed as a result of reading the institution decision.
Q. Have you provided any information to your client on what you believe the correct answer to the board's instruction is on page 10 of this?
A. I haven't provided an opinion, but --
MR. CANGRO: Be careful not to disclose any attorney-client communications. So that probably is a sufficient answer.
A. Yeah, so I have not -- not responded to anything in here other than what I understand are privileged communications with counsel, nor have I written anything.
BY MR. SLOSS:
Q. When were your communications with counsel?
A. We met yesterday to prepare for this

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deposition.
Q. Did you discuss that particular passage from the board's --
MR. CANGRO: Objection. Instruct not to answer.
MR. SLOSS: The basis for the instruction?
MR. CANGRO: Work product privilege.
BY MR. SLOSS:
Q. Okay. Have you been asked to do any further work in connection with the IPR related to the '256 patent at this time, other than provide this deposition?
A. Other than prepare for the deposition, no.
Q. Have you been asked to provide any further opinion in view of what the board said in its decision?
A. I have not.
Q. Can you please look at Exhibit 2 and turn to page 11.
A. Okay.
Q. In the very last line on page 11 contains -- beginning there and continuing on to the next page, contains similar language as what we just looked at in connection with the '256 decision, and in particular the board states beginning at the top of page 12, "Rather, we instruct the parties to brief the issue at

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trial to provide a sufficient record for us to interpret the limitation as needed to resolve the dispute."

Do you recall reading that part of the decision relating to the '991 IPR?

A. Yeah. Yes. To be clear, though, I guess I read that in the context of the full paragraph beginning on page 11 where it says, "WPI's argument," talking about when. But I did read that full paragraph starting on bottom of 11, continuing to 12.

Q. Have you done any work in response to the board's direction to the parties to brief the issues discussed in that paragraph?

A. I have not.

Q. Have you formed any opinion as to what the proper response to the board's instruction is?

A. Not specifically with regard to what they are asking about when, I have not.

Q. The board's decision in the '991 IPR was issued in February of 2017. Do you remember when you read it?

A. I guess it would have been about three -- three, four weeks ago when I was given a package of material that would be relevant to prepare for the deposition.

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Q. Do you recall what was in that package?

A. Yes. At least from memory I'll do my best to describe it. It was copies of the primary -- primary prior art references for all the -- all my declarations; the two institution decisions, the patent owner's responses to both patents, Dr. Foraie's declarations in support of the patent owner's response. The original petitions and my -- my two declarations.

Q. Between when you signed your declarations in those two IPRs and the date you received those packages, or that package containing those materials, had you done any further work on either of those two IPRs, other than setting time to talk about your deposition, finding dates available, things like that?

A. No work of substance related to my opinions.

Q. All right. Up until today, how many hours would you estimate you've spent on these two IPRs? And if it's easier for you to break them out one-by-one, that's fine.

A. Yeah, because they had such overlap in terms of the subject matter, I don't know that I can break them out, but I'm guessing I probably billed about -- total since I started the work sometime in 2016, probably about 50,000 dollars, and my billing rate is $375 an hour, so do the math.

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Q. Do the math, okay.

Looking back at Exhibit 2, can you please turn to page 14. Actually, the paragraph I'm going to refer to begins on page 13, so if you want to look at that, that's where the paragraph begins. But I'm going to be asking you about language at the end of the paragraph which is on page 14.

A. Okay, I think I've read that. If you're directing me towards page 13, the paragraph beginning, "At this stage."

Q. Well, that paragraph.

A. Yeah.

Q. The language I'm focusing on, that I want you to look at is on page 14.

A. Okay.

Q. Second sentence -- first full sentence there that begins, "At this stage, without briefing and evidence." Do you see that?

A. I see that, yes.

Q. And then the board again has language, it says, "Rather, we instruct the parties to brief the issue at trial to provide a sufficient record for us to interpret the limitation as needed to resolve the dispute." Do you see that?

A. I see that.

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Q. Have you formed an opinion relating to the instruction the board has given the parties there?

A. No, I have not studied that particular issue.

Q. All right.

MR. CANGRO: We have been going about --

MR. SLOSS: Yeah, let me just finish this. Another five minutes.

MR. CANGRO: When you hit a good breaking point.

MR. SLOSS: Yes, that's fine.

BY MR. SLOSS:

Q. I'm sorry, could you please turn back to page 11.

A. Of which document?

Q. Of Exhibit 2.

A. Okay. I'm there.

Q. So looking again at the paragraph that begins, "WPI's argument," and looking at the second sentence of that paragraph, it quotes from the '991 patent claims, the term "transmitting a first type bandwidth request." Do you see that?

A. I see that, yes.

Q. Do you have an understanding of what "bandwidth" as used in the claim means?

A. So I want to be clear whether you're asking

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me about what bandwidth means in this quoted excerpt on page 11 or whether -- or what bandwidth means in the entire scope of claim 1 as it's used in multiple places.

Q. No, I'm focusing on the excerpt on page 11 that talks about bandwidth request.

A. So just to be clear, bandwidth request appears a couple of places too, and bandwidth grant, but with specific reference to this section here with the first type bandwidth request, my understanding of bandwidth request is an interaction that occurs between the CPE and the BSC resulting from -- it's a transaction resulting from the CPE receiving some data that it wishes to transmit upstream to the BSC, so it engages in this transaction called a bandwidth request that involves interactions between the CPE and the BSC that allow the BSC to become aware that the CPE has data for transmission, that it wishes to have a future grant of the right to be able to send that data up.

Q. Could you please turn to page 15 of Exhibit 2.

A. Which document?

Q. Exhibit 2, I think the one you're holding. Page 15, looking at the last paragraph, again, the one that begins "WPI's argument." Do you see that?

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A. I see that, yes.

Q. I'm going to ask you about the sentence later in the paragraph that says, "Rather, we instruct the parties to brief the issue at trial to provide a sufficient record for us to interpret the limitation as needed to resolve the dispute." Do you see that?

A. I see that.

Q. Have you formed an opinion as to what the proper response to the court's instruction is with respect to this paragraph?

A. I didn't hear the last words you said.

MR. SLOSS: Can you read it back, please.

(Record read by the reporter.)

THE WITNESS: I didn't hear the words in this paragraph, so let me read the paragraph.

Okay. So --

BY MR. SLOSS:

Q. I can re-ask the question. So based on the language there, the board had instructed the parties to brief the issue on what is meant by the phrase it cites in the paragraph. Do you have an opinion as to what the proper response to that is?

A. Okay. I just want to make sure I'm -- because they quoted two things, they quoted timeout period and they quoted also CPE does not transmit in a

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first type bandwidth request during a timeout period. I'm not sure which of them that you're asking me to offer an opinion on, but I can tell you that I have not formulated an opinion on either, either of the two quoted things that are in this -- in this, beyond the work that I've done in preparing my declaration.

Q. If you'll turn to page 22.

A. Again on Exhibit 2?

Q. Yes. I'm going to ask you about similar language that appears in connection with the paragraph that begins at the top of the page, and the language, again, is towards the end of the paragraph. It says, "Rather than denying TCT's request based on implied arguments, we institute and instruct the parties to address expressly the meaning of the phrase 'transitioning operation after the subsequent bandwidth grant is received at the CPE.'" Do you see that language?

A. I see that.

Q. And have you done -- have you formed an opinion in response to the instruction from the board as expressed in this paragraph?

A. I have not. I have not formed any opinion resulting from reading this.

MR. SLOSS: Okay. Why don't we take a break.

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Ten minutes.

MR. CANGRO: Okay.

(Whereupon, a recess was taken.)

BY MR. SLOSS:

Q. Back on the record.

Mr. Lipoff, can you please look at the two patents?

A. Okay.

Q. I think they are both marked TCT1001. I think you testified that they have virtually the same specifications, correct?

A. Yeah, I think they are just laid out a little bit differently, but I think the words are the same.

Q. And they have the same figures as well, correct?

A. That's correct.

Q. Will you please look at figure 2.

A. Okay, I see it, yes.

Q. I think you referred to the specification in saying that figure 2 represents a flow chart of the state machine; is that correct?

A. Well, that's how the inventor, the applicant describes it on column 6, yes.

Q. Is that a term you've heard before?

A. Yeah, I've heard of a state machine before,

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yes.
Q. You consider yourself skilled in the art of the field of invention, correct?
A. Yes.
Q. What would a person skilled in the art understand the meaning of a state machine to mean?
A. Well, it's a list of characteristics of, in this case, a system, which are well defined under each of these bubbles, the states that exist in figure 2, which would differ between the different bubbles, the characteristics would differ.
Q. The characteristics are the states, correct?
A. The characteristics of the machine would constitute a state, so one set of -- list of any one from 1 to a multiple of things that you would say about aspects of the system, that would constitute a state. And then another feature of that sort of diagram is -- transitions between the states that occur according to generally well defined set of things that happen or triggers that cause a transition from the system being in one state versus another.
Q. Are you familiar with the term finite state machine?
A. I've heard that term, yes.
Q. And in what way is a finite state machine

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different from a state machine, if there is a difference?
A. I don't know that I'm prepared to offer a distinction. I've heard the term. I think I'd have to look it up to be able to see whether there's distinguishing characteristics of it that are not immediately apparent to me.
Q. How would a person skilled in the art understand the meaning of "state"?
A. I believe I testified to that a moment ago. It's -- as it's used in these patents, it can have different meaning. But relative to the claims that are at issue which are method claims on the system, I believe the way it's used in the patent is meant to refer to a variety of characteristic of the system, system being the network elements and their relationship to each other, which are stable and well-defined and well-known enough to be able to put a bubble around them and call them a state.
Q. Are you familiar with the term state diagram?
A. I've heard the term before, although it doesn't appear to be actually used in these patents.
Q. Would a person of skill in the art have a -- make a distinction between a state diagram and a flow chart of a state machine?

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A. Well, I think of a state diagram as being generally, and again, I think it can vary depending on how rigid or formal someone is willing to be, but I think generally a state diagram is something that attempts to being very formal and very comprehensive with respect to what it's trying to represent.
When I see the term as it's used here, flow chart of the state machine, it's not clear to me that it's meant to represent that more rigid formal context, but to be more of a general abstraction to help you understand the operation of it, as opposed to being formal documentation that might be passed to a programmer that might have a lot more detail in it, so it's not clear to me that outside the scope of this patent the term state diagram is intended to be the same thing that's here in figure 2.
Q. Within the scope of the patent, would a person skilled in the art understand figure 2 to be a state diagram?
A. It has the form of a state diagram, but seems to not rise to the level. I think that, again, outside the scope of the patent one would normally think of having sufficient detail. It seems to be more of an abstraction or generalization to help one understand the flow of the operation of the machine, as opposed to

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the more rigid formal representation of a state diagram that one would normally think of.
Q. What would you expect to see in figure 2 that is not in figure 2 if it were a true state diagram, the way you've defined it?
A. I would expect to see, for example, the answers to some of the questions that were raised by the board in their institution decision, should be made visible in the state diagram.
Q. When you talk about the questions raised by the board, do you mean the ones we went over before the break where they instructed the parties to brief certain issues?
A. Yeah. I don't know that we were comprehensive in identifying everything, but in the back of each institution decision there was a kind of a -- I believe a summary where they basically were ordering a response to a number of different terms. I'm not sure we identified all of them, but I think at least some of them we talked about are listed at the -- in the back of each of these --
Q. Back of Exhibits 1 and 2?
A. Back to the exhibits, beginning, "Further ordered."
Q. And it's your opinion that a true state

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diagram would have contained the information the board was asking questions about; is that correct?
A. I don't know that -- I haven't attempted to match up every single issue that the board has raised, that they are looking for further -- to be further informed about, but I think at least some of them I would expect would have been addressed.
Normally, in the course of preparing what most engineers refer to as a state diagram, that's usually something that's done as part of the design process, where you develop a set of requirements for what a system or a device, depending on what it's representing, is supposed to do, and you prepare a state diagram that -- perhaps several of them, where you may take one of the states and have another auxiliary diagram that explains what's happening in a little more detail inside each of the states or you may include it in there. But the purpose of it is it's supposed to be comprehensive enough that you could essentially throw it over the wall to somebody on the other side, along with the other narrative and description of what the system is supposed to do, so without talking to you they could go ahead and they could develop the hardware, software and firmware to be able to make the system work.

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And the very fact that the board seemed to be unable to determine the answer to some of those questions that one would need to know precisely how a thing would work, you know, informs me that perhaps this was not intended to rise to that same formal rigid level of detail of being a -- a design documentation, but more of a general abstraction of general concepts associated with explaining -- helping one understand how the patent is supposed to work.
Q. Let me hand you what was Exhibit 1022 to the '991 IPR, which is International Patent Application Number WO99/61993. Do you see that?
A. I see that, yes.
Q. Do you recognize this as what we have been calling the Abi-Nassif patent?
A. Yes, I recognize it as such.
Q. On the first page of this exhibit there's a diagram.
MR. CANGRO: Do you have a copy for me?
MR. SLOSS: I'm sorry, sure. You don't know it by heart?
MR. CANGRO: Yes, I probably do.
BY MR. SLOSS:
Q. Do you see that diagram on the first page of the Abi-Nassif reference?

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A. I do.
Q. Would you call that a flow chart of a state machine?
A. Well, I'm referring to here now the description that's actually in the patent -- patent on page 3, around line 18 or so. It's described as a state diagram showing three possible states for a MAC user.
Q. So what in your opinion -- would you agree with that description of Abi-Nassif that this diagram is a state diagram?
A. It's a little unclear by the words showing that it's three possible states. It's not entirely clear that it's meant to represent other states which may not be shown on there, but it certainly -- the word state diagram is used.
Q. Do you agree that that's a proper description of what this figure is?
A. Yeah. I think, again, I would characterize it in the same way I did in the figure 2 of the two patents that are at issue, in that it tends to be more of a higher level abstraction, helpful to understand how the patent works, as opposed to attempting to be the more formal rigid design documentation that one might expect to see in what an engineer outside the

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scope of either of these two documents might refer to as a state diagram.
Again, it's not uncommon after the fact to take a system and develop some exhibits or figures which are helpful or tutorial in understanding it, but may not be fully representative of all the details involved.
Q. You don't know that that was done in connection with this Abi-Nassif patent, do you?
A. I do not.
Q. You do not know how the application was prepared, correct?
A. I do not.
Q. So in your opinion, the figure on the first page of the Abi-Nassif patent is equivalent in terms of detail in what it's conveying as figure 2 of the patents at issue here, correct?
A. I would characterize it slightly differently. I would say that the purpose of both of these figures appears to be comparable in that they are an attempt to provide a graphic representation that makes it easier to understand the operation of the two systems that are described.
Q. Let me put in front of you Exhibit TCT1019 from both IPRs.

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MR. CANGRO: I knew it was coming.
MR. SLOSS: Yeah.
BY MR. SLOSS:
Q. And do you recognize this as what you refer to as DOCSIS 1.1?
A. Yes, it appears to be this document, yes.
Q. So if we turn to page 299 of 332 of Exhibit 1019, appendix K.
A. Page 299?
Q. Yes, of 332, it should say.
A. Okay. Page 299 of the document or page 299 of the numbers at the bottom?
Q. On page 299 of page 332, it's below the TCT1019 number. So it's page 299 of the exhibit, not of the document.
A. I've got it.
Q. Do you see there figure K-1?
A. Yes, I see that.
Q. And that's transmission and deference state transition diagram; do you see that?
A. Okay. Yeah. So it's titled "Transmission and deference state transition diagram."
Q. Correct. How would a person skilled in the art understand the phrase state transition diagram?
A. I think it generally would be a more formal

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way of describing what we have been describing as a state diagram.
As I testified earlier, the characteristics of what I would regard as a state diagram would include identification of the states, which are the bubbles that have a defined set of characteristics, as well as the transitions between states, labeled as they are here and in all the other things we looked at with some headline where it gives you an idea of what causes a transition from the change from one state to another that is a transition.
Q. And does figure K-1 of Exhibit 1019, if we are talking about -- let's talk about two buckets here, state diagram and flow chart of a state machine. Does Exhibit K-1 fit into either of those buckets or is it more its own bucket?
A. By using the term state transition diagram and having what I would regard as considerably more detail, it comes closer to what I think outside the scope of any of these documents one might regard to as the kind of state diagram that would be really detailed enough to design about.
In fact, in -- even though this is a bit more detailed and has more information on it than the other ones we have looked at, it also disabuses you from

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regarding it as comprehensive, as I note in paragraph 152 of my declaration for the '991 and equivalent thing in the other one, that -- and also appears here at the top of K-1, it says, "Subject to simplifications," and I would use the term abstractions.
It also has a bunch of assumptions in it which might otherwise be further detailed in a more detailed diagram, where some of the conditional aspects might be further detailed, so it's in order to simplify it and make clear what's going on. It basically is telling you don't -- don't use this as a comprehensive view, but use it as an aid to understanding what's going on.
Q. So K-1, in your opinion, is not a true state diagram, correct?
A. I think K-1 has some aspects of it which are very useful with respect to understanding its purpose, which are stated as detailing the contention resolution.
Q. Excuse me, sir, it's a yes or no question.
MR. CANGRO: Let him finish his answer.
MR. SLOSS: Well, if he can answer the question, if he wants to elaborate, he can do that later on.
BY MR. SLOSS:

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Q. The question was, it's your opinion that a person skilled in the art would not consider figure K-1 to be a true state diagram, correct?
A. So in order to answer your question I think -- I don't know that I've used the word true state diagram.
Q. We can take out the word true. Is it your opinion that a person of skill in the art would understand figure 1 to be a state diagram as you've defined it?
A. I think they would understand it to be a type of state diagram, but as I indicated, these diagrams are created for different purposes and I don't believe this would rise to the level -- in fact, it's not even a question of my belief. It's specifically got a disclaimer in here telling you that this has got a simplification. So it's not the kind of state diagram that one would normally use for the purpose of comprehensive description of the operation of something for the purpose of doing design.
It is a state diagram as it's titled, state transition diagram, that's useful for the purpose of developing an understanding of how some particular aspect works.
Q. Is it fair to say that figure K-1 is closer

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to the flow charts of state machines that are described in both the two patents and in the Abi-Nassif reference than it is to a state diagram as you've defined it?

A. I don't know whether we would have a shared understanding of what "closer" means. I would say they both share the characteristics that they seem to be abstractions or attempting to help you to understand the associated words.

Q. Other than as it's used in figure K-1 of Exhibit 1019, have you seen the phrase "state transition diagram" before?

A. I have seen that phrase, yes.

Q. And it's your belief that a person of skill in the art would understand that to have a different meaning than state diagram?

A. No, I don't believe I testified to that. In fact, I think I testified to the contrary, that when someone uses the term state diagram, they would understand that to be synonymous or a shorthand way of describing a state transition diagram.

Q. Okay. Looking back at figure 2 of either of the patents, the top bubble states, "idle." Do you see that?

A. I do.

Q. And what is your understanding of how a

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person of skill in the art would understand "idle" to mean?

A. So as I understand "idle," both as a person of ordinary skill in the art wouldn't -- I think they would refer to the patent applicant, the inventor's own description, which I have in the '991 patent in paragraph 48, "In idle state 20, the CPE waits for packets to send upstream. When data arrives it transitions out of the idle state to a deferring state."

Q. In figure K-1, if you could look at that, please, in Exhibit 1019 again. You might want to leave that exhibit on that page. We will probably be going back to it a couple of times.

A. I need the page number again.

Q. Yes, page 299 of 332 of the exhibit.

A. Okay. Okay, I have it.

Q. Do you see at the top bubble, that also has the word "idle"; do you see that?

A. I see that.

Q. Is "idle" being used there in the same way it's being used in the patents?

MR. CANGRO: Objection to form.

