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LIGHTSQUARED/GPS INTERFERENCE DISPUTE INVESTIGATION

FRIDAY, SEPTEMBER 21, 2012

House of Representatives,
Subcommittee on Oversight
and Investigations,
Committee on Energy and Commerce,
Washington, D.C.

The subcommittee met, pursuant to call, at 9:30 a.m., in Room 2123, Rayburn House Office Building, Hon. Cliff Stearns [chairman of the subcommittee] presiding.

Present: Representatives Stearns, Burgess, Blackburn, Griffith, and DeGette.

Staff Present: Ray Baum, Senior Policy Advisor/Director of Coalitions; Karen Christian, Deputy Chief Counsel, Oversight; Andy Duberstein, Deputy Press Secretary; Neil Fried, Chief Counsel, C&T; Kirby Howard, Legislative Clerk; Brian McCullough, Sr. Professional

Staff Member, CMT; David Redl, Counsel, Telecom; Alan Slobodin, Deputy Chief Counsel, Oversight; John Stone, Counsel Oversight; Dan Tyrell, Counsel, Oversight; Alvin Banks, Democratic Investigator; Tiffany Benjamin, Democratic Investigative Counsel; Shawn Chang, Democratic Counsel; Brian Cohen, Democratic Investigations Staff Director and Senior Policy Advisor; Roger Sherman, Democratic Chief Counsel, Communications and Technology; and Kiren Gopal, Democratic Counsel.

Mr. Stearns. Good morning, everybody. And let me start the Oversight and Investigations Subcommittee this morning. And I have my start with an opening statement.

But I would say because the House is having some early votes this morning, I ask unanimous consent that the written opening statements of all the members be introduced into the record.

Without objection, the document will be entered into the record.

My colleagues, today, after 8 months of investigation, the Subcommittee on Oversight and Investigations will examine the Federal Communications Commission's decision and orders relating to LightSquared and the committee's efforts to build a wireless mobile broadband network.

The controversy regarding LightSquared and its efforts to build a national wireless broadband network revolves around a piece of spectrum called the L-band. This band of spectrum has historically been reserved for satellite services. In 2003, in order to encourage more efficient use of the band, the FCC issued an order permitting mobile satellite service providers to integrate an ancillary terrestrial component or land-based component into these networks as long as they met certain requirements.

Since that time, LightSquared and its predecessors have been involved in multiple proceedings before the FCC involving the development of its terrestrial component. During these proceedings, LightSquared reached agreement with GPS companies about "out of band emissions" that may result from its terrestrial-based stations and

invested approximately \$4 billion in its network. In March 2010, the FCC approved the transfer of Sky Terra's L-band licenses to LightSquared, enabling the company to deploy a nationwide broadband network. And this transfer was conditioned on LightSquared meeting an aggressive build-out schedule and agreeing not to provide service to the Nation's two largest wireless carriers.

In January 2011, the FCC granted a conditional waiver allowing LightSquared's customer to access its network using devices only capable of receiving terrestrial signals. The waiver was conditioned on LightSquared resolving an overload interference issue raised by the GPS community. These interference issues were a different technical concern of out-of-band emission problems that had been raised by the GPS community in a prior proceeding.

A technical working group was formed to examine the overload interference issues affecting GPS receivers. NTIA later charged PNT ExCom with validating the testing. In February, NTIA concluded that LightSquared system would cause unacceptable interference to GPS. Only 1 day later, the FCC moved to revoke its conditional approval of LightSquared's plan to build a 4G wireless broadband network leaving the company and spectrum holdings in regulatory limbo.

That is where we stand today. LightSquared, a company that committed billions of dollars and years of time in developing its network, has filed for bankruptcy. Its 40 megahertz of spectrum is left unused at a time when demand for wireless service and broadband is exploding. We have convened this hearing today to determine whether

this could have been prevented.

This hearing also raises important implications for spectrum policy going forward, regulatory uncertainty that the FCC will deter new innovative ideas and competition in the mobile space. Moreover, it is not sound spectrum policy to allow 40 megahertz of spectrum to sit fallow, while at the same time seek to relocate broadcasters and Federal users off of spectrum holdings to free up more space for wireless use.

So I look forward to the testimony of our two witnesses today.

And I recognize the ranking member, Ms. DeGette, for an opening statement.

Just a moment. I think we are going to just take 5 on this side and 5 on your side.

So I will go to Dr. Burgess.

[The prepared statement of Mr. Stearns follows:]

***** COMMITTEE INSERT *****

Dr. Burgess. I thank the chairman for yielding.

I thank the witnesses for being here today. I am grateful we are having a hearing. I know my constituents appreciate it.

So the expansion of the 4G cellular networks to a portion of radio spectrum traditionally reserved for mobile satellite communications would improve mobile satellite communications and benefit U.S. consumers needing more bandwidth for communication.

But somehow somewhere along the way things went off track. The FCC obviously has the obligation to be the caretaker of the electromagnetic spectrum. The question is raised, did they do their job? A decision to grant LightSquared the conditional waiver order on January 26, 2011, does seem to be ill advised. The period for public comment before the granting of the conditional waiver order was brief, and whether it was intentional or unintentional, it was placed in the middle of the holiday season the year before. Requests for an extension of the period for comment were not honored and a decision was made in haste over the objections of the United States Air Force and the GPS industry itself.

Benjamin Franklin said, haste makes waste. In the operating room, we have a saying, go slowly, I am in a hurry. This time it seems that haste was in fact the enemy of good decision making. The FCC attempted to address the concerns in the formation of a government and industry working group, but the solutions have not proved up to the task. I hope today's testimony will shed light on these events.

Mr. Chairman, I thank you for the recognition. I yield back.

[The prepared statement of Dr. Burgess follows:]

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Mr. Stearns. I now recognize the ranking member Ms. DeGette.
Ms. DeGette. Thank you very much, Mr. Chairman.

I really want to thank you for having this hearing today on LightSquared and expanding access to broadband, which we all agree is a key driver of economic growth for our Nation.

This administration has taken unprecedented steps to accelerate deployment of wired and wireless broadband networks, and the FCC has been a key partner in that effort.