BY MR. SLOSS:

Q. Let me rephrase. Would a person of skill in

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the art understand "idle" as it's used in Exhibit K-1 in the same way that you would understand "idle" in figure 2 of the patent?

A. I haven't attempted as part of my analysis to do a detailed comparison of what idle -- all the aspects of "idle" in the patents at issue, beyond the inventor's description, nor to compare it to all the aspects of idle in 283.

My only comment with respect to the 283 -- page 283 -- I'm sorry, let me refer to it as figure K-1 so it's not ambiguous, is that I indicate in paragraph 152 of my report, through --

Q. I'm sorry, which report are you looking at?

A. Okay. The '991 declaration.

Q. Okay.

A. Starting in the discussion of appendix K-1 in 152 continuing through paragraph 155, that the word -- that the various states which are common to the names of the states in the patents are the same words, "idle" and "deferring" and "grant pending."

Because DOCSIS has a lot more detail in it, it's quite possible that there are aspects of "idle" -- further aspect of "idle" which are revealed in figure K-1, but at least the transition note which is shown as explanation mark, Q, underline, empty, and exiting

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idle, that would be understood by one of ordinary skill as the exclamation mark implying not empty.

In that aspect, it's -- at least that particular feature seems to be the same, because the inventor described "idle" as waiting for packets to send upstream. So that's kind of an equivalent description, at least with respect to that one -- one aspect of the idle state.

There may be other characteristics that are different, but at least that aspect seems to be the same.

Q. If you look at figure 2 of the patent again, please.

A. Okay.

Q. In kind of the right-hand portion of that figure there are two states described as unsolicited grant pending and unsolicited grant pending absent. Do you see those?

A. Yes.

Q. I think you state that those two states are not part of your analysis, correct?

A. Yeah, I believe I may have stated it in a different way. I think I may have said that the particular claims at issue and the embodiments in there are not relevant to the claims. But if you like,

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I'll -- unless you want to point me to it, I'll look for the specific --
Q. But the point being that we are not -- you do not take those into account in forming your opinions as to the relevant -- of the validity of the claims of either of the patents, correct?
A. So "take into account" is fairly broad. Although they were not states that I considered in my analysis, the fact that this diagram and these states -- let me say it a different way.
As I indicated, part of my process of performing this project was to read and attempt to internalize the patents, and then think about, from my own experience, what prior art was relevant to this. And when I saw this unsolicited grant pending and unsolicited grant pending grants and so on and so forth on the right-hand side, although they weren't relevant to the claims I was considering, they are concepts in DOCSIS. So the right-hand side of this together taken with the left-hand side, you know, immediately suggested to me that this had a high degree of points of similarity with respect to the DOCSIS spec.
Q. But the states described there is unsolicited grant pending and unsolicited grant pending absent are not a part of your analysis of the claims?

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A. That's correct.
Q. If you look at K-1 again, there's a state that's called Data Ack pending, correct?
A. Yes.
Q. And similarly that is not part of your analysis regarding the validity of the claims, correct?
A. Well, I don't know -- I don't know if I can answer your question in a yes or no way.
Q. Well, all I'm trying to do is kind of knock out that as something we have to talk about today, to put it bluntly, and you do say in your declarations that something to the effect of that this state is not one of the states that matches up to the claims, correct?
A. I don't recall offering an opinion on that. If you want to point me to something in here that would disabuse me of that, I'm looking on page 53 of my '991 declaration where I talk about this, and I don't recall saying anything explicitly.
I did mention deferring grant pending and idle. I don't think I said that Data Ack was not --
Q. Well, putting it another way, do you recall discussing Data Ack pending at all in your opinion?
A. Again, my opinion goes well beyond just the discussion of appendix K-1, and you specifically asked

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me as to whether I affirmatively said Data Ack does not correspond -- I'm paraphrasing what you said, so tell me if I'm doing it incorrectly, Data Ack is not relevant to any of the functions or features of the patents that --
Q. I don't think that's what I was getting at.
Let me ask this, is Data Ack pending, in your opinion, equivalent to any of the states described in the claims of either of the patents?
A. It may well be. It's not an analysis that I undertook.
What I was pointing out here in referring to figure K-1 was it -- the words -- this is in my paragraph 155 of the '991 declaration, the words "deferring grant pending" and "idle" are terms that appear in the patent, and although there's differences in the detail and the transitions, they represent similar kinds of concepts, and generally performing functions that are ascribed to the states that are there in the patent.
Data Ack pending does not have -- is not a word or a term that corresponds precisely, and it may relate to one of the states in the patent or not. It's not -- it's not analysis I attempted to do because it wasn't the point I was trying to make.

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Q. All right. What would a person of skill in the art understand "deferring" to mean as it's used in figure 2 of the patents?
A. I think one would be informed by the cite that I made on paragraph 49, page 18 of the '991 declaration, and as the inventor stated, deferring state, the CPE begins by contending for bandwidth. And then after contending, it transitions to grant pending, so I think that's the understanding one would have.
Q. What would a person of skill in the art understand the grant pending state to mean, referring to figure 2?
A. Again, as I indicate here in paragraph 52, citing to the inventor's own words, grant pending state 22, the CPE waits for and receives a bandwidth grant to send data, and then it sends its data, and then the inventor goes on to say that with and in this state of grant pending, preferably the CPE uses piggybacking to request the grant in the next slot.
Paragraph 53, the inventor goes on to state, "Preferably the CPE uses piggybacking to request grant of the next slot while sending data, and the last data in the CPE's backlog is sent without piggybacking." And I cite to column 7 of the patent. And then it continues, "Operation then transitions to grant pending

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absent state," and I cite again to column 7 of the patent.
Q. Figure 2 also shows grant pending absent state you just referred to, correct?
A. Yes, it does.
Q. What would a person of skill in the art understand the grant pending absent state to be?
A. So in an attempt to be faithful to have what the inventor intended, I again on page 19 of my '991 declaration beginning in paragraph 54, continuing through paragraph 57, I cite to the inventor's words. Paragraph 54, "In the grant pending absent state 23, the CPE does not send data to the BSC and no grant is pending."
Citing to column 7 of the patent, "No grant is pending in this state because piggybacking was not used in prior transmission of data to the BSC." Then it continues to have some more detail, which I'll read in the record if you wish.
Q. No. That's fine. Thank you.
MR. SLOSS: I'm sorry, could you read back the answer, please?
(Record read by the reporter.)
MR. SLOSS: Thank you.
BY MR. SLOSS:

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Q. Could you please turn to paragraph 46 of the declaration in the '991, it's on page 17.
A. All right, I'm there.
Q. Okay. In that you, again, quote from the patent and say -- this is talking about grant pending absent state, correct, paragraph 46?
A. It does talk about grant pending absent, correct.
Q. You say that the patent describes that, and you quote from the patent, "By virtue of the grant pending absent state, the CPE can request a data slot without entering into contention and generating excess contention traffic." Do you see that?
A. Yes, that's a quote from column 6 of the patent, yes.
Q. Column 6, lines 33 through 35, correct?
A. Yes.
Q. Do you agree that the quoted language is what a grant pending access state is as it's used in the patent?
MR. CANGRO: I think you said "access."
MR. SLOSS: I'm sorry, should be "grant pending absent state is."
A. Well, I don't know that it says anything different about what the state is and what I previously

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identified. It does talk about some benefits which I think go outside the description of what the state is. The comment about generating excess traffic is a result of what it's doing perhaps, but it's not descriptive of what the state is. It's describing a benefit of the state.
BY MR. SLOSS:
Q. Prior to your work on this case, had you ever heard the phrase "grant pending absent" to describe a state?
A. I don't know that I've heard that term before, but of course, in my analysis, I believe that the prior art that I identify reads on that limitation.
Q. Well, the prior art does not use the phrase grant pending -- none of the prior art uses the phrase grant pending absent state, correct?
A. I don't believe so. I don't -- I don't know that as I sit here I found that, but I -- I -- my recollection is that the term does not appear as a -- as quoted, grant pending absent.
Q. Prior to your work on this case, were you familiar with the state that performed as the state of the grant pending access state defined in the patent, even though it may have been called something else?
A. Yes.

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Q. What was that?
A. It's the basic function of the DOCSIS MAC level, where you in one of several different service flows which I identify in here, where you don't -- well, where you fit the definition that was given by the inventor that I previously read into the record.
Q. Could you please get the declaration for the '256 IPR.
A. Okay. I have it.
Q. Could you please turn to page 15, paragraph 36.
A. Okay, I'm there.
Q. In paragraph 36, you're discussing the open system's interconnection networking model, correct?
A. Yes, that's correct.
Q. Where does quality of service fit into the OSI model?
A. Well, it can be fit into -- it can be performed at various different levels of the model. There's aspects of it that can occur at the data link layer, which -- let me back up for a second.
As I indicate here, the MAC protocol is part of the data link layer within the OSI model. Typically you have the MAC layer being the layer that's between the -- within the data link layer, but closer to the

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physical layer, and then above that you have a logical link control layer, LLC layer, logical link control layer. So within the MAC layer, features related to the quality of service are typically the controls or the ability to send management messages back and forth, which are, in the case of DOCSIS, are MAC management messages that control service flows.

And then at higher levels of the OSI model, typically towards the application layer, the application layer will exercise features of the MAC layer as per the various applications it's running. So the example that's given in DOCSIS that's relevant to this and elsewhere, even in the patent where they talk about FTP is another application, those are places where there's features of the service where you need to maintain different levels of quality of service. So the application there will communicate down through the stack to the data link layer and enable or disable certain service flows or features that affect the quality of service.

So the answer is it can be pervasive throughout the entire OSI model, typically though, based upon underlying controls that are exposed in the MAC layer.

Q. Could you please turn to paragraph 47 of the same declaration.

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A. Okay.

Q. About halfway through the paragraph, you state -- well, first of all, 47 you're talking about the grant pending absent state, correct?

A. Yes. That's -- I mean, there are some other concepts that are talked about there, but at least they are all related to grant pending absent, yes.

Q. About halfway through the paragraph you say, "As I describe in section 7B4A below, noncontention requests such as a request made in a unicast request slot were already well-known in the prior art."

In that, are you saying that a request made in a unicast request slot is the same as what the patent calls a grant pending absent state?

A. No, but it's one of the features of grant pending absent.

Q. What are the other features of grant pending absent?

A. Well, they are described in my paragraph -- page 21, paragraphs 55 through 58. The inventor describes it as also being not sending data and no grant is pending. Then as I continue here in paragraph 56, there is mention the unicast request slot which you describe, but there are other aspects, characteristics

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of the grant pending absent state which are revealed by the inventor, as I've tried to enumerate in paragraph 55 through 58, such as not sending data and no grant pending.

Q. Would you turn to paragraph 49, please, same declaration.

A. Okay.

Q. This discusses the idle state, correct?

A. I'm sorry, we must be at different places. Paragraph 31?

Q. I'm sorry, paragraph 49, page 20.

A. Yeah, it describes the -- describes the idle state, and also talks about the transition.

Q. Okay. Is the description of idle state in that paragraph one that a person of ordinary skill in the art would generally have regarding idle state as it's used in this field?

A. It's how the inventor used it in the patent. I don't immediately see -- I don't know if it's fully descriptive in all respects in every possible nuance, but at least the point that's made here in terms of waiting for packets to send upstream I think would be generally understood.

Q. To your knowledge, these are generally accepted understanding or meaning of the term idle as used to describe a state?

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A. No, I would say it would vary very much in context. It might be very different between say an automobile, which might use the term, or a computer, desktop computer versus radio transmission system.

Q. Let's talk about radio transmission systems. When you use the term idle, is there a generally accepted understanding of the meaning of an idle state in telecommunications systems -- or communications systems?

A. Beyond I think the most general term of it not doing useful work, I think that would be the term that would probably generally cut across most things. But beyond that, I think it could have different features.

Q. Paragraphs 50 talks about deferring, correct?

A. Yes.

Q. Is there a generally accepted understanding of the term deferring as it's used, deferring state in a communications network?

A. I don't find that the inventor's use of the term is completely unfamiliar. But it also would I think not be the way that -- it's not -- not something I would normally see as a state label. That is, without using the word "deferring," just reading about

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what it's doing, it's a state that I kind of recognize as not being unusual, but I don't know that the label deferring would be something that would generally be used to describe that state.

Q. Although that's used by DOCSIS 1.1, correct?

A. DOCSIS 1.1 uses -- uses contention and uses deferring. I don't recall that it's -- other than figure K-1, it's referred to as a state anywhere, but it does, in fact -- it does, in fact, use the same word, "deferring."

It's not something I would normally think about as being commonly used in systems outside the scope of either -- either of these references or patents, but it's -- it is described in the -- by the inventor in a way that I think is understandable, and not -- not completely unfamiliar.

Q. According to both the '991 and the '256 patents, the idle state and the grant pending state are separate states, correct?

A. They are identified as separate states, yes.

Q. Could you please turn to paragraph -- actually, which declaration do you have in front of you? I'll try to make this easy.

A. '256.

Q. Could you please turn to paragraph 61 of

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that.

A. Okay.

Q. You discuss in paragraphs 61 through 66 of U.S. Patent Number 8,254,394 to Gummalla. Do you see that?

A. I see that, yes.

Q. What's your purpose in discussing the Gummalla reference?

A. Well, I should say that although I did refer to that in writing the report, it's been a number of months since -- it's August of last year that I actually read that. But as I'm refreshed by reading this paragraph 61, I was using it to provide an extrinsic reference about how unicast request poll is used, and to show that unicast request poll is a term of art that's generally used and understood, and I believe consistent with how it's used in the references, as well as the patent.

Q. Why do you consider unicast polling as prior art?

A. Well, because at least in the prior references that I cited to, it's described that way.

Q. I'm sorry, well, the references don't describe unicast polling as prior art, correct?

A. Well, I'm sorry. Say it another way. So the

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prior art references that I've identified, including Gummalla, uses the term unicast request polls. So it's a term of art that I think was known prior to the priority date of the subject patents.

Q. And how does that relate to your opinions that the claims of the '991 patent are invalid?

A. Well, I mean, it's one -- one point. It's not the complete set of analysis.

Q. Yeah, what is the point is what I'm trying to get at.

A. It's showing that unicast polling is a concept that is a prior art concept, that it's not an inventive aspect of either of the two patents. That's the only point.

Q. Do you see anything in either of the patents that indicates that unicast polling is thought to be an inventive concept?

A. No, I believe the -- well, said another way, the patent describes a number of different states and functions, depending on whether you're talking about the claims that are in '256 or '991. But the specification has these various states which include unicast polling, because it's something that you're doing in grant pending and it's something that you're doing in grant pending absent. And the patent itself

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uses the term unicast request slots, which occur in both of these states.

So in describing the grant pending absent state as being the inventive aspect, one of the features of the grant pending absent state is to use unicast polling, so I'm showing at least that -- in this section, I'm showing at least that particular feature is known prior art.

MR. SLOSS: Before I forget, can we agree that where the two declarations use identical language or similar language, that I don't have to ask him questions about both declarations to be able to use the testimony in each of the IPRs?

MR. CANGRO: Yeah, that's fine. We would agree with that, yeah.

BY MR. SLOSS:

Q. Could you please turn to paragraph 106 of the declaration you have in front of you.

MR. CANGRO: Sorry, we obviously will reserve any right in response to just kind of note any differences or whatever. But we wouldn't object to using any portion of this transcript in either of the two proceedings.

MR. SLOSS: Okay, fine.

MR. CANGRO: I assume that's what you meant.

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MR. SLOSS: That is. Again, I'm trying to avoid having to go back to each declaration each time and showing him the same language.
MR. CANGRO: No, that's fine.
BY MR. SLOSS:
Q. So looking at paragraph 106, and just for context if you want to look back at some of the earlier paragraphs, this is sort of talking about the development of DOCSIS, as I understand it, correct?
I'm stating it very generally, just trying to give you context for the question. I'm going to ask you one question about paragraph 106, but I want you to have the background before I ask the question.
A. Yeah, I appreciate that. I'm looking back just to see. So I believe all this relates to item subtitle A, terms in the preamble. In particular, discussing issues related to the wireless or cellular limitation, I believe. I believe all that relates back to this page 30 stuff around paragraph 80.
Q. In paragraph 106, you talk about historical fact that "prior to the priority date, cable prior art actually commended itself to numerous artisans of ordinary skill active in the field of wireless broadband space to address MAC protocol issues." Do you see that?

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A. I see that.
Q. My question is, are you saying here that the standards committee, committees in general are composed of artisans of ordinary skill in the art?
A. No, I wouldn't say that. I think they are composed generally of a number of people, some who may rise to expert level, beyond what I called ordinary skill of the art. But others -- others might be operating at the lowest level, satisfying only the criteria for ordinary skill.
Q. Okay.
A. So it could be a mix in the committees.
Q. So in connection with the '991 declaration, essentially you rely on four references, correct?
A. Just to be clear, because I talk about things like Gummalla as providing some background. I think the primary references in various combinations are DOCSIS 1.1 and Abi-Nassif. We are talking about the '991 now, right?
Q. Correct.
A. Okay. Let me --
Q. And also Sen and Rydnell. Do those sound familiar?
A. Yes.
Q. When you say primary references, those are,

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in fact, the only references that you state provide the grounds for your opinion that the patents are invalid, correct?
A. Yeah, with one elaboration, in that Sen incorporates DOCSIS 1.0 by reference, so that was also something that I considered and read into Sen.
Q. Now, was DOCSIS 1.1, that was a reference you were familiar with prior to this case, correct?
A. That's correct.
Q. So this was not -- this is a reference that you knew about, it wasn't given to you by counsel, correct?
A. It's a reference that I've known about for some time, yes.
Q. Who found Abi-Nassif, you or counsel?
A. I think it was counsel who found that one.
Q. And who found Sen, if you recall?
A. I believe I identified GPRS as a topic area, and had some other references that were nonpatent references, and counsel then found a patent reference.
Q. Which turned out to be Sen?
A. Which turned out to be Sen.
Q. Who found Rydnell?
A. Also counsel.
Q. I think you said you did your own search for

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prior art?
A. I did.
Q. How did you do that?
A. Well, I have a fairly extensive library of textbooks and technical papers and that sort of thing, so I did refer to the textbooks and technical papers. Then I also have an account with an on-line bibliographic search firm called HighBeam.
Q. HighBeam?
A. HighBeam, yeah, that allows you to put in key words, and it pulls up trade -- trade press articles, not scholarly articles.
Then I also have an account with IEEE Xplore, that's spelled X-p-l-o-r-e, which is an IEEE database of mostly IEEE publications, but a few other technical societies' conference publications and that sort of thing, including the cable industry, Society of Cable Television Engineers. SCTE stuff is cataloged and referenced in that, and that's an on-line bibliographic search engine too, where you can put in key words with connectors and that sort of thing, and I use a number of key words and descriptors that are in the patent to look for technical articles describing some of the features and functions.
Then I also have an account with the MIT Vera

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system, V-e-r-a, that includes the engineering index compendex database which overlaps with the IEEE database, but includes a lot of European and Japanese kind of publications. And again, they are not patent documents typically, they are scholarly papers. And I searched that, again, for key words, subject matter stuff, shared some of that with counsel, which I think his preference was that --

MR. CANGRO: No, don't include conversation with counsel.

A. But anyhow, I shared that with counsel, and together we surface patent prior art that I reviewed, found relevant. Where it was cumulative or duplicative of some of the other stuff, we didn't use it.

And then let's see, what else. There was another -- oh, Google. I used Google Scholar and Google Patents, also to look at possible prior art.

BY MR. SLOSS:

Q. Have you read Abi-Nassif?

A. I have.

Q. When was the first time you read that?

A. It would have been at some point prior to July 27, preparation of this report.

Q. Have you read Sen?

A. I did.

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Q. And when?

A. Also in connection with preparation of the report.

Q. And Rydnell?

A. Same answer. Prior to preparation of the report.

MR. SLOSS: Why don't we take a break.

(Whereupon, a recess was taken.)

BY MR. SLOSS:

Q. Mr. Lipoff, can you please take out what we have marked as Exhibit 1022, which is the Abi-Nassif reference. I think you've got it in your left hand.

A. I have it.

Q. What would a person skilled in the art understand field of invention of Abi-Nassif to be?

A. The patent itself on page 1, item 1, calls the field of the invention communication systems, but it's focused on -- it says it's focused on the load estimation and applications for using same in a communications network. That's how the inventor describes it.

Q. Abi-Nassif does not describe wireless communications, correct?

A. Actually, I believe it does. It's not -- it's not described in the -- it's not described in what

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I read, but it does appear in the patent as being one of the applications. If you like, I'll find it.

Q. The focus of Abi-Nassif is not wireless communications, correct?

A. I don't know that I would characterize it that way. I think the focus of it is load estimation, and generally in communication systems which would include wireless as being explicitly mentioned, so I don't think the -- I would characterize the focus as not including wireless, but it's not specific to any communications network.

Q. Now, in the title of Abi-Nassif it talks about offered load. Do you see that?

A. I see that, offered load estimation, yes.

Q. What do you understand offered load to mean?

A. With respect to this patent, which I think is consistently used by most communications networks, it would represent the traffic which is external to the system, being provided to the system. That is, coming into the system. And it's a -- it's a measure of the intensity of the -- of the level of the incoming traffic of the system.

Q. Could you turn to the '256 declaration, please. Keep Abi-Nassif close at hand, we are going to be going back to that.

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The '256 declaration?

A. Okay, '256.

Q. Could you please turn to page 45, paragraph 116.

A. I see that, yes.

Q. You state in that paragraph, "Abi-Nassif describes managing network load by regulating the relative usage of contention and noncontention reservation requests." Where does Abi-Nassif talk about managing network load by regulating usage of contention and noncontention requests?

A. I believe I describe that in the paragraphs that are following the one that you identified. Paragraph 116, really starting at 117 where it talks about using the MAC protocol, but more particularly in paragraph 118, where I cite Abi-Nassif 17 lines 1 through 18-6, talking about the contention opportunities versus reservation opportunities, which I think one of ordinary skill understands that a reservation opportunity can accommodate a higher load than contention, because in contention a collision occurs, as my paragraph 119 occurs, so you want to minimize collisions by putting as much traffic as possible under reservation.

Then my paragraph 121 talks about how the MAC

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protocol allows you to transition from inactive to active states without entering into contention, which would be an inefficient use of the bandwidth, so I think it's revealed in the cites that I provided here.

Q. Can you please turn to paragraph 117. In the first sentence there you state, "In its preferred embodiment Abi-Nassif incorporates the MAC protocol of the first generation of DOCSIS," and that's what you referred to at other times as DOCSIS 1.0, correct?

A. Correct.

Q. How does Abi-Nassif's protocol, MAC protocol differ from the DOCSIS 1.0 protocol?

A. I think the MAC protocol as he incorporates it by reference is in all respects identical. The inventive aspect was not the MAC protocol which he describes as, you know, prior art. His inventive aspect was being able to estimate the load by monitoring the collisions that occur.

The DOCSIS 1.0 MAC protocol, which, you know, is the underlying foundation on which his invention is based, is not being modified by anything in Abi-Nassif. He, instead, is basically looking back at the operation of the MAC protocol and observing collisions. And based upon that observation, using that to estimate the load.

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Q. So is it fair to say that -- well, let me ask it this way. Does Abi-Nassif have anything that DOCSIS 1.0 does not have that is relevant to either the '991 patent or the '256 patent?

MR. CANGRO: Objection to form.

A. So to be clear, DOCSIS 1.1 incorporates all the features of DOCSIS 1.0 and adds some things. Abi-Nassif does not -- is silent, unaware perhaps, of DOCSIS 1.1, but it is a useful reference even though it's not modifying DOCSIS 1.0, because it describes a method of operation of the DOCSIS 1.0 specification that reads on the patent claims. So the method of operation, or if you will, the scenario that is incorporated in Abi-Nassif describing how DOCSIS 1.0 might be used in a typical way to operate a system like this is provided with some detail that purposely is not part of the DOCSIS 1.0 spec.

The 1.0 spec is an interface compatibility specification that tells you the possibility of all the things that might happen, and Abi-Nassif applies that 1.0 spec and says this is how it might actually work in a real system, and then knowing how this typical scenario that we describe here in some detail that goes beyond DOCSIS 1.0 works, now let me show you my inventive addition to it when DOCSIS 1.0 is being

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applied in this way.

BY MR. SLOSS:

Q. But in terms of the MAC protocol itself, Abi-Nassif doesn't add anything to what DOCSIS 1.0 has as it relates to the patent's claims, correct?

A. I may not have done a good job articulating the point that I think you're trying to get after, so let me try again.

It does not suggest any modifications or changes to the DOCSIS 1.0 protocol, but it does describe in detail how one might use DOCSIS 1.0 in a system, consistent with the DOCSIS 1.0 specification. And it provides detail of what one would have understood as prior art of how the DOCSIS MAC protocol works, so in that sense it does add to an understanding of how the DOCSIS MAC protocol operates and how it would be understood or used in a real system.

MR. SLOSS: Can you read that back, please?

(Record read by the reporter.)

BY MR. SLOSS:

Q. Where does Abi-Nassif describe how DOCSIS 1.0 would be used in a real system in a way that relates to the '991 or '256 patent?

A. Well, I believe that's the subject of some significant analysis that I've incorporated in my

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expert report beginning on page 61, where I show that disclosures in the Abi-Nassif patent relate on a limitation by limitation basis to each of the claim terms. And in claim 1, it's got a description of possible states, and the description of what happens in those states relates to the same sort of functions that are in the claim limitations of both the patents, so that's how I used it.

Q. So your opinion is contained in paragraphs -- your declaration, beginning page 61, so is that paragraph 174 of the '256 declaration? Is that correct?

A. '256, well, so I guess -- I guess I would combine the sections from page 45 through 50, where I just describe the patent in general, and then the section beginning at page 61 where I actually go through the invalidity analysis. I think they are both relevant to forming my opinion.

Q. Does DOCSIS 1.1 add anything to DOCSIS 1.0 that is relevant to either the '991 or '256 patent?

MR. CANGRO: Objection to form.

A. Well, I cited it as an additional reference. In order to answer that, I should explain the additions that were made to DOCSIS 1.1 that are relevant that I relied upon in my analysis of DOCSIS 1.1.

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DOCSIS 1.1 incorporates the MAC protocol of DOCSIS 1.0. In fact, the section at the end of chapter 6 of DOCSIS 1.0 is repeated verbatim, renumbered in paragraph -- in section 7 of DOCSIS 1.1. So the underlying MAC protocols are identical.

What DOCSIS 1.1 does is it adds the concept of service flows, which is in chapter 8 of DOCSIS 1.1, which were not defined but they were also anticipated and not prohibited in DOCSIS 1.0, they just were not defined. So DOCSIS 1.1 in the same way that Abi-Nassif describes how one might use DOCSIS 1.0, DOCSIS 1.1 describes service flows that can be used consistent with the DOCSIS 1.0 protocol, and I did rely upon some of the disclosure to DOCSIS 1.1 with respect to the service flows in order to show clearly how DOCSIS 1.1 reads on some of the limitations in the claims at issue.

BY MR. SLOSS:

Q. Could you please turn to page 24 of Abi-Nassif. Beginning at line 8 it talks about a protocol referred to as multicabling network system or MCNS, do you see that?

A. I see it.

Q. How is it that DOCSIS 1.1's MCNS protocol is included in a preferred embodiment of Abi-Nassif?

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MR. CANGRO: Objection to form.

A. I'm not sure what you're asking me.

BY MR. SLOSS:

Q. Paragraph beginning at line 8 talks about a preferred embodiment in Abi-Nassif, correct?

A. Yes.

Q. You testified earlier that Abi-Nassif incorporates DOCSIS 1.0, correct?

A. Yes.

Q. And in Abi-Nassif it's saying here that part of its MAC protocol includes this MCNS, correct?

A. Well, it's saying that the document is called the MCNS data over cable service interface specification which is DOCSIS.

Q. So the MCNS is from DOCSIS 1.0, correct, as it's used here?

A. Yeah, again, I -- maybe it would be helpful for me to explain what MCNS is and how it relates to DOCSIS, because I'm not really sure what you're asking me.

Q. You said that the MAC protocol employed by Abi-Nassif is DOCSIS 1.0, correct?

A. Yes, which is -- I think it's -- I believe I testified earlier that during the development of the first generation of DOCSIS, it was not referred to as

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DOCSIS 1.0, it was just referred to as DOCSIS because there was no subsequent iteration.

Q. Fair enough, but when we use DOCSIS 1.0 we are referring to the original DOCSIS, correct?

A. Correct, and the designation that's given here on page 24 where they are referring to SP RFI-IO2971008 is what's known today as the DOCSIS 1.0 protocol.

Q. Okay. And part of that protocol would include this MCNS protocol, correct?

A. No, that's not a correct way to describe it. MCNS protocol was not part of that. MCNS was the client that hired me to develop the protocol.

Q. Right.

A. They were the sponsor, the consortium that paid me to manage the project of developing the specification that is SP RFI-102971008.

Q. Let me ask this, so the language here in Abi-Nassif states, "In a preferred embodiment the MAC protocol includes a protocol commonly referred to as MCNS." Is that statement incorrect?

A. I think it's worded awkwardly. The intent, I believe is, in a preferred embodiment the MAC protocol includes a protocol commonly understood to have been the one that was developed by MCNS, now known today as

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DOCSIS 1.0, and I think that's made clear.

Any ambiguity about what that actually means is made clear when they say that it's defined in the document and they -- they list the radio frequency specification, which is one of the DOCSIS 1.0 documents, but it's the one that's relevant because it's the one that it is of the various DOCSIS 1.0 documents, which there are several, it's the one that describes the MAC protocol.

Q. So are you saying that the portion of the MAC protocol, the DOCSIS -- let me start over.

So are you saying that the portion of the DOCSIS 1.0 MAC protocol that's relevant to the '991 and '256 patents is the MCNS piece of that protocol?

A. Okay, the MCNS is not a piece of the protocol, or the protocol MCNS document is not a piece of the protocol. It is the entire -- MCNS is the owner, developer, the sponsor, the client who paid to develop DOCSIS 1.0. And everything that's in DOCSIS 1.0 would fall under the MCNS umbrella. So there's not a separable MCNS portion or separate MCNS MAC protocol. It's just related to MCNS.

The entire document is a MCNS document, in that they paid for it, sanctioned it, owned it, and then at some later point transferred responsibility to

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CableLabs.
Q. So MCNS is not actually a protocol, correct?
A. No, it's a consortium of cable operators.
Q. Could you turn to paragraph 125 of the '256 declaration, please. Page 48.
A. Okay, I'm there.
Q. Okay, the first sentence states, "Initially the MAC user transitions from the inactive state to the contention state." What do you mean by "initially"?
A. Let me attempt to understand the context of this section here.
So it's referring back to paragraph 123, in describing the inactive state. And its saying that you begin, or at least one way of looking at the operation of the system would be -- to describe the operation, one way of looking at it would begin with let's start from the active state. You could be anywhere in the middle, but let's start with that in order to explain how it works.
So we are in the inactive state for a point of reference in terms of everything that follows. We have no data transmit, or you're waiting for an opportunity to transmit because you do have data to transmit, but you haven't yet transmitted. So that's the inactive state as Abi-Nassif describes it.

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You pointed me to paragraph 125, which says, referring back to your other thing, you're starting with the inactive state as stated in paragraph 125, and also stated as paragraph 123, you start from that, and now you're going to transition from the inactive state to something else. And so initially, because you've been inactive, and the system is unaware that you should be getting bandwidth grants, the first thing that happens is that you would go to the contention state, which would be shown at this figure that's on page 48.
You make a contention request, and if you've been successful, that is the request was received and wasn't collided, you'll then -- the primary station corresponding to the BSC in the patent would schedule future requests based on the initial contention-based reservation, so paragraph 125 is explaining that although you start in contention because you're not getting future requests, the use station will now schedule future requests and request opportunities and data transmission opportunities based on that initial contention.
Q. So I guess I'm still a little unclear where initially, how you conclude that initially the MAC user transitions from the inactive state to the contention

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state.
A. So I am citing to 23, 30 to 32 from Abi-Nassif as they are describing a scenario here; that is also shown here in figure 9.
It's a system that has a number of states. The system at any one point in time can be in any one of these states, and can transition, can stay in that state or can transition out. So in the description of the Abi-Nassif reference, the description they are using, they are saying, well, in order to describe it let's tell you about the starting point and then we will say what happens from that point.
You could have said let's start in active initially, and tell you what happens there, and then you'll move around and at some point, the way the system works, you could end up at some other state of the system. But at least for the description that's given here, it's saying we are going to describe this by starting with the inactive state, then show you what happens from that point on.
Q. So you're saying that Abi-Nassif at page 23, lines 30 through 32, is a cite that covers both the first and second sentences of paragraph 125 of your declaration?
A. Well, I'll go back and I'll look, but I'll --

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yeah, so the cite here at the bottom, 23, 30 to 32, starts with -- starts with the primary station scheduling future requests based on the result of a contention-based reservation, so it's -- it's inverting the language somewhat, but I think it still comports with what I have in my paragraph 125.
You're starting in inactive, you make a contention-based reservation, as it says here, and as I describe, the primary station will schedule future requests based on the initial contention-based reservation, so the initial contention-based reservation is the contention request shown on my page 48, going from the inactive to the contention state, and that's where you schedule these successful reservations that result in page 24 of Abi-Nassif allocating the bandwidth, so forth, as it's described.
Q. So looking at the end of your paragraph 125, which is at the top of page 49, you have a parenthetical. Do you see that "e.g. by transitioning from inactive to active using a noncontention request." Do you see that?
A. I see that.
Q. And you're saying that that is described from page 23, line 32, of Abi-Nassif to page 24, line 4; is that correct?

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A. Yeah, so I think that is disclosed in that cite that I made. It's saying that when you're in the active mode, you can make noncontention requests because you've now, once you've been through the contention request, you're going to have a reservation, and you can now make noncontention requests as is a state diagram on page 48, and also same state diagram that's in Abi-Nassif, shows -- once you've gone through the contention request, you're now in active mode and you're going to receive reservations so you can make noncontention requests at that point.

Q. And that's the sentence that begins at the bottom of page 23, "If a successful reservation is made"?

A. Yeah, I mean I made one cite to something in Abi-Nassif that I think reveals that there may be other places where the equivalent thing is described, but I think that's -- if a successful reservation is made -- I'm reading at bottom of page 23 of Abi-Nassif: If a successful reservation is made, i.e. if the result of contention is success, then the primary station allocates bandwidth to the MAC user based on the QoS requirements. Users can transmit user information contention-free over the shared channel.

Q. And you think that describes transitioning

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from an inactive to an active state?

A. Well, yeah, because you're now transmitting noncontention -- noncontention, and when you're in noncontention mode, that is the description of the active state where you're expecting -- you're expecting to get -- I want to use the terms that are in here. You're expecting to get the transmission opportunities.

Q. And that's an active state?

A. Yeah, the active state, as I understand it, is where you're expecting -- you concluded a successful contention request, and then the primary station allocates bandwidth and the user can transmit information contention-free. And then it goes on on page 24 to say the primary station attempts to aid resolving the -- oh, okay, I'm sorry. That's not relevant.

It's the part that is relevant on page 24 is the MAC user can transmit user information contention-free over the shared channel, because you've now been successful in making the reservation in a contention mode.

Q. You say that there may be other places in Abi-Nassif saying the same thing as described. As you sit here now, can you tell me where in Abi-Nassif there might be other passages in which that concept is

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described?

A. Well, it's a -- well, in my paragraph 129, without searching through the thing, I say, "Upon making a successful reservation," which was done earlier in contention mode, you transition to the active state and I cite to Abi-Nassif.

Q. But that's not the same as transitioning from inactive to active, is it?

A. Well, no. You're going from inactive to contention, and you know, as I said here, and if -- if the request is sent, that is if it gets through, then you transition to active state, and once you're in an active state, you can then make a noncontention request.

So, you know, as I described it, the -- I think correctly, and as the cites I pointed to, you first have to have a successful contention transaction. That is, the contention has to be -- the message has to be successful, it has to not collide.

Q. Now, can you please turn to page 39 of 44 of Abi-Nassif.

A. Page 39?

Q. Yes. 39 of 44. So it would be Exhibit Number -- it may not be on your copy. Is that on your copy down at the bottom?

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A. No.

Q. Well, what I want you to do is go to where the drawings are at the end.

A. Okay.

Q. Figure 9 is the only -- what I guess we will call a flow chart of a state machine, correct, of all the other figures in Abi-Nassif?

A. Yeah, I think it's the only figure that has the form of a state diagram.

Q. Right. So Abi-Nassif discloses three states, correct?

A. Yeah. It, again, as I understand this, it's kind of a high level abstraction, so I don't believe it's intended to disclose all the possible states of the system that one might need to disclose to fully describe the DOCSIS MAC protocol, but at least it's sufficient for the purposes of this patent.

Q. But it's the only flow chart of a state machine in Abi-Nassif, correct?

A. It's the only thing that looks like a state diagram there. There are more words in the patent that describe functionality, which is details that are not necessarily revealed in this drawing.

Q. But this drawing only discloses three states, correct?

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A. This drawing only has three states listed in it, yes.
Q. And the three states are identified as contention, active, inactive, correct?
A. That's how they are labeled, yes.
Q. The patents, both the '991 and '256, describes what they call customer premises equipment or CPE. Are you familiar with that term as it's used in the patent?
A. Yes, I understand the term as its...
Q. Where in Abi-Nassif is what you would consider to be the CPE?
A. I want to -- understand that the patentee is actually included in the description of CPE, which I want to review before I answer your question, and I'm looking at '256 patent column 4, starting around line 18. So the inventor describes it as a device for performing communications processes and tasks at a customer location, operating in conjunction with a base station controller within a wireless cell. There's no particular requirement to be a single device, the alternative embodiments, the customer premises can include a portion of the device, a combination of multiple devices, or a hybrid thereof.
And then just to be clear, the next

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paragraph, beginning around line 27, kind of says that these are general meanings and only illustrative. So I understand the -- at least one embodiment to be a device that's at the customer premises within a wireless communication cell, but then given the paragraph that follows, I understand that the inventor is broadening it to --
Q. My question was simply what in Abi-Nassif do you believe qualifies this as a CPE or is equivalent to a CPE disclosed in the patent?
A. So there may be multiple places, but with regard to the DOCSIS 1.0 protocol there's at least one -- the first disclosure I come across is on paragraph -- on page 24, line 22, referred to as individual cable modem, individual CM.
Q. Okay.
A. And there I believe it's used, CMs are used in other places --
Q. Right.
A. -- in the patent.
Q. And the patents also refer to something they call a base station controller or BSC; correct?
A. Yes.
Q. What is the equivalent term or function in Abi-Nassif?