Mr. Chairman, as you said, the policy issues today are important, and LightSquared and the GPS dispute deserve our scrutiny. Several other House committees have already looked at this issue over the last 2 years, and so, as the committee with primary jurisdiction, I wish we had looked at it sooner, but I am glad we are going to hear from the FCC witnesses today. These are experts who are widely respected for their knowledge and expertise, and I know we can learn a lot from them.

Mr. Chairman, in a lot of ways, the FCC was put in a no-win position. This was a difficult decision for them, and no matter what the agency did, someone was going to end up being very unhappy. And I don't know about you, but I certainly don't have the technical expertise and detailed knowledge to be in a position to second guess the FCC's decisions in this, but I do think we can look carefully at the FCC's decision-making process.

And I think the committee's investigation has revealed a regulatory review process working as it should. LightSquared was

licensed to use spectrum to provide communication service. Over the years, LightSquared sought approval from the FCC to move ahead with its plans, and at every step of the way, the FCC solicited and received public comment on the committee's proposals.

Under both the Bush and Obama administrations, LightSquared received approvals from the FCC to create and modify its business plans to build a network.

During the approval process, public safety concerns with GPS receivers were brought to the FCC's attention. The FCC warned LightSquared of these concerns and only gave a conditional approval to the company to move ahead. Then they set up a process to let technical experts determine if these concerns were meritorious. The FCC made the decision to retract LightSquared's waiver only after the experts found that "there is no practical way to mitigate the potential interference." The FCC took the responsible steps that one would expect in order to address this problem.

FCC clearly told LightSquared that it would have to solve interference problems before it was allowed to move forward with its plan. FCC set up a technical working group to explore problems and made sure that all stakeholders were represented. When experts concluded that there were continued risks from deployment of the LightSquared network, the FCC took preventative action to ensure public safety.

As of today, LightSquared has offered alternatives to move ahead, and I hope they work, by the way. And the FCC remains open to exploring

viable solutions.

Now, Mr. Chairman, it is not Congress' role to make these kinds of detailed technical decisions. I don't have the expertise to do so, and nobody else on the committee does. That is why Congress gave the authority to the FCC in the first place.

I would be concerned, of course, if the FCC made a politically-motivated decision or was swayed by political process, but I don't think anybody here thinks that that was the case in this situation. Instead, we have the FCC weighing the pros and cons and making a very difficult decision based on the advice of the technical experts.

I appreciate our witnesses being here, Mr. Chairman.

And I want to take just one minute of personal privilege. This might be the last hearing that we have in this Congress in the Oversight and Investigations Subcommittee, and I just want to say on a personal note how much I have enjoyed serving as ranking member with you, Mr. Chairman. We haven't always had calm and sedate hearings in this subcommittee, but we have always had respectful discourse, and we have always had debates and investigations that have attempted to shed the light on things.

And I have said, probably you have heard me say every single hearing we have had, I have been on this subcommittee for 16 years, and I have enjoyed serving with all of my chairmen. This chairman is no exception. I know I can speak for the entire side of my aisle in wishing you God speed and all success in whatever you decide to do in

the future, Mr. Chairman.

And I yield back.

[The prepared statement of Ms. DeGette follows:]

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Mr. Stearns. Well, I thank my colleague. And she and I both know how much we have enjoyed our friendship here. And it is beyond just the hearing. And we have talked to each other on the floor many times, and we were friends even before I was chairman of this committee.

So I appreciate your salute and felicitations, and I appreciate our friendship after I am gone, too.

With that, let's recognize the two witnesses here. We have Ms. De La Torre, who serves as chief of the International Bureau at the Federal Communications Commission. She previously served as deputy chief of the Telecommunication Division of the International Bureau. She was president of Telecommunication Management Company in Washington, D.C. And she has a BA from Vanderbilt and a doctors from the University of Texas.

We have Mr. Julius Knapp, is chief of the FCC's Office of Engineering and Technology. He became chief in 2006, having previously served as deputy chief since 2002. He has a bachelor's degree in electrical engineering from the City College of New York.

STATEMENTS OF MINDEL DE LA TORRE, CHIEF, INTERNATIONAL BUREAU, FEDERAL COMMUNICATIONS COMMISSION; AND JULIUS P. KNAPP, CHIEF, OFFICE OF ENGINEERING AND TECHNOLOGY, FEDERAL COMMUNICATIONS COMMISSION

Mr. Stearns. At this point, let me swear each of you in here. As you know, the testimony you are about to give is subject to Title 18, Section 1001, of the United States Code. While holding a hearing -- when holding an investigative hearing, this committee has the practice of taking testimony under oath.

Do you have any objection to testifying under oath?

The chair then advises you that, under the Rules of the House and the rules of the committee, you are entitled to be advised by counsel.

Do you desire to be advised by counsel at this time?

In that case, would you please rise and raise your right hand, and I will swear you in.

[Witnesses sworn.]

Mr. Stearns. We now welcome your opening 5-minute testimony. Start with you Ms. De La Torre. Okay. Mr. Knapp go ahead.

STATEMENT OF JULIUS P. KNAPP

Mr. Knapp. Good morning Chairman Stearns, Ranking Member DeGette and members of the Oversight and Investigations Subcommittee. My name is Julius Knapp and I am the Chief of the Federal Communications Commission's Office of Engineering and Technology where I have served for 38 years. OET is the commission's primary --

Mr. Stearns. Would you just pull the mike a little closer?

Mr. Knapp. OET is the commission's primary resource for engineering expertise and provides technical support to the chairman, commissioners and the FCC's bureaus and offices. I appreciate this opportunity to join my colleague, Mindel De La Torre, chief of the International Bureau in appearing before you today. My portion of the testimony will focus on the FCC's role in evaluating and attempting to resolve spectrum interference issues in connection with the mobile satellite service in the L-band.

Ms. De La Torre will address the process in historical context relating to granting Ancillary Terrestrial Components, or ATC, authority to mobile satellite or MSS providers. At the commission, we are focused on ensuring that businesses and consumers are able to take full advantage of the economic opportunity presented by underutilized spectrum but only when consistent with public health and safety. In its decade-long proceeding to remove regulatory barriers and align the service rules for the L-band with the rapid evolution

of mobile communications technologies and markets, the commission considered a unique proposal that had the prospect of attracting new investment, increasing competition, bringing additional broadband service to rural and hard-to-reach regions and creating thousands of jobs.