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A. Well, again, I don't believe Abi-Nassif is attempting to be comprehensive or limiting, but it does give the example, with regard to the MCNS protocol, of something called a cable modem termination system, CMTS. I think the first mention of it may be on page 24, line 16.
Q. Can you get out one of the patents, please, and look at figure 2.
A. The state diagram?
Q. Yes.
A. Okay.
Q. Excluding the unsolicited grant pending state and the unsolicited grant pending absent state, figure 2 discloses four states, correct?
A. That's correct.
MR. SLOSS: Okay. Why don't we break for lunch.
(Lunch recess 12:41 p.m.)

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AFTERNOON SESSION
1:16 p.m.
STUART J. LIPOFF,
was called as a witness, and having been previously duly sworn, was examined and testified as follows:
CONTINUED EXAMINATION
BY MR. SLOSS:
Q. Back on the record.
Can you pull out DOCSIS 1.1, please. All right, so let me ask you a few general questions about DOCSIS 1.1. First of all, is it about wireless communications?
A. So the document itself is not describing wireless communications, but as I indicated in my expert report, for example, the '991, around page 35, that it's related to and is analogous prior art to other wireless systems.
Q. When you say "it's related to," what do you mean?
A. Well, as I indicate here on page 35 of my report, I indicate at least two examples here, one of them on page 36 talking about how it was incorporated into the 802.16, sometimes called wi-max standard, that is the MAC protocols and everything above the physical layer. And also how the multipoint -- excuse me,

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multichannel, multipoint distribution services MMDS also made use of that.

I'm aware of a number of other instances where there were some proprietary nonstandard systems that were actually called wireless DOCSIS. And as I testified earlier, there was a deliberate attempt to layer the standard into the OSI protocol, keeping the physical layer separate with an understanding from the very beginning that to make DOCSIS cost effective, the semiconductor manufacturers needed to make MAC protocol chips that were compatible with both wired and wireless, so a number of the features that were incorporated into DOCSIS 1.1 were to make it wireless friendly.

Q. As used in DOCSIS 1.1, what does QoS mean?

A. Well, it's an abbreviation for quality of service, and it appears in chapter 8 of the DOCSIS specification.

Q. And generally what does quality of service have to do with it?

A. These were additions to the DOCSIS 1.0 specification, which defined the concept of service flows, and by using these service flows, the operators of DOCSIS 1.1 systems were able to control the upstream traffic in such a way that when different services were

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being accommodated, you could provide the most efficient use of the limited bandwidth on the systems, resulting in the highest possible quality of user experience.

Q. As used in DOCSIS, what does backward compatible mean?

A. I don't -- it doesn't surprise me that that word or concept appears in here, but I don't think I cited to it. And in order to give you an answer in the proper context, if you can point me to somewhere in the DOCSIS spec where the word exists, I'll -- I'll attempt to describe it.

Q. Let's do this. Your declaration refers to DOCSIS 1.1 being backward compatible with DOCSIS 1.0, correct?

A. Again, I'm pretty certain I used the word "backward." I just want to make sure I used it in the right context. Again, I can search for the cite, but if you have it listed somewhere.

Q. Well, as you sit here, you don't recall what you meant?

A. Well, I'm not sure you stated it correctly in the right direction.

Q. Okay. Well, do you recall using the term backward compatible?

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A. I recall the term backward compatible that I used somewhere in the document.

Q. Do you recall what you meant when you said backward compatible?

A. Yeah, I think I could recall it. Again, it may or may not exist in the DOCSIS 1.1 specification. It wouldn't surprise me if it does, but the point is, is that cable modems which were designed to work on the DOCSIS 1.0 systems, could be used on DOCSIS 1.1 systems. That is, the end user did not need to throw away the device that they had that was only designed to compatible with DOCSIS 1.0. That when the cable operator upgraded their system or changed it to incorporate the additional capabilities of DOCSIS 1.1, that DOCSIS 1.0 cable modem which was practicing the DOCSIS 1.0 MAC specification would continue to work and/or operate transparent to the user. That is, although they may not get access to the additional features and capabilities that were provided by DOCSIS 1.1, they could at least continue to use it in the same way they did before the cable operator upgraded. That was how I used the term backward compatible. That's the concept at least that I know I wanted to get across.

Q. Would you agree that the MAC protocol

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described in DOCSIS 1.0 is more complete -- strike that.

Would you agree that the MAC protocol described in DOCSIS 1.0 is better described than the protocol set forth in the Abi-Nassif patent?

A. I don't have a context for describing "better." I think those documents have their own disclosure and both of them read on the limitations. So I don't -- I would agree DOCSIS 1.1 is a thicker document, but it discusses a number of things which are not germane to Abi-Nassif, so I don't think I would say it's better.

Q. Would you agree that it describes the MAC protocol more completely than in Abi-Nassif?

A. Well, as I stated in my declaration, to the extent someone -- the board looking at Abi-Nassif would find that the ideal state is not disclosed, that I think it's unambiguously disclosed in DOCSIS 1.1. So while I'm not admitting that the concept of idle is absent from Abi-Nassif, it doesn't appear on the -- as one of the states in the figure that we have been talking about, and so arguably somebody might say that it's, well, not disclosed or not disclosed well enough. DOCSIS 1.1 puts any of those issues to bed, because it has explicit disclosures, which I matched up against

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the idle state.
Q. Are you saying -- are you saying it's adequately disclosed in Abi-Nassif because Abi-Nassif incorporates the DOCSIS 1.0 MAC protocol?
A. Partly for that reason, but not -- not solely. Even the description of what's happening in what they call the inactive state one would argue would include a combination of some of the states that are described in the two patents, because there's features or characteristics of what's happening about the data buffer being empty and not being empty and collision and contention and stuff, that actually all those different concepts are disclosed in Abi-Nassif. They are just not mapped the same way in this high level state diagram.
Q. So in the inactive state disclosed in Abi-Nassif, what part -- what are the parts of that state that appear in the patent?
A. So let me refer to the applicant's -- the inventor's description of these states starting on page 18 of my '991 declaration as an example.
Q. I'm sorry, you said what page?
A. Okay, page 18 of the paragraph 48. So the idle state as described by the inventor is where you're waiting for packets to send upstream. And I think

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Abi-Nassif discloses it -- the very same thing, that you can be in a situation where you have no packets which have arrived, that is, you're waiting, and -- or Abi-Nassif also says or the packet has arrived but you haven't yet transmitted it. But it says you'll be in a situation where there's no packet arriving, and that's -- that's one of the places.
Q. And that's in Abi-Nassif's inactive state where that's occurring?
A. I believe so. We have actually discussed this particular section before, where we are citing to 46. So previously discussed on page 46 of my '991 declaration, described in the inactive state of Abi-Nassif, the cite to Abi-Nassif 22, 30 to 23 1 has the case where there's no data to transmit. So that would correspond I think to the patent owner's description of the idle state, where you wait for packets to send upstream. When data arrives system transitions to a deferring state, so I think that's at least one example of where what's called the idle state corresponds to one of the characteristics of what Abi-Nassif calls inactive.
Q. Are there any other states described in patents that are found in Abi-Nassif's inactive state?
A. Inactive state.

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Q. Well, that's what we are talking about, right, inactive state?
A. Yeah, okay. Well -- so I haven't done a comprehensive mapping to the state diagram to all the limitations. My analysis was not confined to the state diagram. It was looking at the entire state of disclosures in Abi-Nassif, but as I sit here reading from that very same section, paragraph 129 of my '991 declaration, page 46, you have two characteristics which are identified in Abi-Nassif as being part of the inactive state. One of them has no data to transmit, and the other one where it is awaiting an opportunity to transmit a request to the primary station. It's unstated, but I think it's implied that in that second instance it actually does have data to transmit.
Without looking at the specific scenario that's involved, mapping that to the patent, there are various states described in the state diagram of the patent where you have that situation of your -- awaiting an opportunity to transmit a request to the primary station.
So again, I'm not -- having not performed an analysis of mapping these two diagrams together, but instead finding assertions in the reference that I could do, I can't sit here today and give a

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comprehensive list of every place with an inactive there's an overlap or something that relates to the state diagram.
Q. All right, let's go back to DOCSIS 1.1. It uses the term cable modem. What do you understand cable modem to be in DOCSIS 1.1?
A. So I think the best place for me to respond to that would be by pointing to the figure in DOCSIS 1.1. So on page 2, figure 1-1, where it shows the cable modem in the domain of the customer premises as being something that talks through the cable network, to the cable modem termination system, and provides traffic to some device that's hooked up to it.
In this particular figure, the illustrative device is shown -- appears to be a personal computer.
Q. What is a cable modem termination station?
A. Cable modem termination system, actually it's labeled, in this figure is the system that is not located at the customer premises, that would be located at the network operator's -- at some facility controlled by the network operator, and I believe would -- would correspond to the description as it's used in column 4, the '256 that's labeled base site controller. It's a device for performing coordination and control of the system.

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Q. So is there a difference between a cable modem and a cable modem termination station in DOCSIS 1.1?
MR. CANGRO: Form.
A. Yes. The two subject patents are about point to multipoint communications, and the DOCSIS 1.1 architecture is also a point to multipoint system, where the multiple points would be the various customer premises equipment, that is multiple cable modems, each of which is associated with one and only one cable modem termination system. So in the point to multipoint context, the CMTS is the point and the multiple points are the cable modems.
BY MR. SLOSS:
Q. Could you please look at figure K-1.
A. Of?
Q. I'm sorry, DOCSIS 1.1. That's page 299 of 332.
A. Okay, I'm there.
Q. I would also like you, please, to look at paragraph 152 of the '991 declaration. I think it's the one you had in front of you most recently.
A. Yes, okay.
Q. Page 53, paragraph 152.
A. Okay, I'm there.

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Q. And you say in the first line of paragraph 152, appendix K-1 is subject to simplification and assumptions. What are those simplifications and assumptions?
A. So now referring to DOCSIS 1.1 specification, appendix K, page 299 of 332, there is an attempt here to at least give some examples. I don't know if this is intended to be comprehensive of all the simplifications, but it lists two of them.
It says it doesn't talk about packet arrivals while deferring or waiting for grants, and is vague about sizing piggyback requests. So I think that's one. And then it also says much of this applies with respect to concatenation, but it does not attempt to address all the subtleties of the situation. So those are the simplifications that it lists.
Q. Okay. Let's talk about those for a minute. We talked about you mentioned packet arrivals while deferring or awaiting. If that was added, if that was included in the state diagram, how would the state diagram change?
A. I don't know. I would have to -- I would have to study that in some detail in order to answer that.
Q. What is concatenation?

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A. Concatenation was a capability that was added to the DOCSIS 1.0 MAC layer, to allow for packets that were too long to fit into a -- I'm sorry, I'm saying it the wrong way. That was fragmentation, which is another capability.
Concatenation was if you had packets that were short, rather than sending them in separate MAC frames, if you could fit them in the same MAC frame, you could use that MAC frame more efficiently by putting in a couple of the packets that were waiting to be sending rather than having to send them in separate MAC frames. So it was a -- it was a capability that was added to DOCSIS 1.1 that extended the MAC layer that was not provided in DOCSIS 1.0.
Q. When you say extended the MAC layer, what do you mean?
A. Meaning it added other features and capabilities which did not prevent older cable Modem 1.0 from continuing the work, but newer cable modems that were designed specifically to work with 1.1 could exercise these additional features, and when so exercising achieve the benefits of whatever these additional features were.
Q. Now, concatenation does not relate to the claims at issue, correct?

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A. I don't believe -- well, I guess that's not true. So there are some instances where piggybacking requests are sent during concatenation that I cite to in my report for satisfying some of the claim terms that relate to a further bandwidth request.
I believe that there's at least one instance where I do that as giving at least one example where a piggyback request is used in DOCSIS that I say is an example where it reads on some of the further bandwidth request terms that are in the patent.
Q. But concatenation does not affect the states, the number of states, how the states operate, correct?
MR. CANGRO: Objection to form.
A. I mean, to the extent the states require -- in these patents, the states have terms that have things like transition without piggyback, which is one of the labels that are next to the straight -- the transition arrow from grant pending to grant pending absent, because piggyback is described as something in the state diagram with respect to that transition, and then there's also in that same diagram, there's another state transition where you go from grant pending back to great grant pending, so it's transmit with piggyback, so piggyback does appear in the state diagrams and I would say where I cited to using it,

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there could be -- there could be aspects of it that relate to concatenation.
BY MR. SLOSS:
Q. But it doesn't relate to the actual number of states, right?
A. I don't think it creates or deletes any state.
Q. That's a better way of saying it.
In paragraph 162 of your '991 declaration, you talk about nonrealtime polling service, which that's sometimes referred to as NRTPS, correct?
A. Yes, that's correct.
Q. Can NRTPS be added to the state diagram of figure K-1?
A. I haven't performed that analysis. When I refer to figure K-1 in my report, I was doing it simply to indicate that there are parallel terms that match those in the patent, such as idle, deferring, grant pending, and as we discussed earlier, there are at least some characteristics that map over. But I was not using figure K-1 as my attempt to -- sole attempt to show that the limitations in the subject patents are revealed by the DOCSIS prior art, so you're asking me to perform an analysis I haven't performed.
Q. All right. In figure K-1, if we exclude the

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Data Ack pending state, which I think we talked about earlier today, then figure K-1 discloses three states, correct?
A. It -- it shows four bubbles, and if you take away one of them, you have three left.
Q. And the one we are taking away is the Data Ack pending, correct?
A. Yes, in your question you're taking away, yes.
Q. Well, I mean, you have not included it as a state that appears in the claims of the patents, correct?
A. So I believe we discussed this earlier. What I think I said, and hopefully I'm saying consistently is the term Data Ack pending as it appears in the DOCSIS specification does not match the same words that exist in the patents. What analysis I have not done, and I am not prepared to state, is that the functionality and conditions that are associated with what's labeled Data Ack pending, I would not say may or may not be also be able to be matched up. It may have a different word associated with it or it might be described in a different way, but I'm not prepared to say that it's irrelevant. It's just that it was not included in my analysis.

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Q. Okay. There are a lot of nots and mays in that answer. I just want to make sure I understand what you said.
You did not include the Data Ack pending state in your analysis, correct?
A. That's correct, I did not include the Data Ack pending as shown in appendix K in my analysis. I was silent about it.
Q. So taking that out then, the figure K-1 shows three states as idle, deferring and grant pending, correct?
A. Yes. If that one is eliminated it shows three remaining ones, yes.
Q. Could you please turn to page 251 of 332 of the DOCSIS 1.1 document which is Exhibit TCT1019.
A. Okay, you said 251?
Q. 251 of 332, yes.
A. Okay, I'm there.
Q. Do you recognize this as part of appendix C?
A. I do.
Q. Do you recall looking at section C.2.2.5.7?
While you're looking for your declaration, as you sit here today do you remember reviewing it?
A. Excuse me?
Q. As you sit here today, do you remember

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reviewing section 2.2.5.7?
A. Yes, I do, but I wanted to be prepared to demonstrate that by showing that in paragraph 174 of my '991 declaration, I refer to that with respect to the inactivity timeout and idle limitation of the patent.
Q. Section C.2.2.5.7 talks about a parameter it calls timeout for active QoS, correct?
A. That's correct.
Q. In the second paragraph of section C.2.2.5.7, it says, "If defined, this parameter MUST" -- in all caps -- "be enforced at CMTS and should not, in all caps, be enforced at the CM." Do you see that?
A. I do see that, yes.
Q. And when it talks about -- when it says something must happen, would a person skilled in the art ignore that instruction?
A. No. When it says must, it's a requirement if it's defined, but I think there is some possible ambiguity about what this means, and it doesn't mean that the CMT -- that the CM has no -- no knowledge or role, because it's telling you that the -- that when this timer expires there is a transaction that occurs.
Just above where we were talking about, it says the CMTS must signal this resource change with a DSE-REQ to the CM, so the parameter may be enforced at

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the CMTS, but the result of the enforcement is that there are actions that are taken at both the CM and the CMTS as a result of that timer.

Q. But if you say when the parameter -- it talks about the parameter must be enforced at the CMTS, that's the timeout, correct?

A. Well, that's what this is about. The CMTS and the CM are talking to each other in a system. The trigger for this timeout is basically under control of the CM, because when the CM stops sending messages to the CMTS, the CMTS notes that the duration between previous messages exceeds a certain threshold.

Q. But you would agree that it says that the timeout must be enforced at the CMTS and should not be enforced at the CM, correct?

A. Yeah, and as I explained, this should not be interpreted or misinterpreted as the CM not having a role. The CM is basically what's providing the input to the timer.

The output of the timer is a message going back to the CM telling it that that active service flow is now being terminated. So this is -- these claims that are at issue here are method claims for a system, not a method claim for any individual network element, and this section that we are reading is talking about

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how the system interacts with the CM and the CMTS. It's quite clear that both of them are involved in the process associated with timeout.

Q. I want to go back to our discussion about simplifications and assumptions related to appendix K-1. Though simplification and assumptions do not include the omission of a state, that is part of the protocol, correct?

A. Sorry, give me that page number again.

Q. You want to look at appendix K-1, which is page 299 of 332.

A. Okay. So I don't think in the list here of the simplifications and assumptions there's anything explicitly says that a state is being limited, but if you take this entire section in context, it's starting by saying it's attempting to really clarify how the transmission and contention resolution algorithms work. It's being quite explicit that it's not attempting to describe all the possible aspects of the MAC layer.

In fact, the whole appendix K is labeled transmission and contention resolution, so it's really a document that's tutorial in nature as the first sentence states, "The appendix attempts to clarify how the transmission and contention resolution algorithms work," and then it goes on to talk about the

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simplifications and so forth. But it's quite clear to me it's not attempting to show all the possible states of the system. It's explicit in that it's focusing deep down on just the transmission and contention resolution aspects.

Q. You said something at the beginning of your answer about "this" section. What are you referring to?

A. I was referring to appendix K.

Q. Could you please get your declaration for the '256 patent, and I would like you to look at page 57, paragraph 155. Do you see that paragraph?

A. I do.

Q. And it states, "Piggybacking in turn is a technique used doing fragmentation." My question is, is fragmentation the only use of piggybacking?

A. No.

Q. Where else is it used? If it's used throughout, you can say that.

A. It's used -- in the DOCSIS 1.1 context you're asking me where is it used?

Q. Yes.

A. So any time you have a grant from the CMTS to the cable modem to send data, not -- not just a transmission opportunity for making a request, but any

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time the transmission opportunity represents a grant from the CMTS to actually send data up, in the service flows that I've identified, it doesn't exist in all service flows, but at least in the realtime polling and nonrealtime polling, in those two, you can include piggyback requests, which tell the CMTS that you have more data to send than you have a grant, than you've been granted. You've got more to grant -- more to send.

Basically the term as it's also used in the patent site, I think consistent with how the admitted prior art for the piggybacking exists in the patents.

Q. If you'll please turn to paragraph 161. In the first sentence there it says, "The NRTPS service flow includes timely unicast polling." What did you mean by "timely"?

A. So I'm referring to section 8.2.4 titled Nonrealtime Polling Service in the DOCSIS 1.1 specification. And the description here is CMTS must provide timely unicast request opportunities. So I'm just citing to how it's described in the DOCSIS spec.

Q. Can you look at 162.

A. Yes, okay.

Q. It says, second sentence of paragraph 162, "For example, contention requests may be needed if more

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bandwidth is needed before the next polled request opportunity." Do you see that?
A. Yes, I see that.
Q. That's referring to section 8.2.4 also, correct?
A. Yes, that's correct. It's the next section following the timely unicast opportunities.
Q. If unicast polling were timely, why would a contention request be needed? Why would that happen if you've got a timely unicast polling?
A. So in this particular section of the DOCSIS specification that we have been talking about, 8.2.4, it describes a particular example of a traffic flow poll, FTP, file transfer protocol. And I don't believe it's meant to be exclusive as the only time you would use this service, but it's saying at least there's one example.

So as I read this section and my understanding is it's saying in the case of FTP, you typically have got at the cable modem a very large file, something that is longer than would end up fitting in any transmission grant, any upstream bandwidth grant opportunity. You've got more data than the cable -- the CMTS is willing to give you during any one map interval. So the way the near realtime polling

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service would typically work, would be that the manufacturer of the CMTS would design their proprietary scheduling algorithm that would attempt to provide transmission grant opportunities to the cable modem so the data is not backing up at the cable modem. That when it arrives at the cable modem and it's ready to be sent up, the cable modem can generally expect to get a transmission grant opportunity.

There may be a number of reasons why the cable modem might have more data than is predicted by the scheduling algorithm at the CMTS. It could be that there was some network congestion, and the earlier upstream transmission didn't get through and -- or wasn't acknowledged, so the cable modem at that case may exercise a contention request and say I've got stuff that's backing up here, I really need some more bandwidth.

It's also possible that the scheduling algorithm located at the CMTS which was looking at the incoming traffic was making decisions that would change over a period of time, because perhaps the computer sending this stuff up was busy doing some other task and for the last five minutes it had been sending it fairly slowly, and the CMTS was providing what it thought were timely grants based on that slow traffic,

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and all of the sudden the other task that's running on the computer is sending data up at a much faster rate than it had been, and the intervals that are arriving are now no longer sufficient, so it may exercise the contention request in order to obtain additional upstream opportunities which were not scheduled.
Q. And what part of that involves unicast -- timely unicast polling?
A. So the nonrealtime polling service as it's described briefly here and elsewhere, and the way it works is it's a service in which you don't have to wait to be asked to make a request. That is, you do not need to enter into contention mode. That's its basic operation.

The way the MAC protocol works in the subject patents, as well as in DOCSIS, is it -- when you're in a mode that the CMTS wants to offer you opportunities to request upstream bandwidth, it will send a message to you and only you, that is not contention but in unicast, that has a high assurance of getting through. And so the unicast request opportunities are messages from the CMTS directed to a particular cable modem that give it transmission resources, upstream transmission resources where it can make requests for bandwidth to subsequently send data.

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Q. Does DOCSIS 1.1 have timers?
A. Does it have timers?
Q. Yes.
A. We have been talking about one of a number of timers that are identified in section C, and so, yes, it provides for timers.
Q. Can you tell me how many timers there are in DOCSIS 1.1?
A. I could turn to that -- that's appendix C -- and count them if you want, but it wasn't important to me in any of my analysis to identify any additional timers. Some of them may or may not read on some of these limitations, but I did find one which is the timeout for active service flows.

So if I were to count -- if I were to turn to appendix C and count the timers, I'm also not certain that would be comprehensive because I believe there are also some timing issues and timers that are incorporated into the main body that may not be listed in appendix C, but I made no attempt to enumerate them.
Q. Are there timers associated with the cable modem requesting bandwidth?
A. Well, there may be a number of them. One of them that I -- that I did cite to is with respect to the requests -- contention mode requests where your

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request -- you send -- well, start over.
Where you -- you use a transmission opportunity given by the CMTS to send from any cable modem, not unicast, but broadcast, any cable modem, the right to use that transmission resource to send up a contention mode request, because it's a broadcast request, directed -- not a unicast request, directed to any cable modem, there's a possibility of a collision, which means that two cable modems transmitting at the same time may interfere with each other and neither one of them would get through. And so there is a timer that's defined in the DOCSIS spec that's referred to as back off, where if you fail to get some affirmative response that tells you that the message got through, you delay or defer, as the term is used in some places, sending it again, and you continue doing so exercising a timer in between each transmission.
Q. Could you please turn to paragraph 165 of the 99 -- I'm sorry, the '256 declaration.
A. Okay.
Q. All right. The first sentence states, "Although no bandwidth requests will be pending at that time, the CM is still polled by the CMTS with unicast request opportunities."
What do you mean by "at that time"?

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A. Let me find out what the context is here.
Oh, okay. Yeah, so this is under the nonrealtime polling service context on page 59. What it's basically referring to is section 8.2.2 and 8.2.4, and so while the nonrealtime polling service is active and the real time polling service, for that matter, the operation of the DOCSIS MAC layer during that polling service is to provide periodic or nonperiodic intervals on the order of a second or less polls, unicast polls.
The concept of nonrealtime polling service is that those polls are supposed to be timely. That is, they are supposed to be somewhat matched to what the expected traffic flow is, but there's an allowance for the fact that those traffic flows may be somewhat irregular, so it's possible during any one of these polls that the cable modem does not have data pending to be sent, and so there's no bandwidth request that will be pending. It's still being given the opportunities to request the bandwidth should there be any data there, but until the timer expires it will continue to get these periodic or nonperiodic polls.
Q. So I'm still not sure I'm clear. When is "at that time"? What does that refer to?
A. I believe the time is -- that's being referred to there is the time in which the cable modem

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is being polled. The time that the cable modem has been given a unicast request opportunity, the right to ask for bandwidth. And that's the time I believe that's -- proximate time that's basically how the nonrealtime polling service works.
Q. You talked about service flow becoming inactive. I think you've mentioned it in your prior answers, but you also talk about it in paragraph 167 and the following paragraphs.
A. Okay.
Q. How does the service flow become inactive?
A. So you're referring me to paragraph 167 of my report, or are you asking me more generally?
Q. Generally how does service flow become active in DOCSIS 1.1?
A. There are a number of ways. On page 60 of my '256 declaration, I indicate one way, which is the expiration of the inactivity timer as described in C.2.2.5.7, titled Timeout for Active QS Parameters.
That was one of the ways that I cited to, to read on the claim limitation of inactivity, timeout and idle. I am aware that there are other ways in which a service flow can become inactive, but they were not something that I needed to cite to for reading on this claim limitation.

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Q. Is there anything in DOCSIS 1.1 that is equivalent to the CPE described in the patents?
A. I believe we may have talked about that.
Q. Cable modem?
A. I have referred to the figure -- the device that's shown in figure 1-1 that they call a cable modem or CM.
Q. Is the CMTS the equivalent to the BSC in the patents?
A. I believe it correspondence to the description as the patentee has given it as being one of the network elements in a point to multipoint system.
Q. I want to talk about Sen for a minute.
A. Yes.
Q. Sen U.S. Patent Number 6,466,544. Do you have it there? I think I gave it to you earlier.
A. I don't know that I have that. I don't think I do.
Q. Okay. Let me give it to you.
THE WITNESS: I would like to go to the bathroom at an appropriate point.
MR. SLOSS: Now is fine. Five minutes or ten minutes?
THE WITNESS: As quickly as you want.

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MR. SLOSS: Five minutes okay? Okay.
(Whereupon, a recess was taken.)
BY MR. SLOSS:
Q. Before we took a recess, we were talking about how a service flow becomes inactive. How does a service flow become active?
A. I don't know that I specifically address that in my analysis, or I don't believe I addressed it in my declaration.
In order to provide the analysis and read on the limitations in the claim, I made the assumption that it had started and had become active. But DOCSIS does provide for a number of ways in which a service flow can become active as described in the DOCSIS specification.
Because I did not perform detailed analysis of it, I can give you an example, but I don't mean it to be comprehensive.
Section 6.3 of the DOCSIS specification talks about MAC management messages, and among the various MAC management messages are service flow additions and changes and deletions. These are explicit commands, that depending upon the command, may be issued by the cable modem or CMTS or both, and they allow you to activate service flows.

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There's also other disclosures elsewhere in DOCSIS that service flows can also be activated as part of the registration or provisioning process, that is, before the cable modem is actually allowed to send traffic. So there are a variety of ways. None of them were germane to any of my analysis.
Q. All right, if you could look at Sen now, and I believe you said earlier today that you have reviewed Sen?
A. Yes, I included it in the '991 declaration.
Q. Would you please look at column 3 of Sen, lines 440 to 42, just one sentence. It says, "A packet channel request message of 30 is sent by the MS26 via a packet common control channel." Do you see that?
A. I do see that.
Q. So what Sen is describing there is it sends packet channel requests through the packet channel control -- packet common control channel, correct?
A. So this section you're pointing me to is, as I understand it, is the prior art message flow operation of what is referred to as the GPRS protocol. So with respect to the prior art operation of -- standard operation of the GPRS protocol, I believe that's the section you just read.
Q. MS stands for mobile station, correct?

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A. That's my understanding, yes.
Q. You said this is the prior art description, the protocol; did Sen use a different protocol?
A. Well, Sen distinguishes between the prior art and the -- its inventive capabilities by showing difference between figure 3 and figure 4 and then the associated text, where it adds the packet standby state, figure 4, that doesn't exist in the prior art.
Q. I'm not sure that answered my question. Does Sen describe a different protocol than the protocol described in the prior art that we just looked at in column 3, lines 40 to 42?
A. So I believe that as far as it goes, this description of the prior art GPRS protocol is incorporated in the Sen's invention. He adds some additional aspects to the protocol, but my understanding is it starts in the same way that -- that there is a packet channel request message sent.
Q. The packet common control channel is how Sen sends mobile station sends packet channel request messages, correct?
A. I lost the last part of your sentence.
Q. The packet common control channel is how Sen's mobile station sends packet channel request messages, correct?

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A. Yes. Sen discloses that the packet channel request message is sent via a packet common control channel. My understanding is that's a channel that's shared with other mobiles. It's common.
Q. Could you please look at column 3, beginning at line 49 and ending at line 55, that sentence.
A. Okay, I see that.
Q. So is that saying that packet channel request messages are sent with contention?
A. Yes, they are sent -- my understanding is -- at least the one that's described here in this situation is sent on a common channel which may or may not succeed. And if it doesn't, that is when it fails to contend for a slot as used here in this column. It then tries again according to this exponential back off algorithm.
Q. And again, this is part of a paragraph that describes figure 2, correct?
A. It's describing figure 2, yes.
Q. I think you said that was prior art?
A. It's identified as prior art, yes.
Q. Does Sen incorporate that aspect of the prior art in its protocol?
A. Yeah, it's my understanding that in the system that is partly revealed by figure 4, you start

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off the same sort of way, you -- it shows that you go from packet idle in both figure 3 and figure 4 to MAC contention. So my understanding is that at least this aspect of them are common to both the Sen improvements as well as the prior art protocol.

Q. Let me hand you what's been marked as Exhibit 1024, the '991 petition. That is a reference known as Rydnell. Do you recall reviewing Rydnell?

A. Yes, I did, in preparation for this deposition today.

Q. Can you summarize why you included Rydnell in your analysis?

A. So as I discuss in my declaration starting on page 99, with respect to the transition from the grant pending absent to an idle state during a timeout, I say that I believe that Sen does disclose this by virtue of their description of release timer, but to the extent there's any ambiguity about whether or not that particular limitation is -- is found to disclose that Rydnell has a more elaborated discussion of what I believe would read on the timeout.

Q. Is that what Rydnell calls the FPM inactivity timer?

A. In paragraph 354 of my declaration, I cite to the T2 FPM inactivity timer. And Rydnell discloses it,

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if it expires you enter a sleep mode, which I believe at least overlaps with the characteristics of the -- it may have other things in it, but it at least includes what the inventor calls the idle mode.

Q. Is it correct that Rydnell's FPM inactivity timer detects any activity between base station and mobile station?

A. Yes, so the trigger as I understand it for the inactivity timer expiring is that the mobile station fails to send a timely sequence of begin frames. So it's again a set of transactions that are occurring in the system between the mobile station and the -- I think they call -- they don't call it the base station. They have MD -- look up the abbreviations, but the MSC -- mobile switching center, I believe.

Let me see. Oh, yeah, here it is.

So with respect to figure 1A, the MS is the mobile station, and the MDBS is the mobile database station.

Q. So using that nomenclature, is it correct that Rydnell's FPM inactivity timer detects any activity between those two components?

A. I believe the only disclosure that I cited to was traffic from the mobile station to the mobile database.

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I did not look for nor do I recall whether or not it's also detecting activity going in the other direction. But the only thing I cited to was the begin frames from the mobile station to the base. It's possible it works the other way as well, but that was not germane to any of my analysis, so I didn't look for that.

Q. Could you please turn to paragraph 216 of your '991 declaration.

A. Okay.

Q. So this is the first paragraph in a section that talks about limitations in claim 1 of the '991 patent, correct?

A. Looking for my '991 patent. Here it is.

So if I understood you properly, you're asking me whether this is the first limitation?

Q. No, I'm not saying that.

A. I misunderstood you.

Q. The section deals with limitations from claim 1 of the '991 patent.

A. Oh, yes. Yeah, I'm sorry.

Q. The limitations are spelled out in heading C, correct?

A. This particular limitation is, yes. This is -- but it's one of them that's in the middle of the

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claim. It's not the first one. Okay, right.

Q. Correct. Okay, so paragraph 216 you say, "Abi-Nassif's transition from active to inactive states corresponds to this limitation." Why do you say that? Actually, let me ask a different question.

Later on in that same sentence you say, "Abi-Nassif's inactive state corresponds to the grant pending absent state limitations." Why do you say that?

A. I'm looking for one of the documents here. Okay.

So referring back to page 19 of my declaration, where the inventor has described the states, let me just summarize my understanding of each of those so I can answer that question.

So grant pending, you're waiting for a bandwidth. The CPE waits for and receives a bandwidth grant to send upstream data and then sends the data. So in grant pending, you have an expectation that the base site controller is going to provide you with a grant, so you're waiting for it.

Grant pending absent state, the CPE is also receiving opportunities to request bandwidth, but the difference is it has no grant pending because you don't have data to send -- well, it has no grant pending

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because the previous data transmission did not include piggybacking, so until the base site asks you, it doesn't have an expectation necessarily that you're going to have data to send, but it's offering you the opportunity. So the difference is in grant pending you have data, in grant pending absent you're being given a request opportunity and you may or may not have data.

Q. You may have answered this question with the statement you just made, but what do you understand happens when a user enters the grant pending absent state?

A. Well, I -- I -- I think I answered that a moment ago, but in paragraph 54 through paragraph 57, the inventor basically describes this. You enter the grant pending absent state, because in your last data transmission that you made to the base site controller from the CPE, you did not provide piggybacking. So at that point you did not signal to the base site controller that you've got more data to send, at least as of the time you send your last data request off.

So then the next thing that happens while you're in the grant pending absent state is, the CPE is sitting there waiting for data, and the BSC as explained in paragraph 55 is periodically, for example, every ten milliseconds, sending a unicast poll to the

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CPE, that is its asking do you have any data yet. And if the CPE at the time it receives that unicast request slot has no data, it will not respond. But if it does, it will use that unicast request slot to request a data grant, a data slot known as a grant, without having the need to go through contention, because it's a unicast slot and therefore it's not -- by definition not a contention slot.

Then after it receives that, it will send the -- it will go to the grant pending state, and when it gets the subsequent grant of a data slot in the grant pending state it will then transfer whatever data it has to the BSC.

Q. What do you understand happens when the Abi-Nassif user enters an inactive state?

A. So Abi-Nassif in inactive can transition out of the inactive state through any one of two means as described. It can provide a contention request if are no -- no expectation that it's going to be -- receive unicast grants, or it can provide a noncontention request if it's a -- has an expectation that it's going to receive some unicast grants, and it allows either. There's...

Q. So how does that correlate to the grant pending absent state in the patents?

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A. Because it's -- it has the ability to receive just like the grant pending state, it has the ability to make request in a noncontention mode, as shown -- well, as described in the text, but you know, as shown concisely in figure 9, where the noncontention request can be made while in an inactive state.

Q. That's figure 9 of the Abi-Nassif patent?

A. Correct.

Q. Could you please turn to paragraph 222 of your '991 declaration.

A. Okay.

Q. Now, there you talk about the limitation of the patent transmitting a first type bandwidth request to the BSC without entering into contention. Do you see that?

A. I see that.

Q. In what state is the first type bandwidth request transmitted in Abi-Nassif?

A. So I think this is the same thing we were just talking about. The MAC user receives data to be transmitted and you transition into the active state without -- upon receiving contention for the opportunity to do the request. So the transitions that are shown in figure 9 of Abi-Nassif that are noncontention that would correspond to that would be

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from the inactive to the active state. And the disclosures that I cited to in Abi-Nassif 23, 1 to 5, explain that this is the situation where you're not required to contend for upstream bandwidth. That is, you're expecting or you're receiving unicast polling just like that limitation is described here in top of page 69, without entering into contention.

Q. So if I understood what you said, Abi-Nassif describes transmitting the first type bandwidth request from the active state to the inactive state; is that correct?

A. I think you identified the two states, but I'm not sure that I understood or I agree with your direction. So let me say what my understanding is. That while you're in inactive state, the characteristic of the inactive state, where one possibility of the inactive state is that you can be receiving unicast grants, and that is grants to make requests which are not in contention. And during that operation of the system, where those unicast grants are being given, you're in the inactive state.

And in that state when you receive that noncontention request, you can transmit this first type bandwidth request without entering into contention as disclosed in page 23, 1 through 5.

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BY MR. SLOSS:
Q. Is the unicast request the same as the first type bandwidth request?
A. There really are a couple different things here that are terms being used, and I think you put two of them together that I don't believe I've used.
There's unicast polling, which represents an opportunity, a transmission opportunity granted by the BSC to the CPE to make a request. So the first type request is transmitted from the CPE to the BSC. It's transmitted as a result of a unicast poll. It's not a unicast request. It's a transmission of a first type bandwidth request without entering the contention.
Q. And that request is received while in what state?
A. The request is made while you're in the -- well, the request is received by the BSC when the system is in the inactive state. I'm sorry. I said that wrong.
The unicast poll is received by the CPE while the system is in the inactive state. The request is then made, and when the noncontention request is made, after the handshaking that occurs, you then move into the active state.
Q. You would agree with me, would you not, that

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in claim 1 of the '991 patent, the first -- strike that.
You would agree the '991 patent claim 1, that the first type bandwidth request is received while in the grant pending absent state, correct? And I'll refer you to column 12, lines 15 through 19 of the patent.
A. You're referring me to a portion of claim 1; is that correct?
Q. Yes.
A. Okay, starting at line 15?
Q. Yes.
A. So my understanding of that is that when the CPE is in the grant pending absent state, it is in the grant pending absent state and it may or may not have data, but the claim term goes on to say that when the CPE does receive data, then it transmits its first type bandwidth request from the CPE to the BSC, where -- well, that's the end of that claim limitation. So the arrival of data while you're in the grant pending absent state will result in you transmitting the first type bandwidth request to the BSC.
Now, when I read that claim element in the context of the disclosures of the specification, I understand that to be, you know, in response to a

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unicast poll, would be the -- reading that in the light of the specification, the embodiment that's described there.
Q. Is it your opinion that unicast polling teaches without entering contention?
A. I believe that's the way it's I think consistently used in the patents and in the references, I think so.
Q. How does the teaching of unicast polling extend to teaching the grant pending absent state?
A. Well, it's -- I don't believe it's in this claim limitation, but -- so referring back to the patent specification and the inventor's description of grant pending absent, it characterizes it as -- in paragraph 55 of my report as the BSC periodically polls the CPE with unicast request slots. So the inventor, in describing what he means by grant pending absent, ties it to unicast request slots. And he makes clear, continuing in paragraph 55, that on page 20, without going through contention.
Q. So where is the grant pending absent state in Abi-Nassif?
A. So, again as I mentioned I think a couple of times, the detailed description of how Abi-Nassif functions is described in a -- is summarized to some

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extent in figure 9, but more fully described in the cites. But in the situation in figure 9 where you're in the inactive state, and during those times when you are given the ability to make noncontention requests, that situation would characterize -- would be the characteristics associated with the grant pending absent state.
You're being given noncontention request opportunities. That seems to be the essential -- noncontention request opportunities without having to explicitly ask for them, they are continuing to come to you.
Q. Please turn to paragraph 234 of your declaration.
A. Okay. I'm there.
Q. Now, are you saying there that Abi-Nassif states that the request to receive data occurs in the active state after the transition from the inactive state to the active state?
A. So I took a moment just to refer back to see where we were in my declaration, and I'm sorry, I lost track of your question.
MR. SLOSS: Would you read it back, please.
(Record read by the reporter.)
A. I'm sorry, I still didn't get the question.