This proposal was the direct result of proceedings designed to ensure that MSS spectrum would be utilized to its full potential. As with any proceeding before the commission that has a potential for spectrum interference with nearby spectrum users, the FCC relies on licensees and stakeholders to raise any relevant interference concerns. During the decade preceding the LightSquared November 2010 waiver request, the GPS industry had numerous opportunities to inform the commission of the receiver overload issue. Despite participating extensively throughout these proceedings and raising other interference issues that were ultimately resolved, it did not do so.

The FCC would have investigated any potential interference issues as soon as they were raised and attempted to resolve them. Nevertheless, once GPS receiver manufacturers and service providers ultimately informed the commission of the potential for interference to legacy devices, the commission halted the licensees proposed commercial service.

To be clear, in November 2010, the GPS industry was not complaining about signals from LightSquared signals falling into the GPS band; they were instead notifying us that GPS receivers would pick up signals far into the neighboring band. In responding to those GPS

concerns, the commission acted responsibly under its 70-year memorandum of understanding with the Department of Commerce to protect national security and public safety, while simultaneously attempting to find a solution to the GPS receiver overload issue. The commission's goals and proceedings such as these are to foster cooperative engineering solutions to what sometimes seemed to be impossible problems. We worked equally with all of the interested entities, including NTIA, the Department of Defense, other Federal agencies and the GPS industry counsel to assess LightSquared's proposal and to encourage the parties to work together to resolve this matter. This process has been fact-based, transparent and in accordance with the commission's established policies and procedures.

Now, as I have mentioned in this instance the interference is caused by GPS receivers picking up signals outside of the GPS band. The commission relies on receiver manufacturers and service providers to report potential interference issues because they are in the best position to understand the parameters and limitations of their own equipment. The commission does not possess the technical specifications for the hundreds of different types of GPS devices utilized by commercial users, government contractors and government entities.

Moreover, since the FCC does not regulate GPS devices we are not prepared to test such devices or determine their capabilities and interference issues. Manufacturers and service providers have the relevant information, and they also have the incentive to notify the

commission of the potential for receiver overload, so as to avoid problems with their services and products. The lack of technical data provided in response to earlier commission proceedings prevented us from addressing that issue until well after permission had been granted in 2003 for MSS providers to use the L-band for terrestrial service.

Again, thank you for this opportunity to appear before you and I look forward to your questions.

Mr. Stearns. Thank you.

[The prepared statement of Mr. Knapp follows:]

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Mr. Stearns. Ms. De La Torre.

STATEMENT OF MINDEL DE LA TORRE

Ms. De La Torre. Good morning, Chairman Stearns and Ranking Member DeGette and members of the Oversight --

Mr. Stearns. You might have to pull the mike just a little closer, too, if you don't mind.

Ms. De La Torre. Good morning.

My name is Mindel De La Torre, as we have said, and I am chief of the International Bureau at the FCC. I am pleased to have this opportunity to follow my esteemed colleague Julius Knapp in providing you the background and context related to the FCC's process in the MSS ATC L-band matter.

I have been chief of the International Bureau since October 2009, where I oversee the bureau's functions with regard to licensing of international and domestic satellites, international long distance, international broadcast stations and submarine cables, as well as the FCC's participation in bilateral and multilateral efforts.

I previously worked at both the NTIA and the FCC, and I appreciate the two distinct roles that these agencies play in ensuring adequate spectrum for America's consumers and governmental entities. As my colleague mentioned, the commission is focused on lifting regulatory barriers and ensuring economic growth.

The MSS ATC L-band proposal, filed with the International Bureau

in March 2009, represented such an opportunity. However, when we were informed that there was a potential for receiver overload interference from the GPS community, we took action to ensure that these essential U.S. services, government services as well as commercial activities, would not be disrupted. The detailed summary in my written statement and the attached appendix outline the commission's 10-year history in the MSS proceeding.

The commission has consistently, across the tenures of three chairmen, worked to promote terrestrial use of MSS spectrum. This history further shows that the commission acted in accordance with established procedures and allowed multiple opportunities for public participation. Also, the commission staff exercised delegated authority only where consistent with commission rules and provided at least 48 hours advanced notice to individual commissioners to inquire about these decisions.

The proceedings relevant to this hearing began in 2001, when LightSquared's predecessor and interest Mobile Satellite Ventures, MSV, along with ICO Global, petitioned the commission to allow for the addition of an ancillary terrestrial component, ATC, to integrate terrestrial services with their mobile satellite services. These parties argued to the public that the public would benefit from the terrestrial component because it would enhance coverage in areas where reliable satellite service was challenging. In 2003, the commission approved rules to permit MSS licensees to operate up to 1,725 base stations, and in 2005, this limitation was lifted to provide mobile

service to areas where satellite signals are degraded or blocked, specifically urban areas and inside of buildings.

The U.S. GPS Industry Council filed the petition for reconsideration of the out-of-band emission rules noting, that the rules failed to adopt emission limits specified in the 2002 agreement. USGIC noted that the limits were necessary to protect against potential deployment of tens of thousands of cell towers and millions of mobile devices. The receiver overload issue however was not raised in this proceeding.

Over the course of the next 8 years, the commission engaged in several actions designed to foster MSS ATC deployment. The record shows that the GPS industry consistently failed through several proceedings to specifically notify the FCC of receiver overload problems or concerns until briefly referencing the issue in comments related to the July 2010 MSS notice of proposed rulemaking and notice of inquiry and then again in response to the November 2010 waiver request.

In the interim, the commission provided MSS ATC authority, set power limits and other operating parameters, as well as acted on the transfer applications ultimately leading to LightSquared status as a licensee. On January 26, 2011, the International Bureau responded to the concerns raised by the GPS industry and other parties by preventing LightSquared from deploying commercial service in the L-band until it resolved concerns about harmful interference. The bureau did so through a conditional waiver order that also directed LightSquared to

organize and participate in a GPS Interference Technical Working Group, in which all interested parties worked directly with LightSquared to resolve the interference concerns. The Technical Working Group included more than 120 participants, including representatives from the Department of Defense and other Federal agencies, as well as the GPS community and various telecommunications companies and, of course, LightSquared itself.