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I missed a word.
(Record read by the reporter.)
A. So as I understand what Abi-Nassif teaches, that after you receive the contention-free opportunity to make the request, as I say here in paragraph 234, there are a number of things that happen.
You request the bandwidth, receive the grant, transmit the information, then you transition from the inactive state to the active state, where you're now waiting for the actual grant for data, and then you send the data up. So your transition is from inactive to active as a result of receiving the contention-free opportunity and making that request.
BY MR. SLOSS:
Q. And the request is the request to receive data, correct?
A. Not the request to receive data. The request for bandwidth. You make a request from the CPE to the BSC for a data grant, for a transmission opportunity, for the right to be able to send the data up in a noncontention mode. That's what the request is, a request for a data grant, also called a request for the bandwidth. They are intended to mean the same thing.
Q. Okay. So the request for bandwidth in Abi-Nassif occurs in the active state?

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A. The opportunity to make the request occurs by receiving a unicast poll while you're inactive, but once you transmit, once you take advantage of that unicast poll transmission opportunity, and you make the request, my understanding is you then transition to active mode.
Q. When does this step occur in the '991 patent?
A. I'm sorry, I was looking at the wrong part of the claim. So we are dealing with item E at the top of 73?
Q. Right. Maybe look at column 12, line 20.
A. All right. Okay, so the claim term reads you transition from grant pending absent to grant pending after you receive a bandwidth grant. So it's my understanding of how bandwidth grant is used here in the patent is you previously had a bandwidth request opportunity, which was in the previous limitation. You took advantage of that request opportunity to tell the BSC that you actually do have data now, and the CPE in a subsequent transmission from the BSC actually receives a grant that is a permission or an opportunity offered by the BSC for the CPE to send its -- the data that's pending, upstream from the CPE to the BSC.
Q. In what state?
A. Well, you're starting in this claim

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limitation of grant pending absent to grant pending. You're going from absent -- grant pending absent to grant pending.
When the bandwidth grant that was resulting from the request that was made, the response to the unicast poll, bandwidth request that was made that's described in the first type bandwidth request in the previous limitation, you're taking advantage of that unicast polling opportunity, sending a bandwidth request, and then when the BSC in this limitation we are talking about subsequently provides a bandwidth grant in responding to that request, this claim says you then transition from grant pending absent to grant pending.
Q. All right. Could you please turn to paragraph 237 of your declaration.
A. Okay.
Q. All right. In that, you state that Abi-Nassif does not explicitly describe transitioning to an idle state that is separate from Abi-Nassif's inactive state, correct?
A. You read it correctly.
Q. Did I misstate it?
A. Well, no. I think you didn't misstate it, but I don't think there should be any implication that

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because the word explicitly appears there, that I don't find that Abi-Nassif also discloses that. It happens not to be something that's explicit in these figures.
But the very fact that while you're inactive you can be making these contention requests or noncontention requests tells me that there is functionality in Abi-Nassif that includes times when you may not be expecting to get unicast requests. You may not be expecting to get unicast polls giving you opportunity to make bandwidth requests. So I think Abi-Nassif tends to collapse two of the states into the bubble called inactive, because again, this is -- Abi-Nassif is not supposed to -- is not trying to unambiguously describe the entire protocol. But since it incorporates DOCSIS 1.0 which does include all these same things here in DOCSIS 1.1, I would say it's not explicit, but I still think it's disclosed.
Q. And in what states are collapsed into the Abi-Nassif inactive state?
A. So it would be the grant pending absent and idle, would be the characteristics that the inventor describes of those two states, are also functionality that is occurring while Abi-Nassif, it says here in the inactive mode.
Q. Can you please look at figure K-1 from

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DOCSIS, page 299 of 332.
A. Okay, I'm there.
Q. Figure K-1 shows the CM transitioning from grant pending state to idle state when it no longer has data to transmit, correct?
A. Well, it shows -- it shows three possible triggers, one of which is the last data upload did not include piggyback. So that would be a situation where at least at the time the last data was being uploaded from the CPE to BSC, there was no piggyback request.
Q. So there's no data to transmit?
A. There was no data at that particular time, but it also shows some other conditions, it says.
Q. Looking at that particular instance where it shows it has no data train to transmit, how is that the same as transitioning to an idle state if the CPE does not transmit any first type bandwidth request to the BSC during the timeout period?
A. I'm sorry, I didn't understand the question.
Q. Okay. So if figure K-1 of DOCSIS 1.1 shows that there is a situation where the CM transitions from grant pending state to idle state when it no longer has data to transmit, is that comparable -- strike that.
Is that -- there's nothing in the patent that describes that particular transaction, correct?

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MR. CANGRO: Objection to form.
A. So I think as I mentioned several times, I did not rely upon appendix K-1 to support all my analysis, and appendix K-1 as I've noted has a disclaimer that says that its feature is to simplify and summarize the transmission and contention resolution. So there's nothing that I looked at with respect to those detailed transitions.
I referred to appendix K-1 solely to indicate that there are overlaps between the actual names of the modes that exist in the patent and in DOCSIS 1.1, and that at least some of the characteristics are similar. But my analysis focused on the detail disclosures which are in DOCSIS 1.1, which appendix K deliberately goes out of the way to say it's not attempting to be comprehensive.
BY MR. SLOSS:
Q. What detailed disclosures were you looking at in DOCSIS 1.1?
A. I have multiple cites.
Q. You cited 8.2.2, correct?
A. I would need to look, but you know, I had multiple cites to the DOCSIS which include cites to description of the MAC protocol. I have cites to the quality of service, service flows, and I have cites to

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some material in the appendix C with respect to timing. So there are multiple cites that I have to DOCSIS 1.1, which I think are all material to understanding that it does read on these two patents.
Q. All right. Can you look at C.2.5.7, please?
A. Page?
Q. 251 of 332.
A. Okay.
Q. And we looked at this earlier. This is the section that talks about timeout for active QoS parameters, correct?
A. Correct.
Q. Does section C.2.5.7 describe a timeout of an active service flow of an entire service flow?
A. So it describes the timeout for a -- one of many possible active service flows, but for each service flow you can set such a timer.
In the example that I gave in my declaration, which I think is representative of typical and normal operation of the system, when the nonrealtime polling service is active, my analysis that I provided with respect to this timeout was with respect to the termination of the nonrealtime polling service.
Q. So it does not describe a timeout of the grant pending absent state of an active flow, correct?

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A. Well, DOCSIS 1.1 does not use the term grant pending active state. I'm sorry, you said grant pending absent?
Q. Yes.
A. Yeah, DOCSIS 1.1 does not use the term grant pending absent, but it does describe the operation of the DOCSIS system in a manner consistent with how the inventor uses the term grant pending absent.
Q. Where does it describe the timeout of the grant pending absent state of an active flow?
A. Well, I think I said that. So, you know, there may be multiple places where I ended up describing what DOCSIS 1.1 is doing, but I'm looking at page 73 of my declaration for the '991 where, again, I'm referring to the -- this timeout for active parameters.
Q. What paragraph?
A. Okay, starting paragraph 238 on page 73. And then the description of this particular timeout occurs through paragraph 245, and there is a variety of discussion and analysis there.
But the basic idea here is the -- for example, the nonrealtime polling service now being active while you're in that mode, would be expressing functionality of the patent's use of grant pending

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absent. That is, it's regularly receiving unicast opportunities as the inventor has described grant pending absent. And it may or may not have a -- in response to these transmission opportunities to request a grant, it may or may not have data, and if it doesn't have data, if it doesn't respond to these requests to use these opportunities to request grants for a period of time as configured by the timeout, then the service will be deemed inactive as paragraph 241 says. And once it's inactive, it can no longer send packets, and that would correspond I believe to the idle state, the way the inventor has described it. At that point that service flow is terminated and it can't use that service flow anymore for sending packets.

Q. Can you please look at paragraph 244 on page 74?

A. Yeah.

Q. You say, "By becoming inactive the DOCSIS 1.1 service flow is put into an idle state." What is the basis for your statement that an inactive service flow equates to being put into an idle state?

A. DOCSIS 1.1 teaches that you must have a primary service flow, and that there must be at least one service flow which is active at all times. You can't have a situation where there are no service

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flows.

Furthermore, it indicates that the default for the termination of a service flow or the failure to define a specific one, the default is best efforts. In page 252 of 332 of the DOCSIS specification, there is a section C2.2.6.2 that shows service flow scheduling type, and it indicates that if there is not a specific service flow which is scheduled, then the best effort service flow must be assumed.

So best effort service flow is defined by DOCSIS as being in a situation where you're not expecting to get unicast polling, instead you have to use contention in order to exit that mode, which would again generally correspond to the way idle is used in the patents.

I think DOCSIS has got a lot of information in different places, but they're my authority for having to have at least one service flow active at all times is also in another section of DOCSIS.

Q. So it's your understanding that there can never be a situation under DOCSIS where a service flow would have no activity?

A. I'm not sure I said that. I think what I'm saying is, there can never be a situation in DOCSIS where there's not at least one active service flow. It

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could be once the nonrealtime polling service is terminated, there has to be at least one other service flow running, and in the scenario I described which is quite typical, when the nonrealtime polling service is finished, that is when the FTP file, the typical application as described in DOCSIS is complete, satisfied, it's sent up all its information, the timeout timer would expire, the activity timer would expire, the service flow would be terminated, and the cable modem would be equivalent to the idle mode as described in the patents by entering the default best efforts service flow.

Q. Can you please look at K-1 again?

A. I'm there.

Q. It's shown in figure K-1, idle is the only state where there's no activity on the service flow, correct?

A. Appendix K and K-1 are operations of -- some detailed operations of aspects of the MAC layer, which are silent about anything to do with the service flow. There's no attempt, as I understand it, in any aspect of figure K-1 that has any particular coupling or citation or mention to the service flow.

The MAC layer operation at this layer is describing operations of the MAC layer which the

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service flow may exercise, but these transmission contention resolution aspects described here in K-1 are not with respect to any one particular service flow or any service flow.

Q. You don't believe it would be fair to say that no activity on the service flow would occur in either the grant pending or deferring states?

A. Not -- to me your question is kind of asking me to compare apples and oranges. They are two different things. This is a -- a lower level protocol operation of transmission and contention resolution which service flows may interact with, but there's no particular service flow that's invoked here.

Moreover, I didn't attempt to take every service flow that's defined in DOCSIS and have it read on the claim limitations. I picked two to talk about, the realtime polling and nonrealtime polling, which are well defined service flows in DOCSIS, which I believe express, taken together with the other aspect of DOCSIS, I believe pretty well express all the claim limitations.

Q. Would you agree that timeout of the service flow would not cause a transition to the idle state, but would end the service flow?

A. The timeout of the service flow activity

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timer would, to the extent it's been defined, which they usually are, would end that specific service flow, and at that point either another service flow that's already running, which you can have multiple ones running together, or if there was no other service flow running it would default back down to best efforts.

The DOCSIS specification is silent about which is the prescribed way to operate, but at least one of the possibilities that I know to be common is that the cable modem wakes up when it's first initialized in the best efforts mode, and then various other service flows are initiated, including nonrealtime polling service, and then they end and then you revert back to best efforts. And my understanding is informed not just by experience, but also by necessity, because DOCSIS 1.0, which needs to be supported -- DOCSIS 1.0 modems need to be supported in 1.1 systems are only capable of best effort service flows.

So the combination of my understanding of what is typical in how DOCSIS is applied, together with the necessity of supporting backward compatibility of older 1.0 cable modems, informs me that when the example I've given in the near time polling service is terminated, that you revert to best efforts, whose

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characteristics would correspond to idle as used in the patent.

Q. Could you look at paragraph 240 of your declaration, please.

A. 240.

Q. You use the term in quotes there, "not transmitting state." Do you see that?

A. Yes.

Q. Is that your term?

A. I don't remember, but I will look.

Q. Well, you don't cite any DOCSIS --

A. I may not have cited to it, but I was talking about appendix C2.5.7 and that may have been where --

Q. You're looking at C.2.5.7 which is page 251 of 332?

A. Thank you.

No, it doesn't appear there. So as I sit here, I don't recall whether I was actually -- I don't know why I put quotes around it. It may be a term that may exist in DOCSIS. It's just as I sit here, I don't remember.

Q. So the statement that you have in paragraph 240, it's your understanding that that statement is supported by section C.2.5.7 of DOCSIS?

A. No, I was not able to find those words.

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Q. I'm sorry. I mean, beyond the quote itself, the statement that you make in the paragraph.

A. Well, I think it's -- I believe it's relevant to the timeout, in that the whole -- this entire section dealing with item F173 that is transitioning to an idle state, but doesn't respond during a timeout period, this whole section is bringing in the disclosures, and the appendix C2257 which is looking for data being sent. And so if you don't respond to the request, as I'm saying in 240, then you don't have data to send. And as 241 indicates, if you continue doing that for some period of time, the timer activity will expire and the service will be inactive.

Q. So 245 is also a reference -- you don't have a reference to C.2.5.7, but that is what you're -- that section of DOCSIS is what you're using to support what you say in 245?

A. Yeah. So it's drawing the -- it's saying that if you have the timeout, then you have an inactive service flow, and you -- when you have an inactive service flow you can't -- you can't use the service flow anymore.

Q. Okay. Can you turn to page 84 of your declaration, still looking at the 291 declaration. '991 declaration.

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MR. CANGRO: It's been a little over an hour, would this be a good time to break?

MR. SLOSS: Maybe five more minutes. Yeah, I'm aware we are due for a break.

A. Page 84?

BY MR. SLOSS:

Q. Yeah, paragraph 291. You use the phrase, you say, "this limitation also reads on DOCSIS 1.1." What do you mean by "reads on"?

A. I may be using the term in a way that's not consistent with my nonlegal training, but what I was attempting to say here is that the limitation which is expressed above is disclosed in the DOCSIS 1.1 prior art with respect to the nonrealtime service flow.

Q. So you're not saying that the service flow is the same as state, are you?

A. No. I'm saying that my analysis of DOCSIS 1.1, which included functionality, which is described by the service flow, together with other aspects of the MAC layer, I believe discloses the -- its prior art that discloses this particular claim limitation.

Q. Where in DOCSIS 1.1 does it describe the equivalent of a grant pending absent state?

A. Well, oh, my goodness. I thought we have already discussed this.

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Q. If we have, just remind me where we discussed it and I'll move on. I don't need a detailed explanation if you've already given one.
A. Okay, so --
Q. I'm really trying not to go back over old ground. I just want to make sure that I've asked that.
A. So to be clear, page 19 of my declaration, I pull some cites from the patent where the inventor describes the grant pending absent state, and there are a variety of things that are indicated here, but it's saying you got there because you didn't have piggybacking, and then paragraph 55 of my declaration says that you're waiting for data, you periodically poll the CPE and unicast request slot.
Continuing on page 30, the CPE can use this slot to request a data slot without going through contention. So while you're in the nonrealtime polling service, as I believe we discussed earlier, you're basically doing that.
If you like, I'll turn to the description of nonrealtime polling service and I will show you where it says that.
Q. No, I think we have gone over that. Paragraph 292, is that information taken from section 8.2.4 of DOCSIS 1.1?

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A. It was from the part of DOCSIS that described the nonrealtime polling service, which --
Q. I believe that's 8.2.4 on page 149.
A. Yes. So the paragraph 292 of my declaration, where it starts off by "the high bandwidth FTP example provided by DOCSIS 1.1," that is referring to that paragraph 8.2.4 where it mentions such as high bandwidth FTP, yes.
Q. And is the high bandwidth FTP example provided by DOCSIS 1.1 that you cite there, that example does not say that the CM can have an empty buffer and receive a unicast poll while in the grant pending state, correct?
A. At least in the section we are looking at here of 8.2.4, it does not describe -- it doesn't explicitly state that there's a possibility the buffer could be empty.
Q. Okay.
A. But the section in appendix C that we were talking about earlier, where there is a timer activity -- an active -- an active timer that can be set, it makes it clear that there are possibilities where a -- any service, such as the nonrealtime polling service, may not respond to these requests which would be an indication of an empty buffer.

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So I would say DOCSIS taken as a whole, this 8.2.4, together with my citations to the appendix C activity timer, would -- would -- would inform one of ordinary skill that it is a possibility that you could have an empty buffer.
Q. Paragraph 293, is that taken from DOCSIS? You don't cite anything, that's why I ask.
A. No. That's my own commentary.
Q. All right.
A. Based on experience.
Q. Okay. Looking at paragraph 297, and again, this is still talking about DOCSIS 1.1, correct?
A. Okay, yeah, different claim limitations, but yes.
Q. We are talking about -- is this still DOCSIS 8.2.4?
A. Okay, yeah, so it's -- it's -- it's invoking aspects of the nonrealtime polling service flow.
Q. Yeah, that's in 8.2.4, correct?
A. Yes, that's correct, at least in one place.
Q. Okay. What state is the NRTPS service flow in as the CM is polled?
A. I wouldn't characterize the service flow as something that has states. The system has states. The service flow is a set of quality of service features,

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which are being mindful of, as the -- as the system transitions from one state to another. So I don't think I can answer your question as it was asked.
Q. Can you tell my what state the -- well, for the activity -- strike that. Let me reword it.
For the activities described in paragraph 297, can you tell me what state those activities occur in?
A. Well, so this paragraph 297 is with respect to the claim limitations right above it. So it's -- the claim limitation says you're operating in the grant pending absent state, awaiting arrival of data, and you transmit a first type bandwidth request without entering contention when the CPE receives data for transmission.
Q. I understand what the claim says, but paragraph 297 is talking about reading on DOCSIS, correct?
A. Well, it's in a -- I guess let me -- if it's not clear how it's worded here, what I'm trying to say is if you look at the operation of the nonrealtime polling service flow, it's performing functionality that discloses the claim limitation up above, when you're operating in the grant pending absent state.
Q. So for paragraph 298, while the service flow

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is awaiting arrival data for transmission to the CMTS, is it in a particular state?
A. This entire section starting 297 is with respect to the claim limitation that it's in the grant pending absent state.
Q. But is there a state within DOCSIS that these activities are occurring in? Let me put it this way.
Is there a state described by DOCSIS, as in DOCSIS, where these activities are occurring within DOCSIS?
A. Yeah, so within the nonrealtime polling service, as DOCSIS describes a nonrealtime polling service, you are awaiting arrival of data for transmission to the BSC, and when you get a unicast poll opportunity that is coming to you, you have the ability to transmit a first type bandwidth request without entering a contention. So the claim limitation talks about without entering contention that the way you can send a first type bandwidth request without entering contention is by receiving a unicast request opportunity, all which comports with how the inventor describes the grant pending absent state that we have talked about.
Q. But how are these activities that are described here in paragraphs 297, 298 and 299, how are

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they being described by DOCSIS as being in any particular state?
A. Well, I don't believe in the description of the nonrealtime polling service or the -- or my citations, I was referring to anytime DOCSIS calls it a state.
DOCSIS describes the -- my citations describe certain functions and operations, sequence of operations within DOCSIS that correspond to the functions and sequence of operations that the inventor calls a state. DOCSIS doesn't have an obligation to use that terminology in order to disclose the limitations of the claim.
Q. No, I understand, but I mean DOCSIS does disclose states and transitions from states, correct?
A. It does have an appendix K that we have talked about, that in that particular instance with respect to making clear how the operation of the contention in transmission systems work, it finds that particular construct of that state diagram to be helpful.
I think the plain language of the operation of the nonrealtime polling service is so clear and concise and understood that the authors of DOCSIS 1.1 didn't feel compelled, even though they could have, to

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use a state diagram to express how it works. But nonetheless, taking the inventor's own description of what that state means, against what DOCSIS discloses, I am able to find that I believe it does disclose those limitations.
MR. CANGRO: We are at about an hour and a half now.
MR. SLOSS: Yeah, let's take a break. Ten minutes.
(Whereupon, a recess was taken.)
BY MR. SLOSS:
Q. Can you please look at Abi-Nassif which is Exhibit 1022. That one, yes. Look at figure 9, which is on the back.
A. Okay.
Q. What state, looking at figure 9, what state is the MAC user in when transmitting its contention request?
A. The figure shows that you're in the inactive -- as defined by Abi-Nassif, what he calls the inactive state.
Q. Could he also be in the contention state?
A. Well, I want to make sure I heard your question correctly. What state are they in when the contention request is issued; is that what the question

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was?
Q. Yes.
A. Okay.
Q. Well, the way I worded it, what state is it in when the MAC user is transmitting a contention request?
A. Okay. So my understanding is, is that from the inactive state, you transmit a contention request, and you enter the way -- the way they describe it, you enter the contention state, and while in the contention state, the request can be either denied or accepted. If the request is denied, you return to the inactive state. If it's accepted, you leave the contention state and you enter the active state.
So there's somewhat of a violation of the normal understanding I think one would apply to a state, as it not being transitory, but something static that you can remain in for some time. But the way he's described it, as that while you're in what he's calling the inactive state, you can -- you can make a contention request, entering the contention state, and then immediately either go back to inactive or leave it and go to active, since he doesn't show the -- any additional detail at this level of -- this high level state diagram.

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Q. Could you pull out your declaration for the '256 patent, please.
A. Sure.
Q. And if you'll turn to page 69, please.
A. Okay.
Q. Looking at paragraph 195.
A. I see that, yes.
Q. Okay, there's a phrase in the middle of the paragraph that says, "the maximum duration that resources remain unused." What do you mean by "resources"?
A. So I was citing to the way resources are described in appendix C.2.2.5.7.
Q. What do you understand it to mean as you interpret it?
A. So my understanding is resources are referring to the bandwidth on the system, which is precious. That is, it -- it's sections of the total bandwidth that are available, that can either be reserved or assigned to a particular user, or it can be shared among different users, but it's typically a scarce resource, where during busy times of the day the amount of traffic on it may exceed the capacity that it's able to cover, the capacity it can provide to cover the traffic that's being offered it to it. So

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the efficient operation of the system, and indeed the goal of I think all the patents and the references we have been using, is to find ways to most efficiently use that transmission resource.
Q. I think you're actually answering a question I didn't ask.
What is the transmission resource, not necessarily how it's maximized or anything, but what is the resource?
A. Oh, the resource is portions of the transmission bandwidth that are assigned to, or somehow earmarked for one use versus another. And in the case of these references, transmission resource varies a bit, but --
Q. I was just interested in what the resource meant. I think you've answered that.
A. It's a portion of the transmission bandwidth.
Q. And the same section also talks about -- uses the word activity, says that there's no activity on the service flow. What do you understand activity to mean?
A. What are you pointing me to?
Q. Section C.2.2.5.7, second line.
A. Okay, the actual specific nature of the activity could vary for different types of service flows, but for the example polling service, nonrealtime

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and realtime that we have been talking about, the activity would be communications from -- between the CMTS and the and the cable modem.
Q. How is inactivity as described in that section detected?
A. So in the case of the example nonrealtime service flow, this would be when you're in the situation that you're receiving regular opportunities, unicast opportunities to request bandwidth, one form of inactive would be that even though you're given that opportunity to request bandwidth, you don't use that opportunity. That is, you don't request the actual bandwidth. So it would be one example of inactivity that would trigger this timeout for activity QoS parameters.
Q. Is that detected by the cable modem or the cable modem terminal station?
A. Well, my understanding of this disclosure is that it's a joint enterprise between the CM and the CMTS. The CM is responding or not responding to the opportunities, and the CMTS is measuring the time interval between the last response and the previous one, and it -- after that timeout timer expires, this particular appendix cite that we have been looking at, 2.2.5.7., says the CMTS will inform the CM that its

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terminating the service flow by signaling the resource change.
So the patent talks about the states of the system, not the states of any one network element, but with respect to how this functionality of timeout, I understand it to be a set of transactions and cooperation that occurs at both the CM and the CMTS.
Q. Looking at that section C.2.2.5.7, again, it says, "If there is no activity on the service flow within this time interval, the CMTS must change the active and admitted QoS parameter sets to null." Do you agree with that statement?
A. I agree you read it correctly, and it's my understanding that that's how it's intended to work.
Q. All right. So service flows with a null QoS parameter sets are terminated, not idle, correct?
A. The service flow, the particular active service flow at the time, in the example that I cite, the nonrealtime polling service flow would be deactivated, but there would be -- you would fall back to another service flow because the DOCSIS specification requires that there always be a primary active service flow.
And as I indicated before on the next page, page 346 of the DOCSIS spec, there's C.2.6.2 that makes

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it clear that the best efforts service flow would be the default one that you would fall back on.
Q. Right, but the service flow that receives the null -- that has a null QoS parameter, that service flow is terminated, correct?
A. The active service flow that times out would be terminated.
Q. Once it's terminated it would no longer be able to send packets, correct?
A. The cable modem would be able to send packets using the service flow it would default to, but it wouldn't send them under that service flow.
By the way, I should point out that the service flow is supporting an application such as FTP, and there are situations where the service flow may be activated for an FTP transfer. For a variety of reasons, the FTP transfer service might be interrupted automatically or manually by the end user. The service flow can terminate, but the FTP transaction could continue after the service flow terminates using one of the other service flows, so the service flow may terminate, but the application and the transmission of bits may not.
Q. You would agree, would you not, that if we are trying to combine two references to invalidate a

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patent and neither of the two references has a claim element, the same claim element, they are missing the same claim element, the combination of the two references will not supply the missing element?
MR. CANGRO: Objection to form.
A. Sorry, I heard your words, but it might be helpful if you would either rephrase that or explain what you're asking. I'm not sure I fully understood what you were asking.
BY MR. SLOSS:
Q. Part of your opinion is that combination of, for example, Abi-Nassif and DOCSIS 1.1, render the claims of these two patents invalid, correct?
A. Yes, that's at least one of the grounds.
Q. Correct. And so my questions without focusing on any particular reference, just as a matter of obviousness, as you understand it, if you have two references, each -- both references are missing the same element of the claimed patent.
A. I see, okay.
Q. And you combine those two references, the combination of the two references that don't have the same element will not result in a combination that provides all of the elements of the patent, correct?
A. Okay.

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MR. CANGRO: Objection to form.
A. I think I understand your question now. So if you're saying that -- and just to be clear, allow me to paraphrase it.
You're saying if even after combining two references I'm still missing a particular limitation, I can't find a limitation disclosed, then I would agree that -- unless -- well, let me -- let me be clear, because I think there were instances where I talked about admitted prior art, and also what would be obvious to one of ordinary skill.
I think if the missing element was admitted prior art, even though it might not exist in either of the two references, or if the missing element were something that would be obvious to one of ordinary skill, then I don't know that it needs to be explicitly disclosed. But in the absence of those two, at least those two situations, I think you would need -- you need to find all the limitations one way or the other.
BY MR. SLOSS:
Q. Could you please get the '256 declaration.
A. I have it, yes.
Q. Okay. And I want to ask, turn to page 70, please. I want to first ask you about heading number 2?

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A. Okay.
Q. It says, "Exemplary motivations to combine." Do you see that?
A. Yes, I see that.
Q. Why do you use the word "exemplary" there?
A. I believe that I was trying to say that there may be -- may be other reasons that in addition to the ones that I've cited, so these would be I think good examples. I believe I put enough in there that was sufficient to satisfy the threshold of what would be reasonable to combine, but you know, there may be other things.
Q. Would it be fair to say that any other motivations were not important enough for you to include?
A. No, I don't think so. I don't know that I would agree to that, because I think the -- as I understand it, this motivation to combine is not so much a litmus test as it is kind of a more subjective preponderance of reasons where the combination of a number of things would support the obvious -- obviousness of combining them.
Q. Are you planning on putting forth reasons that are not stated here in addition for motivations to combine?

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A. I have not been asked to do so beyond anything that is in this report at the moment.
Q. How did you come up with the motivations to combine what you describe here?
A. Well, I did have some discussions with the attorneys about what is, you know, recognized, you know, by the courts as being reasons. I don't know whether I've actually stated them here in the report. So I want to take a look, but I do recall having that conversation, then using those criteria.
I don't know that I've explicitly stated the -- what I think are the well-known or commonly recognized criteria for motivation to combine, but you know, as I understand at least some of them that were explained to me, and I may be missing some, that your one issue would be points of similarity, that they are in the same general field of endeavor, that they are both attempting to address some of the same objectives or problems, that adding one of the references to the other overcomes a deficiency, or improves in some way the operation of the other reference. That there may be a teaching in one of the references that -- it says it would be a good idea to use it in the other. These are at least some of the things that I know I had been told to consider in supporting the motivations to

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combine.
Q. Can you please get out the '991 declaration?
A. Which one?
Q. The '991 declaration.
A. Oh, okay. I'm looking at the '256.
Q. And turn to page 71.
A. Okay.
Q. Looking there at heading 2, you talk about motivation to combine. Do you see that?
A. I see that.
Q. Now, I note that you don't say exemplary motivations to combine, or use the word exemplary like you did with the '256 declaration. Is there a reason for that or is that just the way it came out?
A. I don't recall there being any difference in my intent here.
Q. Okay. Looking at paragraph 228, page 71 of the '991 declaration, you say at the end of the sentence, "Including teaching suggestions and motivations in DOCSIS 1.1 itself." What are you referring to there?
A. Well, I start out here with a number of reasons, but Abi-Nassif incorporates by reference DOCSIS 1.0.
Q. Sir, I think you're looking at the next

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paragraph. I'm looking at paragraph 228?
A. Yeah, no, I'm -- I'm -- I believe I'm addressing paragraph 228. I think what I'm saying is that DOCSIS 1.1 is explicit, that it's including the MAC layer capabilities that are incorporated by reference in Abi-Nassif. So by DOCSIS 1.1 indicating that it has DOCSIS 1.0 capabilities and Abi-Nassif saying it has 1.0 capabilities, but at that point was unaware of the increased functionality that's described in 1.1, the very fact that DOCSIS 1.1 mentions it has 1.0 capabilities would be the motivation within DOCSIS 1.1 to combine it into Abi-Nassif, because it would bring these new capabilities into Abi-Nassif, and Abi-Nassif has 1.0 in it already. So combining the two would make sense.
Q. Looking at paragraph 231, how would the fact that if a person of skill in the art would recognize that DOCSIS 1.1 was meant to provide enhanced QoS features lead the person skilled in the art to combine the two references?
A. So Abi-Nassif describes with less detail than DOCSIS 1.1, and without the specific identification of service flows such as nonrealtime polling service, it does provide for the increase of the overall quality of service, because by reducing the number of contention

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slots and having more reservation slots, it is dealing with the basic problem of the allocation of bandwidth which affects the quality of service.
DOCSIS 1.1 has fairly elaborate support for enhanced QoS features and that's in an entire chapter, chapter 8, which includes the example nonrealtime polling service that is not identified as such nor detailed as much in Abi-Nassif. So what I'm saying here is that all the chapter 8 stuff, which overlaps with Abi-Nassif, but goes above and beyond it, would be something that one might think about bringing into Abi-Nassif in order to provide enhanced features and functions.
Q. Could you look at paragraph 232, please.
A. Yes.
Q. In the latter part of this paragraph, you say, "The provision of services requiring higher QoS, such as high bandwidth FTP, VoIP and MPEG video, as these polling service flows were known techniques that could be applied to similar devices or devices ready for improvement." What is the basis for that statement?
A. I think it's -- may be a little bit more detail on what I just explained with respect to the preceding paragraph. But Abi-Nassif is dealing with

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some of the QoS and efficient user resource features that I talked about. But it doesn't specifically talk about some of the applications that are identified in DOCSIS, and some of the service flows which DOCSIS specifically created to deal with things like high bandwidth FTP and POIP and streaming services such as video, so there is an understanding that provided -- there was an understanding in Abi-Nassif that QoS is important, that -- but a lack of detail as to what -- what might be required that would be specific to the difference between high bandwidth FTP and voice over IP. These, on the other hand, were revealed in DOCSIS 1.1, so putting them into Abi-Nassif would make Abi-Nassif an improved system.

Q. Can you please turn to page 75 of the '991 declaration.

A. Okay.

Q. Paragraph 250 states, "One of ordinary skill in the art would have been motivated to modify Abi-Nassif in this manner to increase the efficient utilization of bandwidth." What support do you have for that statement?

A. Let me -- so I believe that this paragraph you asked me to respond to, 250, is following on from 249, where I'm saying the modification to Abi-Nassif

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would be to use the improved and additional features of DOCSIS 1.1 polling service flows, for example, to improve DOCSIS 1.0.

So my basis for this is Abi-Nassif discloses DOCSIS 1.0, which at the time was prior art to Abi-Nassif, but was unaware of some of the features that were soon to be released in DOCSIS 1.1. Because the goal of Abi-Nassif was to use load estimation as a means for improving the overall quality of service, that's what the patent was about.

There was a recognition of Abi-Nassif that quality of service and improving the user experience, you know, was important. That was part of the reason or objective of the patents.

DOCSIS 1.1 provided an elaborated set of improved and additional features which related to the same sort of objective or goal in improving the efficient use of the system and the quality of service, so combining the two or bringing the DOCSIS 1.1 teachings into Abi-Nassif would improve the overall operation of the Abi-Nassif system.

Q. In paragraph 251, you use the term "backwards compatible."

A. Yes.

Q. We discussed that this morning, and I just

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want to ask if the way you're using backwards compatible -- let me ask this.

What do you mean by backwards compatible as used in paragraph 251?

A. I think -- I think the description I gave this morning would be the same that I would give here, but I might elaborate a little bit.

So I think earlier today I said that one aspect of backwards compatible that was important was that end users who had DOCSIS 1.0 cable modems would find that these would still work, and they wouldn't loss any functionality or capability once the cable operator upgraded the CMTS to DOCSIS 1.1.

Another aspect, though, of the backward compatibility, which results in the DOCSIS 1.0 cable modems continuing to work, is that all of the features and functions of the DOCSIS 1.0 MAC layer continue to be supported, and the CMTS as well. So by virtue of the requirement to support the older DOCSIS 1.0 cable modems, make them backward compatible with the newer 1.1 systems.

You also had a requirement in the CMTS, the CMTS be supporting all the -- the 1.1 CMTS also support all the 1.0 capabilities and features in MAC layer.

Q. Could you get out the '256 declaration,

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please, and turn to page 85. Actually, before we do that, a couple questions.

Is it your understanding that the primary station described in Abi-Nassif corresponds to the DOCSIS cable modem?

A. You're not --

Q. No, I'm not focusing on the declaration right now.

A. Okay.

Q. We will get to that in a minute.

A. So I believe you asked me if the primary station as used in Abi-Nassif corresponds to the cable modem. Is that your question?

Q. Yes.

A. I believe no.

As I understand how primary station is used, it would correspond to the base site controllers used in the patents of the CMTS. Because I'm looking here at Abi-Nassif, at least I think the first use of those terms on page 1 started around 925.

Q. So secondary station in Abi-Nassif corresponds to cable modem?

A. I believe that's the intent. I think the secondary stations are the multipoints as the term is used in the patents, and the primary station is the

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single point in this point to multipoint network, I believe that's correct.
Q. So if a person skilled in the art were to add DOCSIS 1.1's deactivation of service flows to the system described in Abi-Nassif, deactivation would be added to the primary station or the secondary station?
A. So the disclosures in DOCSIS 1.1 relate to the operation of the overall system, and the additions of DOCSIS 1.1 teachings I would say would be equally incorporate -- could be equally incorporated or improve the operation of the Abi-Nassif system.
What you might do during a transition period when you have some mix of different things is not something that I considered, but certainly if you're starting with a green field, this is a document you aren't concerned about supporting the older devices that are on there, taking what DOCSIS 1.1 teaches and folding it into Abi-Nassif at both the primary and secondary station levels would improve the operation of Abi-Nassif.
Q. Okay, now can you turn to page 85 of the '256 declaration.
A. Okay, I'm there.
Q. In looking at paragraph 254, at the first line it talks about the CM is provided with timely

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unicast request opportunities. And in the last sentence it says, "In this manner NRTPS sets aside upstream transmission opportunities." Is there a difference between request opportunities as used there and transmission opportunities?
A. So the terminology that I find is useful to describe the resource allocation on this system would be to distinguish between transmission opportunities which are granted by the BSC to the CPE for the CPE to send something, and then the nature of what those transmission opportunities that may be made available will vary. One form of transmission opportunity is the opportunity for the CPE to make a request, which in this paragraph you referred me to is referred to as request opportunities. That is, it's an allowance given by the BSC to the CPE to make a request.
Another type of transmission opportunity that's allocated by the BSC would be bandwidth for the purpose of uploading data. So where 254 in the -- paragraph 254 in the last sentence talks about upstream transmission opportunities, it's talking about resources that are going to be made available for the purpose of sending data, not opportunities for just making requests.
Q. All right. Could you please go back to

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figure K-1.
A. Sure.
Q. That was DOCSIS 1.1.
A. Okay.
Q. Again, page 299 of 332.
A. Okay, I'm there.
Q. All right. I want to focus on the transition from grant pending to idle.
A. Okay.
Q. And this shows that the transmission is by the CM; is that correct?
A. Well, I don't -- again, it's meant, I believe, to be a system state diagram. It's not -- it's not the state diagram of either the internal operation of the CM or the CMTS, but it does show that there are a variety of things which would trigger a transition from grant pending to idle. And one of them that calls -- one of those, those reasons are the first one that's listed there, is that you transmit data from the cable modem to the CMTS without piggybacking.
Q. So is it your opinion that the CMTS can transition to idle?
A. I don't think that was my testimony.
I think what I indicated was that all the state diagrams, I think we have been looking at, are

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system state diagrams. They represent a set of descriptors related to the entire system, and the system consists of network elements and connections between the network elements. So the state of the system could include various aspect of what a particular network element is doing or not doing, whether a connection between different network elements is enabled or not enabled. And there's nothing within these state diagrams that implies that it's representing the state of any of the network elements, the CMTS or the CPE.
Q. Can you please turn to paragraph 258 on page 86 of the '256 declaration.
A. Paragraph 58?
Q. 258.
A. Excuse me.
Q. Page 86.
A. Okay, I'm there.
Q. The first line of that paragraph begins, "in the NRTPS service flow, the CM will not request upstream bandwidth if it has no data to send." My question is outside the NRTPS service flow, will the CM request upstream bandwidth if it has no data to send?
A. There are situations where the cable modem may request upstream bandwidth outside of the NRTPS

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service flow. Would you like me to go ahead and cite some examples?
Q. Sure.
A. One could be that there are other service flows that are running. There also can be MAC maintenance messages. These are messages from the CMTS to the cable modem that will cause the cable modem to request upstream bandwidth in order to perform whatever the maintenance is. The CMTS could order the cable modem, for example, to rearrange, or it might order the cable modem to dynamic channel change to move to another channel, so there could be other reasons why there could be traffic coming to the CM or CMTS, which as you asked are outside the service flow.
Q. You can put away the '256 declaration and DOCSIS and Abi-Nassif, and if you would pull out Sen.
A. Okay.
Q. Also get the declaration for the '991 patent as well in front of you.
A. I have that, yes.
Q. Could you please turn to page 97 of the declaration.
A. Okay.
Q. I want to ask you about paragraph 337.
A. Okay, I'm there.