On June 30, 2011, LightSquared filed a final report of the Technical Working Group with the commission. And based on these results, LightSquared recognized that in its proposed use of part of its spectrum, what we call the upper 10 megahertz band, would result in GPS receiver overload. LightSquared offered an alternative proposal to operate only in the lower 10 megahertz band and to coordinate and share the cost of underwriting a workable solution for GPS legacy precision measurement devices that were at risk of overload.

The FCC released a Technical Working Group's report as well as LightSquared's alternative proposal for public comment in June 2011 and subsequently required further testing. On February 14, 2012, the commission received a letter --

Mr. Stearns. If you could just sum up.

Ms. De La Torre. Okay. And so the commission staff is currently reviewing the extensive record developed in response to the public notice. Currently, LightSquared still cannot deploy its service commercially because of the unresolved receiver overload interference issue. And this concludes my testimony.

[The prepared statement of Ms. De La Torre follows:]

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Mr. Stearns. Thank you.

And I will start with my questions.

And Ms. De La Torre I am going to ask you a question. If possible, you could just answer yes or no. In an August 4, 2011, email, marked as Exhibit 1 in your binder, you made an analogy that a LightSquared GPS situation determining interference, the interference dispute on the highway, where LightSquared is operating, and this is what you indicated, is operating in the left lane and GPS is operating in the middle lane; you state that GPS "has been driving in the left lane with impunity, but now that it looks like the left lane might actually have traffic in it, the GPS community is yelling bloody murder." Is that true? Is that what you wrote?

Ms. De La Torre. I did write that.

Mr. Stearns. Each operator has responsibility to stay in its lane, using your analogy. Is that correct?

Ms. De La Torre. Yes.

Mr. Stearns. And when one operator veers into the adjacent lane, is it the responsibility of that operator to correct its course, or is it the role of the FCC to patrol the highway, briefly?

Ms. De La Torre. Really what was happening here was that --

Mr. Stearns. Isn't the responsibility of the operator to correct its course, yes or no?

Ms. De La Torre. That is a difficult question. That is the question that is before us.

Mr. Stearns. Yes or no.

Ms. DeGette. Can't you let her answer it?

Mr. Stearns. No. I am asking for a yes or no. Do the best of your ability?

Ms. De La Torre. Well, I think that they do have a duty to respond.

Mr. Stearns. Okay. I am going to take that as a yes.

Does GPS companies have a duty to design receivers that filter out signals in adjacent bands, yes or no?

Ms. De La Torre. I will let Mr. Knapp, who is the engineer, answer that question.

Mr. Stearns. Well, you can answer, too. Based upon your email, I would say your answer would be yes; they have a duty to design receivers that filter out signals in adjacent bands, is that correct? Say yes.

Ms. De La Torre. Yes.

Mr. Stearns. Okay.

Mr. Knapp, I am ready for you now. You state in your testimony, some GPS legacy equipment effectively treats the GPS spectrum and the L-band spectrum as one band, is that true?

Mr. Knapp. That is true.

Mr. Stearns. Since the problem appears to be a GPS devices and not LightSquared's emission, what does this mean for the future of the L-band?

Mr. Knapp. So the difficult issue we have is all of the millions of legacy devices that are out there relied on for things like public

safety and so forth, and there is no easy way to fix many of them. So we absolutely do need to be thinking about what we do going forward, and we are doing just that.

Mr. Stearns. If GPS does not make changes to its wide front-end receiver devices, do you envision a scenario where anyone can operate in the L-band in the future?

Mr. Knapp. I think what we are trying to do --

Mr. Stearns. If they do nothing is the L-band available?

Mr. Knapp. Well, for the high power equipment that has been proposed, the issue of the upper 10 is problematic; the lower 10, I think, is still subject to our open proceeding.

Mr. Stearns. But wouldn't you say, based upon what I just said, that this L-band is going to be in jeopardy if there is not some type of effort by GPS to make changes to its front-end receiver? Isn't that true?

Mr. Knapp. What we need to do --

Mr. Stearns. Yes or no.

Mr. Knapp. It would be yes.

Mr. Stearns. Okay, yes.

Ms. De La Torre, one day after receiving LightSquared's updated business plan and request for a waiver of the integrated services rule on November 18, 2010, the FCC placed a request on public notice providing a 10-day period for initial comments. How many days does the FCC normally provide for comments after issuing a public notice for ATC modification request?

Ms. De La Torre. Anywhere from 7 to 21 days.

Mr. Stearns. Was the expedited comment period relating to the FCC's March 2010 order requiring that LightSquared follow an aggressive build-out schedule for its network?

Ms. De La Torre. Well, they had -- the proceeding, as I mentioned, has been going on since 2001, so there was a lot of documents in the record, so we put it out for public notice.

Mr. Stearns. Does anyone request an extension of the comment period, and if so, who and was the request granted?

Ms. De La Torre. Yes, there was a request for extension, and we did grant that extension. We granted the extension for 3 days.

Mr. Stearns. Did the parties requesting an extension have a chance to actually file their comments in the proceedings?

Ms. De La Torre. Yes, they did.

Mr. Stearns. There are many concerns I have with the process, but the greatest concern that I have is that your agency, acting only on one day after the NTIA sent their comments to the FCC, rushed through a public notice that would put LightSquared in regulatory limbo with no alternative in sight. Can you explain to me why the FCC did not first look to alternatives, short of proposing to suspend the company's licenses?

Ms. De La Torre. What we wanted to do is we wanted to get public comment as much as we possibly could on this important report that we had gotten from NTIA and the letter from NTIA. We wanted to get as much comment as we possibly could, so we put it out as soon as we could.

Mr. Stearns. But acting only one day after NTIA sent their commitment to the FCC, it seems like you rushed it.

Ms. De La Torre. I don't know that we rushed it, but we were definitely -- we wanted to get as much information as we possibly could.

Mr. Stearns. I am anxious for the FCC to reach a conclusion on this matter and continue to hope a solution can be found. When do you plan to wrap up your review of your February public notice?

Mr. Knapp. So we don't have a specific target. It is a complex issue and LightSquared has put some new ideas on the table, and we think everything is worth considering at this point.

Mr. Stearns. All right. My time is expired.

Ms. DeGette. Thank you very much, Mr. Chairman.

Ms. De La Torre, I just want to clarify your answers to the previous questions. This memo, this August 4, 2011, memo, Exhibit 1, that the chairman was referring to, I think it would be fair to say that what happened here was that the spectrum was allocated in a certain way, so that the GPS had a certain portion of the spectrum, correct?