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Q. Okay. Are you saying that the packet transfer state of Sen is the same as the grant pending state of claim 1 of the '991 patent?
A. Let me get oriented here.
Q. Yes.
A. Yeah, so I think on the pleading the functionality of the packet standby state of Sen to the grant pending absent -- sorry, start over.
I'm equating the packet standby state of Sen to the grant pending absent state of the '991 patent.
Q. Okay. What is your basis for making that connection?
A. Okay, so I'm referring back in this section on page 97, back to my description of Sen in paragraphs 192.
Q. Okay.
A. And the functionality that's described here in paragraph 192 are empty packets. So in this packet standby state, there's disclosures in Sen that I refer to starting here in paragraph 193, that Sen's description of the empty packets means that it has to be interpreted as that the mobile station is being granted noncontention opportunities to send the data upstream, because that's the whole idea. But the idea of sending empty packets is -- it's not taking

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advantage of it. That is, it's not requesting any bandwidth. So that corresponds to one of the modalities in the grant pending absent state, whereas the patentee describes it, you're getting unicast request poll opportunities, just as you are here, and you're waiting for data to arrive.
Q. Could you please turn to page 325 of the declaration.
A. Page number again?
Q. Paragraph 325, page 94.
A. I'm there.
Q. You say in this paragraph, "The MS sends a packet channel request message to the network, and awaits receipt of a packet intermediate assigned message." You're saying there that the MS awaits receipt of a packet, intermediate assignment message, in the MAC contention state?
A. Yeah, so the -- the request message is being sent in the contention state. The immediate assignment message that comes back is being sent from the base station back to the mobile station, and not in a contention mode. But the request message is sent in a contention mode.
Q. In a contention state, you say there.
A. Yeah. Yeah, okay. The -- so the way Sen

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describes transition A is that you enter the contention state by sending the packet channel request message.
Q. And you're referring to figure 4 from Sen which is reproduced at the bottom of page 94 of your declaration?
A. That's correct.
Q. The packet intermediate assignment message is essentially a bandwidth grant, correct?
A. Yeah. Yeah, it's a transmission -- it's a grant of using transmission services. I'm being careful to distinguish between a grant for making a request and a grant for actually sending data.
Q. You talked about transmission resources, is that the same as bandwidth?
A. Well, bandwidth is used in a variety of different ways in these references, including the patents, and particularly it's request bandwidth, grant bandwidth, and so on and so forth. So I want to be clear about how I believe it's being used in Sen. The packet channel request message is a request for bandwidth to actually send -- to send data up.
Q. In the '991 patent, the CPE awaits receipt of a bandwidth grant from a BSC in the grant pending state, correct?
If you look at column 12, lines 2 and 3 of

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the patent.
A. We are talking about '991?
Q. Correct.
A. So I will do that, but I'll just note that on page 19 of my declaration, I cited the column 7, line 10 to 13 for the inventor's description of the grant pending state, which says it waits for and receives a bandwidth grant to send upstream data.
You're pointing me to some other part of that?
Q. I'm pointing you to the claim, which is what my question is based on, column 12, line 2 and 3. It says the CPE is a -- "in a grant pending state wherein the CPE awaits receipt of a bandwidth grant from the BSC."
A. Yeah, I see that, and I believe that comports to my paragraph 52 of my report, yeah.
Q. So what I said was correct, though, that in claim 1 of the patent, the CPE awaits receipt of a bandwidth grant from a BSC in the grant pending state, looking at the claim language?
A. I believe that's correct, yes.
Q. All right. Now, if in Sen the contention state is where the MS awaits a bandwidth grant, and in the patent the grant pending state is where the CPE

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awaits a bandwidth grant, the grant pending state of claim 1 of the '991 patent cannot be equivalent to the packet transfer state. Would you agree with that?
A. No, I wouldn't. The packet transfer state in Sen is one where you are -- you've been given bandwidth grants and you're actually sending packets, so that would correspond to the patent's use of grant pending.
You go from packet idle to MAC contention in Sen, and then if you do not have to defer as per state transition line B, you go via line D, to packet transfer, and in packet transfer just like the grant pending state in the '991, you are now getting grants to up transition bandwidth for sending upstream packets.
Q. So it is your opinion that the grant pending state of claim 1 of the patent is equivalent to the packet transfer state of Sen?
A. I believe the -- at least the essential aspects of what the inventor claims are the characteristics of the grant pending absent state are also performed by the packet transfer state in Sen.
Sen has a different architecture and there may be other things that are happening in the packet transfer state, but it's -- it's at least doing what -- what the inventor describes as being the functions of

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the packet transfer state -- of the grant pending state.
Q. Could you please turn to turn to page 97 of your declaration and look at paragraph 338.
A. Okay.
Q. Does Sen define an empty packet?
A. I don't believe it makes clear as to whether it is the absence of a transmission or if it is specifically something to be recognized as a packet that has no -- no payload or content, but it does describe something that the system recognizes as being different than an upstream data transfer.
Q. And Sen also does not define when an MS might transmit an empty packet, correct?
A. It doesn't -- I don't know whether you're using the word defined in the same way, but it does characterize the packet standby state as a state in which it has the opportunity to use transmission resources, but, you know, can -- cannot use them by sending empty packets.
Q. Let me ask it this way. Does Sen say when an MS might transmit an empty packet?
A. Well, it indicates that you're given that opportunity if you don't have data, you would send an empty packet. You would -- if you don't have anything

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to send, you don't have any data sitting, you would send an empty packet.
Q. Does Sen say that?
A. So I have the analysis of the empty packets, and I think addressing the question you asked, on page 61 of my declaration, paragraph 192, and I don't cite to specific language that says these are the times when you're sending them, but I think that would be the understanding, because what it's saying here is that the mobile station is being granted nonrecurring opportunity to send data upstream, but it's not taking advantage of those opportunities in paragraph 193.
So the reason you would not be sending -- taking advantage of these opportunities is if you don't have data to send, because there would be no other reason not to do that, and of course the whole purpose of the system is to allow you to efficiently and rapidly send information from the mobile station to the base. So if you're given the opportunity and you have data to send, you would send it. And the reason you would send an empty packet is that you have nothing to send.
Q. Could you please turn to page 104 of the declaration.
A. Sure.

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Q. Looking at paragraph 372.
A. Okay.
Q. Now, is what you're describing there that Sen is sending a packet channel message -- sorry, a packet channel request message in a MAC contention state?
A. Oh, I'm citing here to column 3 and column 4, but I think with respect to your question, the column 4 citation I think addresses that. Column 4, line 15, it says, "in the MAC contention state, the MS sends the packet channel request message to the network an arbitrary number of times."
Q. So it does send the packet channel request message in the contention state?
A. The -- yeah, the column -- column 4, line 15 describes at least in this description of figure 3.
Q. So the control packets in Sen use contention?
A. Ask me again.
Q. So the control packets in Sen use contention?
A. Well, I want to be careful to distinguish between using contention technology and contention states and so on and so forth.
I think the disclosure in Sen is -- and by the way, I was referring to what happens in the prior figure 3, but you know as we talked before, it's the same portion that occurs also in figure 4. The packet

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channel request message is subject to collisions, so it can be regarded as a contention request. It's a request that's sent using a resource which is shared by other stations in which there is a possibility of contention.
There is a description of a contention mode or contention state in the state diagram that involve aspects of contention, but the request message is sent from packet idle to the contention state, so that's the thing that causes the transition.
Q. Could you please turn to page 99 of the declaration.
A. Yeah.
Q. Look at paragraph 347.
A. 90-what?
Q. 99, paragraph 347.
A. Okay.
Q. So in what state as described in Sen, do the activities set forth in paragraph 347 take place?
A. So this claim limitation talks about being in the grant pending absent state, where you're waiting for data to arrive, but you're getting opportunities, and then you transition to the grant pending state. So in Sen, you're in the grant pending absent state packet standby, and then you transition to the grant pending

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state packet transfer, and this is in response to a control packet being received by the base station from the MSC.
Q. I think in your answer you used both the terms grant pending state and grant pending absent state. Were you simply equating those states with the like states that you believe are in Sen when you use those terms?
A. Yeah, I believe I've said before that I believe the -- at least the functionality described by Sen in packet transfer encompasses and includes all the functionality that the inventor has, perhaps more, and that packet standby incorporates and includes all the functionality associated with the grant pending absent that the inventor described. So I'm not saying there are not other things that are disclosed in Sen, but at the very least Sen's description of packet transfer state and packet standby would teach the limitations that are in grant pending and grant pending absent in the patent.
Q. In paragraph 48, can you tell me what states in Sen the activities described in paragraph 48 are occurring?
A. 348?
Q. 348, I'm sorry.

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A. Reading from the previous 347, 348 is saying that once you -- in response to this control packet you allocate the bandwidth to the MS, so that would correspond to you then moving to the grant pending state because now you can use this bandwidth that's been allocated to transmit the data upstream. I'm sorry, I would just conclude with saying that paragraph 349 summarizes that saying you transition from grant pending absent to grant pending after you get that grant.
Q. Can you please look at Sen in column 4. At lines 55 through 57, it states there, "the MS26 can then transmit the packets via the reduced amount of the original bandwidth." Do you see that? Then it goes on.
A. Yeah.
Q. My question is, isn't that saying that the transition -- the transmission as described there, that's not necessarily occurring after a subsequent bandwidth grant is received, correct?
A. Well, there are a couple of disclosures in Sen. One of them that you just pointed to here, which appears to be one way in which you can effect that transition, the other one is the concept of a control packet which would just be a request for more

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bandwidth, which is column 4, line 57, I believe.
Q. But my question is -- I mean, Sen does disclose that a transmission can occur other than when a subsequent bandwidth grant is received, correct?
A. It does disclose that as one of the possible ways that you can cause that transition, but it doesn't take away from the fact that that transition can also occur by sending a control packet which would correspond, since it's not actual data, that would correspond to request for more bandwidth as I noted in 347. So I believe as I stated a few moments ago, Sen may have some additional functionality and capabilities that are included, but at the very least it encompasses and supports the description of the various states, the functionality of the states as the inventor has described them in the '991 patent.
Q. Can you look at paragraph 350, please.
A. I see it.
Q. You state there, "In Sen the MS may enter the packet idle state 38 if a release timer expires." Sen does not explain what events start its release time, correct?
A. I believe that -- so with reference to paragraph 350 of my declaration, I cite to Sen column 5, line 8 through 10, and it does not elaborate further

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about what the release timer is, but I think one of ordinary skill reading this particular section, understanding that that's in close proximity to the MS disconnected link or the release timer expires, would understand that this kind of corresponds to the timeout that's described in the Varma patent with respect to inactivity.
Q. Why would a person of skill in the art know that?
A. Because you would understand that the whole purpose, objective of all these references are to efficiently use a system, and because the concept of inactivity timeout is a general concept generally applied to resource limited systems such as this, that when you have a release timer, you would understand that that would most appropriately relate to one or more of the network elements no longer using the resource, and therefore you would want to be able to, as a the term release implies, release those resources and make them back available for use by the user. So that would be the normal understanding of -- of the term release timer as it would be used here in this patent.
Q. I want to ask you a couple of questions about Rydnell.

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MR. CANGRO: It's been about an hour and twenty minutes, so if you're going to switch gears --
MR. SLOSS: Pardon me?
MR. CANGRO: We have been going about an hour and twenty minutes.
MR. SLOSS: I'm almost done. Five minutes at most.
MR. CANGRO: You mean done-done?
MR. SLOSS: Done-done.
MR. CANGRO: Okay.
BY MR. SLOSS:
Q. So Rydnell, Rydnell does not describe a state equivalent to the '991 patent's grant pending absent state, correct?
A. I did not rely upon Rydnell for teaching the grant pending absent, so I'm not prepared to offer an opinion on that. I relied upon it for the expiration of the activity timer, but I would note that it does have a feature in it that I describe in paragraph 355, by sending these begin frames which is a noncontention request. So it's possible on further analysis I might be able to be specific about identifying the grant pending absent state, but it -- well, let me maybe be clearer.
So because -- because this analysis beginning

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on paragraph 355 which describes sending a begin frame which is in a noncontention request thing, that is a feature or capability of what the grant pending absent state is.
Q. Well, it's a feature of it, but it's not equivalent to the state, correct?
A. Well, it's not a complete total description of the state, but I believe that when you look at that particular feature which is one of the prominent aspects of the grant pending absent, and you look at the idea that it has this timer expired, when combined with the other references I think it supports the idea of transitioning from the grant pending absent to the idle state, because that timeout timer is taking you to the point where you no longer can be sending the begin frame.
Q. Well, it's true, though, isn't it, that a person skilled in the art would not know to correlate Rydnell's FPM inactivity timer to a state equivalent to a grant pending absent state?
MR. CANGRO: Object to the form.
A. I don't -- I guess I would not agree with that. I think that reading Rydnell, and in the combination with Sen, because there's, again, the same motivation to combine this that's described here on

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page 101, I think you would look at the timeout method which is taking you from a state in which you can send requests without contention, which is -- has a great deal of overlap with the capabilities of the grant pending absent state, I think it would reinforce the idea that Rydnell does teach you the aspect of a timer that's relevant to understanding -- the aspect of the timer that could be incorporated into Sen to the extent Sen may be missing it, because Rydnell has more detail about this begin frame, and what that means and it specifically says it can be sent in a noncontention request.

BY MR. SLOSS:

Q. Can you please look at paragraph 359.

A. I see that.

Q. Now, Sen describes a packet idle state, correct?

A. Yes.

Q. We talked about that. Are you saying that such a packet idle state conserves battery life?

A. I think Sen is silent in the same way that the these patents are as to exactly what else is happening in the devices, in the idle state, but I don't think Sen explicitly discloses conserving battery life, which is why the explicit disclosure in Rydnell

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that this sleep mode, which is -- covers everything that's associated with idle, but also talks about saving battery, that might be a reason to want to bring Rydnell into Sen precisely because Sen is silent about anything it's doing to conserve battery life. Rydnell could be a useful addition that would improve the operation of the Sen system.

Q. In looking at paragraph 360, how would the determination of expiration based on a failure to transmit a begin frame provide for power efficiency as you state in paragraph 360?

A. Well, again, it's failure to send a begin frame is just as the patent describes. It's in the grant pending absent state, it's failing to take advantage of opportunities to request resources, because that's what the begin frame basically does. So when that timeout timer expires in Rydnell you go to sleep, you turn off the -- in addition to not sending anything, you also go into battery saving mode where you're not consuming resources, you're not consuming power from the battery to run the transmitter and receiver.

Q. Would you please turn to paragraph 335 on page 96.

A. I'm there.

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Q. Why do you say that a person skilled in the art would have been motivated to implement piggybacking in the LLC block headers of Sen?

A. I'm sorry, I must be at a different place.

Q. Paragraph 335.

A. Oh, I was looking at 336. Excuse me. So as the patent owner admits with the -- as admitted prior art, piggybacking is a well-known technique which is not explicitly disclosed in Sen that obviates a need to send separate resource messages. So if you were to incorporate the piggybacking capabilities into Sen, you wouldn't need to send the -- I can't find the patent -- shown in figure 2, you have these packet resource request messages which are messages which are use of the transmission resource, which would be described as overhead.

They are not actually transferring any traffic. So if you could use piggybacking by informing the base station that you need to use resources, you wouldn't have to send the packet resource request message, and that would improve the overall operation of the system.

Q. Now, piggybacking was known at the time of the Sen patent, correct?

A. It was known prior art, yes.

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Q. So if Sen had wanted to include piggybacking, Sen could have included piggybacking, correct?

A. It -- if he was aware of it and had thought about doing it, he might well include it.

Q. It was a pretty well-known concept in the industry at the time, correct?

A. It was not something that was generally used in the GPRS protocols, which is part of the world of GSM technology. GPRS is part of the GSM mobile standards.

It's possible he may not have been aware of it or -- any one of a number of reasons, such as limitations of the processing capabilities of the devices at the time, whatever, may have chose not to --

Q. But you don't know why it was or was not -- why it was not included in the patent?

A. No, my knowledge is limited to the -- kind of the theoretical question of -- it's not disclosed in Sen, and it is disclosed in the other references, and I believe it would probably have improved the operation of Sen.

MR. SLOSS: I have no further questions. Thank you.

MR. CANGRO: The witness takes the opportunity to reserve to review and sign. That's it.

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MR. SLOSS: That's fine. 30 days?
MR. CANGRO: Yes, I think it's the same, 30 days.
THE COURT: Mr. Cangro, do you need a copy of the transcript?
MR. CANGRO: I do.
(PROCEEDINGS ADJOURNED AT 5:45 p.m.)
* * * *

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CERTIFICATE OF REPORTER

STATE OF NEVADA)
) ss:
COUNTY OF CLARK)

I, June W. Seid, a Certified Court Reporter licensed by the State of Nevada, certify: That I reported the deposition of STUART J. LIPOFF, on Tuesday, April 18, 2017, at 9:00 a.m.;

That prior to being deposed, the witness was duly sworn by me to testify to the truth. That I thereafter transcribed my said stenographic notes via computer-aided transcription into written form, and that the typewritten transcript is a complete, true and accurate transcription of my said stenographic notes. That review of the transcript was requested.

I further certify that I am not a relative, employee or independent contractor of counsel or of any of the parties involved in the proceeding; nor a person financially interested in the proceeding; nor do I have any other relationship that may reasonably cause my impartiality to be questioned.

IN WITNESS WHEREOF, I have set my hand in my office in the County of Clark, State of Nevada, this 25th day of April, 2017.

June W. Seid

JUNE W. SEID, CCR NO. 485

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DEPOSITION ERRATA SHEET

Assignment No. J0542400
Case Caption: TCT Mobile (US) Inc. v. Wireless Protocol Innovations, Inc.

DECLARATION UNDER PENALTY OF PERJURY

I declare under penalty of perjury that I have read the entire transcript of my deposition taken in the captioned matter or the same has been read to me, and the same is true and accurate, save and except for changes and/or corrections, if any, as indicated by me on the DEPOSITION ERRATA SHEET hereof, with the understanding that I offer these changes as if still under oath.

Signed on the _____ day of
_____, 20__.

_____
STUART J. LIPOFF

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STUART J. LIPOFF

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Signed on the 30th day of APRIL, 2017.

Stuart J Lipoff

STUART J. LIPOFF

DEPOSITION ERRATA SHEET

All the corrections noted below are for transcriptions errors

Page 10

Line 13- " the point. And" should be "the point, in"

Page 16

Line 12- "Edgar" should be "Vehicular"

Page 18

line 3- "HD220" should be "HT220"
line 7- same as above

Page 22

line 9 "ISO" should be "OSI"

Page 93

line 21- "multicabling network system" should be "Multimedia Cable Network Systems"

Page 108

Line 23- "wi-max" should be "WIMAX"

Page 128

line 11- "site" should be "cite"

Page 136

line 11- "correspondence" should be "corresponding"

Page 167

line 8-"C2257" should be "C.2.2.5.7"
line 15-"C.2.5.7" should be "C.2.2.5.7"

Page 189

line 6-"POIP" should be "VoIP"

SIGNATURE Stuart J Lipoff DATE: 4/30/2017

STUART J. LIPOFF