Ms. De La Torre. Yes, that is correct.

Ms. DeGette. And LightSquared had been approved conditionally for portions of the spectrum that were adjacent to the GPS portions, correct?

Ms. De La Torre. Yes. Dating back to 2004.

Ms. DeGette. Yes. And after the conditional approval, the GPS community came forward belatedly and told the FCC that they were concerned because they were actually going into portions of the

spectrum that LightSquared had been conditionally approved to use, is that correct?

Ms. De La Torre. There had been an order that had been -- the transfer of control order from SkyTerra to Harbinger had been issued the year before in March 2010. And with that order, there was another accompanying order that modified the license. And so that had happened earlier in the year.

Ms. DeGette. But you were frustrated when you wrote this memo because the GPS folks were supposed to stay, as you said, in their lane, but they consistently went over into the other lanes that had been conditionally authorized for others, right? Yes or no would work with this one.

Ms. De La Torre. Yes.

Ms. DeGette. Thank you.

So but you also recognized in this memo, and the part that the chairman didn't refer to, that the problem here is that GPS -- and I want to ask you about this, too, Mr. Knapp, because there had been some glancing references to it -- but this GPS wave length is very important, security wise, is that right?

Mr. Knapp. Absolutely.

Ms. DeGette. So, Mr. Knapp, in your testimony, you said that there are concerns about national security and safety with GPS, is that right?

Mr. Knapp. Of course.

Ms. DeGette. And Ms. De La Torre, at the end of your memo, you

say, "this is a very complicated issue and tough choices will need to be made and may in fact change the established rules of the road, but how many times do we have to reiterate we will not endanger one person on an airplane, one soldier, one voter or one driver who relies on your GPS service." Is that what you said in the memo?

Ms. De La Torre. Yes, I did.

Ms. DeGette. And that is because even though it is irritating that maybe GPS is not staying in their lane, if you literally hold them to that and there is some problem with this GPS, then it could affect national security communications or transportation, like airplane, communications, is that correct?

Ms. De La Torre. Yes.

Ms. DeGette. Mr. Knapp.

Mr. Knapp. Yes.

Ms. DeGette. Okay. So I can see why you would be frustrated, because poor LightSquared, you know, they got this conditional approval, and through no fault of their own, the GPS is going over into their lane. And I think that is why your review process is still open, because you are still trying to find a solution to it; is that correct Ms. De La Torre?

Ms. De La Torre. Yes, absolutely.

Ms. DeGette. And so here is my question: I know that LightSquared has come forward with some other proposals to use different parts of the spectrum and so on. Are you considering those other proposals right now?

Ms. De La Torre. Yes. As Mr. Knapp said, yes, we are currently considering them.

Ms. DeGette. Mr. Knapp.

Mr. Knapp. If I may, I should add that several of those proposals include spectrum that is used by the Federal Government, so the Federal side NTIA would have the lead in determining whether those are viable.

Ms. DeGette. In order to make that determination, do you need congressional action?

Mr. Knapp. No. At this juncture, I can't project whether that would be necessary or not, but certainly we would come back if that seemed to make sense.

Ms. DeGette. Okay. So it is not like, and either one of you can answer this, it is not really like the FCC is trying to arbitrarily sabotage this investment that LightSquared has made, which is substantial, correct?

Mr. Knapp. Absolutely not.

Ms. DeGette. And in fact, you are still trying to find a solution, is that right?

Mr. Knapp. That is right.

Ms. DeGette. Okay. I don't have any more questions.

Thank you, Mr. Chairman. I yield back.

Mr. Stearns. You have got one second left. Do you want to ask him, is there a solution?

Ms. DeGette. You can ask him.

Mr. Stearns. I will take your one second. Is there a solution?

Mr. Knapp. There are ideas worth considering.

Mr. Stearns. So the answer to the question is, yes, there is a solution.

Mr. Knapp. Yes.

Mr. Stearns. Okay. Thank you.

With that, I recognize Mr. Burgess for 5 minutes.

Dr. Burgess. Thank you, Mr. Chairman.

Now, Mr. Knapp, you said "worth considering" twice, so it is intriguing. This is an enormously complex issue made even more complex. By now I have got mental images of double wides and winding mountain roads. But I think that is really what the committee is asking is about a solution and a solution where both parties can actually come away with something, neither party is harmed to the extent that they can be kept from harm, and we don't tread upon the rights of other people who have reasonable uses for spectrum that already exists; is that a fair statement?

Mr. Knapp. That is a fair statement.

Dr. Burgess. Well, then, in the things that you have --

Mr. Stearns. Dr. Burgess, can you just pull your mike up a little bit, just so it is easy to hear you. We are waiting on every word you say, so we have got to hear it.

Dr. Burgess. Well, in that context of having things that are worth considering, surely you have some solutions that you have been pushing back and forth between yourselves at the FCC. Is there any of those that you are willing to share with the committee this morning?

Mr. Knapp. Not specifically. I will say that it is not only this immediate issue, but we also think long term about the implications for use of the spectrum because of the spectrum crunch and the importance of getting every ounce of benefit out of all of the spectrum that we possibly can.

Dr. Burgess. And we certainly bump up against this from time to time in this committee because of the fact that the spectrum is a valuable asset owned by the People of the United States. The government is in a cash crunch, so sometimes, we actually go to spectrum as a solution.

Let me just ask a couple process questions of both of you, and I referenced this in my opening statement, the comment period before the issuance of the conditional waiver. It does seem to be condensed, especially when you are dealing with an issue of this complexity. Is that a fair observation for me to make? And bear in mind I am just a simply country doctor; I am not an engineer. So it seems like you drop it before Thanksgiving or between Thanksgiving and Christmas. It looks like Harry Reid's health care bill to me. That is not a time where a lot of people are paying attention.

Mr. Knapp. If you view this in the broader context of the long history of the proceeding, we had a commission rulemaking proceeding that set out the policies that would apply here. What the staff was doing was just implementing those policies. There already was provisions for a substantial terrestrial network. And if you look at what action was actually taken, we took the very tough step of saying

that the system could not be operated commercially until this issue was resolved. And we put in place a process to understand the scope of the problem and try to find a way to get solutions to it. So although the specific timeframe of the action may have appeared in isolation as short, what we were doing was moving as quickly as we could through the process to find an answer.

Dr. Burgess. And yet some of the principals involved, the GPS industry, the Air Force, did feel that there was inadequate time, did they not? Did they not express that to you?

Mr. Knapp. So what we did in the action, they had asked that we needed time for further tests, so the process we put in place did just that. And we made sure that those parties were all engaged, and they were engaged heavily in the process of conducting the tests and examining solutions.

Dr. Burgess. But then there was an extension granted, is that correct?

Mr. Knapp. There was an extension of time for the comments.

Dr. Burgess. For the comments.

Mr. Knapp. Yes, absolutely. And it was all considered, and it resulted in the action that the agency took.

Dr. Burgess. And refresh my memory, how long was the extension of the comment period?

Ms. De La Torre. It was 3 days.

Dr. Burgess. Again, I am just a simple outside observer. For an issue of this complexity, did the parties who complained about the

length of the comment period, were they mollified by a 3-day extension.

Ms. De La Torre. Well, they did in fact file comments in the proceeding, and they came in and they had various meetings with us during that time. So there was plenty of time for them to meet and to give us their views on the proceeding.

Dr. Burgess. Well, just as an outside observer across the street, 3 days doesn't seem like a lot of time for an issue of this complexity. I appreciate the fact it had been worked on for a long time and a lot of people had much more working knowledge on this than I do, but it does seem condensed. What did they relate to you when you said, okay, you got 3 more days? Did they say, this is great, that is all we needed?

Ms. De La Torre. Well, what I recall is that they in fact did file within that period. And then they had plenty of time to come in before the waiver order was issued in January. So they had many weeks to come in. They took advantage of that time. We heard their concerns. In fact, as Mr. Knapp said, the action that we took, took direct consideration of what they had raised with us. And we basically stopped LightSquared from going forward with commercial deployment of its system until the interference concerns were resolved. Now, we did not resolve those.

Dr. Burgess. Can I stop you here for a second? I know my time is up. But it seems like the interference questions haven't been resolved even at this stage. Am I understanding that correctly?

Ms. De La Torre. You are. And that is one reason why getting

the process started as soon as possible was really important. We wanted to get that started and get all the parties together.

Dr. Burgess. Thank you, Mr. Chairman.

I appreciate the indulgence.

Mr. Stearns. And the gentlelady from -- oh, Mr. Bilbray was here.

I think Mr. Bilbray is next for 5 minutes.

Mr. Bilbray. Thank you, Mr. Chairman.

Mr. Chairman, let me first clarify; I have got a personal stake in this. Any one of us that go off into the ocean with our families offshore know how important the GPS is, not just for aircraft, not just for finding our way around streets, but basically getting home and making sure you don't run into some rocks.

On the flip side, if I may say to the ranking member, just as much as the GPS is essential, there are thousands of people offshore every day that would have a huge safety factor if they could pull up their iPhone and from 200 miles offshore to be able to call for emergency services. So this has a safety issue going from both ways.

But I think this is a much bigger issue than just GPS or a new access into the LightSquared. And if I could say to the ranking member, we need to recognize that this is setting the message across the country and around the world of exactly how the Federal Government is going to handle the situation. And if we do not straighten this out, the alternative is for us to have an intransigent locked-in system that says, nope, we won't allow anyone to move outside any arbitrary lines we make because once you cross those lines, we know we can't get you

back. And I will give you an example, analogy: This is like somebody using a passing lane or going into the other lane to pass. We do that all over this country. But once you start allowing people to claim a right for using a right of way that was not set aside for them, the only alternative is to eventually for the government to put up regulatory jersey walls to where that option is no longer available in the future. Even though no one is using that lane 99 percent of the time because we won't enforce it when somebody wants to use the lane, we have got to block it off, and that asset is not going to be used with flexibility. We are going to become intransigent at bureaucratic lines. So I think that we have got to recognize this issue was very strongly setting an example to the next group that bids on something, are we going to apply it and be flexible and thus when the time comes, are we going to implement it, or are we going to create the barriers. Isn't this a situation of squatting and squatters' rights, and how do we tell anybody when they do bids, that there is not going to be a squatter sitting on their spectrum if we don't straighten this thing out and make it clear to everybody that the Federal Government will make you whole and will not allow squatting to supersede the due process that we set aside? How do we avoid that?

Mr. Knapp. Well, first of all, as we conduct our processes, they are open, and it is incumbent on all the parties to participate in that. This situation has been, in my 38 years at the FCC, an anomaly. Almost invariably, the parties come in and explain --

Mr. Bilbray. Okay. When the parties explain this -- let me

interrupt one second. When they talk about interference, are you saying, wait a minute, is there interference, or is there -- does the -- is it harmful interference? There is one thing to have static with GPS. There is something else to be blocking the GPS. Isn't it true that the, quote-unquote, interference may not be harmful interference that would block the item. It may give some difficulty but still won't be able to block the service; the service still gets through with GPS. Isn't that true?

Mr. Knapp. This is one of the issues that has been raised, and it is one of the core issues that the commission routinely has to address in deciding whether interference is harmful or not. We also have to take into account, when we are dealing with public safety services or defense, a much higher threshold for ensuring against problems.

Mr. Bilbray. Okay. There is the problem. We are now creating the issue of that we will go so far because we think it is a public safety issue, and once you name that, if somebody that has run police departments and sheriff departments, the question is, does that become now the excuse to use that lane all the time, even without a red light running, even though it is not a code three, because we are public safety, we get to drive in the left lane all the time, without having to show that there was reasonable application here? And that is what I am concerned about. And let me tell you something, as someone has run police departments, that happens all the time, you know. But we don't sit there and continue to allow it just because somebody claims it. They need to prove it. And that is that harmful interference.

When will you get that clarified, and what is your obligation to make sure that we make this whole so this Congress and future Congresses don't have to start building jersey walls and blocking off all kinds of great flexible opportunities because we have seen what happened with LightSquared, so we are not going to allow any flexibility in the future? How do we maintain that flexibility?

Mr. Knapp. So this issue I think has given greater focus to receivers and the issue of staying in your lane. And we conducted a workshop at the commission on addressing receiver standards going forward. Just this past March, we have tasked our Technological Advisory Committee, which includes experts across industry to make recommendations on how we can deal with these kinds of issues in the future as we are making spectrum allocation, so we are working on it.

Mr. Bilbray. Thank you very much.

Mr. Chairman, what he just told me is, now, they are going to be harder and put up a jersey -- basically block it off, that flexibility to avoid this problem. That is exactly what I want to avoid, and that is why we should be working to straighten this out so they don't have to start putting up those jersey walls, and we maintain our flexibility. I think both sides want that.

I yield back.

Mr. Stearns. I thank the gentleman for his insight.

And the gentlelady from Tennessee, Mrs. Blackburn, is recognized for 5 minutes.

Mrs. Blackburn. Thank you.

And Mr. Chairman, I do want to take a moment and just thank you for your leadership. You are going to be missed. We are all going to miss you and appreciate the leadership and guidance you have given this commission on so many issues.

To our witnesses, we are going to have votes called in just a few minutes, and I want everyone to have the opportunity to get through their questions. I want to talk with you specifically about your February 10th memo, or it is an email from February 10th, and the March 26, 2010, order dealing with preventing SkyTerra from making its ATC spectrum available to AT&T and Verizon.

So let's start, Ms. De La Torre, with you with that February 10th email from Joel Rabinovitz. You are on that email, correct? You are a recipient of that? It is Exhibit 9 in your binder.

Ms. De La Torre. Yes, I was aware of that.

Mrs. Blackburn. Would you please speak into the microphone?

Ms. De La Torre. Yes, I am on that email, but I wasn't participating in the email as far as sending, responding to it. I am on it, though.

Mrs. Blackburn. Okay. But you read in there that, and I am quoting from the email, the condition is that Harbinger not sell to Verizon and AT&T. So is this email consistent with your thoughts regarding the purposes of the conditions?

Ms. De La Torre. Thank you, Congresswoman.

In fact, where we ended up was not where the email started actually. We ended up -- there was a loophole in the FCC's sort of

framework for secondary markets of spectrum. And terrestrial systems at the time could use secondary markets, and they could lease their spectrum, but MSS operators could not. And so one of the reasons that we had wanted to put this condition in on AT&T and Verizon, it didn't prohibit them from actually gaining access to that spectrum, but it said that the FCC needed to be notified of that. And I think that that just basically filled in a gap in our rules that we then actually changed the rules later in the following year, in April 2011, to apply it to the mobile satellite service as well. So AT&T and Verizon, just to be clear, were not prevented from actually accessing that spectrum; they just had to give notification of that.

Mrs. Blackburn. Okay. Well, let me ask you this then. Do you think it should be common practice for the FCC to impose conditions like this when it really -- so that it affects the rights of nonparties to a proceeding? Should that be common practice of the FCC? Should they move forward in that vein?

Ms. De La Torre. I have been at the commission for 3 years, and during that time, in most of the transactions that we have worked on, we have conditions that are applied. And they are specific to the particular transaction, and I think that is what we did here as well.

Mrs. Blackburn. Okay. Let's talk about Globalstar for a second. I have got a couple of questions I wanted to ask about that. On June 30, 2010, the FCC granted Globalstar an extension of its deadline to come into compliance with the ATC gating criteria until August 2nd of 2010. Despite the fact that the FCC granted Global

Star's 30-day extension the RUS suspended Open Range's future loan advances on July 14, 2010, and threatened to suspend its remaining funds unless it found an alternative spectrum partner. So, during this period, were there any conversations between the FCC and RUS or the FCC and the White House discussing the possibility that LightSquared could serve as an alternative spectrum partner to Open Range?

Ms. De La Torre. Thank you, Congresswoman.

I was not a party to any of those conversations. If they were held, I was not a party to them.

Mrs. Blackburn. Were you aware that there were any?

Mr. Knapp, do you want to respond to that?

Mr. Knapp. I just wanted to add that neither was I.

Mrs. Blackburn. Okay. You were not a party to them or you were not aware that they were taking place?

Mr. Knapp. I was not aware that they were taking place.

Ms. De La Torre. Either one.

Mrs. Blackburn. Thank you.

My time is expired. I yield back.

Mr. Stearns. I thank the gentlelady.

And the gentleman from Virginia, Mr. Griffith, is recognized for 5 minutes.

Mr. Griffith. Thank you, Mr. Chairman.

Let me echo the comments of my colleagues on how much I, particularly as a freshman, have appreciated your leadership, and I have learned a great deal from you, and I am kind of hopeful we will

have some more hearings. But in the event that we don't, let me add my comments to those of my colleagues and how greatly I appreciate your leadership. Thank you.

That being said, if I might ask, how does the FCC define harmful interference? And let me do some subparts on that. Is the level of harmful interference specific to each GPS device, or is there a particular industry standard that defines whether interference is harmful? Is any interference harmful? Who makes the decision at what level it is harmful? Is that the FCC or is that the GPS device manufacturer or user? And is the design of the receiver relevant to the determination of harmful interference? And be happy to repeat the subparts if you need me to. But the base question is, how do you determine harmful interference, and who makes those decisions?

Mr. Knapp. First, I would be more than happy to provide the precise language of the definition in the commission's rules. It is consistent with the international definition. It generally, in lay terms, is, it is subjective. It talks about repeated disruption of a service, particularly in the context of safety and navigation services as well. So the definition itself gives deference to the importance of protecting safety services.

In the case of GPS, there are multiple kinds of receivers. So, in some instances, there are industry standards. So, for example, for the GPS chips that are used in cell phones for 911 location, there are industry standards that are in place. As commented, I think in the letter that we received forwarding the test results from NTIA, there

is no accepted standard for general navigation equipment. There is a standard for aeronautical, and so I will stop there. So, in some cases, there are standards and others not, and the criteria for determining what is helpful is not always consistent. Is there a question I missed?

Mr. Griffith. Yeah. How is the filter designed relevant to that --

Mr. Knapp. Filter design comes into play usually at the intersection between two adjacent bands. So it is not unusual to have some play, some flexibility, between the services right at the borders. And normally, those problems are solved between the parties themselves. We have to look at the overall characteristics of the equipment and the service and what it is capable of doing in making decisions like this as to what is harmful or not.

Mr. Griffith. And this is one that has always got to bother you, and for centuries, the law has tried to figure out on different items how to make this work. But the FCC has relied on the fact that no party raised the overload interference issue until late 2010 to account for its late consideration by the FCC. And I have to ask, what standards of timeliness does the FCC have? I mean, oftentimes, if you don't raise an objection in other areas of the law, you lose them, and whether it is the statute of limitations or the theory of laches, you have a timeliness issue. So what is the FCC's rule on that?

Mr. Knapp. So we are governed by the public interest standard. And in this case, although it is a very difficult situation, we cannot

put at risk things like air safety or defense or 911 systems and so forth. So we have to be very careful when we evaluate those kinds of situations.

Mr. Griffith. Mr. Chairman, I have no further questions at this time and yield back.

Mr. Stearns. I thank the gentleman. I think what we are going to do is I am going to have a second round, and the ranking member has a very short question, too, and then we will adjourn the committee.

So my question is to Mr. Knapp. Obviously, a company has lost \$4 billion, a huge amount of money. The technology they had was a game changer. The whole thing has been scuttled. And so what we are trying to do now is understand what solutions are available.

So, Mr. Knapp, the Technical Working Group and the PNT ExCom both conducted interference testing on multiple types of GPS devices. Is that correct, yes or no?

Mr. Knapp. Yes.

Mr. Stearns. How many different types of GPS receivers did the Technical Working Group test, actually test.

Mr. Knapp. They tested a pretty significant number of each different type. So for cell phones, for example, and for the personal navigation devices, I believe it was well over 75 or so.

Mr. Stearns. Seventy-five okay. How many different types of GPS receivers did the PNT ExCom test?

Mr. Knapp. As broad categories, I believe there were six or seven different categories.

Mr. Stearns. In the Technical Working Group testing, what types of GPS devices were deemed susceptible to harmful overload interference?

Mr. Knapp. So the report from NTIA commented that the cell phones -- well, for any device if they get close enough, you can have interference, but the cell phones appeared to be okay. That there was concern that 75 percent of the -- and I am just reciting what the report said -- 75 percent of what are called the general navigation devices. In the case of aeronautical, the judgment was against an industry standard.

Mr. Stearns. Were there certain types of GPS receivers that did not receive harmful interference from LightSquared's signal, yes or no?

Mr. Knapp. Yes.

Mr. Stearns. What standard was used to determine harmful interference in the Technical Working Group's testing?

Mr. Knapp. So there were different standards for each of the different working groups. In the case of cell phones, they used the worldwide standards developed by a group called the 3G PP, which is Third Generation Partnership. There were no standards for general navigation. They used a standard for the aeronautical equipment based on the radio technical.

Mr. Stearns. What is the FCC's responsibility to oversee the working group?

Mr. Knapp. So, in this case, we did what we often do; we brought

all of the parties together through this process with the --

Mr. Stearns. So you are a facilitator and not much more? You are not an investigator, oversight or an enforcer --

Mr. Knapp. Part of the rationale here is we want to be careful not to steer the work of the group, because in the end we may have to make a decision and assess its work.

Mr. Stearns. I understand.

Who provided the devices for the Technical Working Group testing?

Mr. Knapp. That came from the working group itself, which was co-chaired by the GPS industry and LightSquared.

Mr. Stearns. In the PNT ExCom testing, what types of receivers were deemed susceptible to harmful overload interference?

Mr. Knapp. So, just to be clear, there was a first round of testing. And in the second round, all that was looked at was cell phones and general navigation devices and then a particular class of aeronautical equipment that was used for mapping terrain.

Mr. Stearns. I think I have asked this before, but certain types of GPS receivers, weren't some of them -- did not receive harmful interference from LightSquared? Isn't it true some of them did not, isn't that true?

Mr. Knapp. Yes.

Mr. Stearns. Would you say there are a lot of receivers that did not receive it, or was it significant, would you say significant?

Mr. Knapp. So it varied across the categories. And one of the categories that was particularly not covered in the second round was

called high-precision equipment. And that is some of the equipment that is designed actually to operate across both bands together.

Mr. Stearns. If harmful interference was not observed in a particular category of GPS devices, does that mean a potential solution might exist for that category?

Mr. Knapp. Well, for the equipment that didn't experience harmful interference, yeah, there is a solution for that category.

Mr. Stearns. In your mind's eye, can this problem be solved?

Mr. Knapp. I think the --

Mr. Stearns. Just yes or no.

Mr. Knapp. I can't answer yes or no because just as when we went into this, until you work through the problems, you don't know the answer.

Mr. Stearns. Well, describe what your solution would be?

Mr. Knapp. I can't describe what my solution would be. I know that there are ideas that are on the table that we are considering.

Mr. Stearns. And do you endorse any of those ideas?

Mr. Knapp. No, we have an open proceeding. It would prejudice the outcome for me to endorse one or the other.

Mr. Stearns. Well, as an electrical engineer, don't you think this could be solved?

Mr. Knapp. As an electrical engineer, we always strive to solve the problem, but there is no certainty that you are going to.

Mr. Stearns. You got to pass the exam. It is either yes or not. All right. Well, as I say, you know, I am just -- I think all of us

are a little frustrated with this huge possible innovation leap here in the loss of this company. So, anyway, my time is expired.

Ms. DeGette. Mr. Chairman, first of all, I would like to ask unanimous consent to put the spectrum chart into the record, which I had shared with your staff.

Mr. Stearns. By unanimous consent, it will be made part of the record.

[The information follows:]

***** COMMITTEE INSERT *****

Ms. DeGette. Thank you.

I also understand that you are going to put the exhibit notebook into the record, subject to some redactions that will be agreed upon by staff.

Mr. Stearns. That is correct.

[The information follows:]

***** COMMITTEE INSERT *****

Ms. DeGette. I would just ask unanimous consent that we put Ms. De La Torre's memo Exhibit 1 in the exhibit book in without redaction.

Mr. Stearns. Unanimous consent, so ordered.

[The information follows:]

***** COMMITTEE INSERT *****

Ms. DeGette. Thank you very much.

I just want to say I don't have any questions, you will be happy to know. But I just want to say that this entire hearing really highlights the urgency of the work that the Select Working Group that Chairman Upton put together and which I was privileged to serve, a subcommittee -- select subcommittee of this full committee, because as we look more and more at the use of spectrum and as we look at increasing demands on our spectrum, we are really going to have to figure out how we balance really important legitimate commercial needs, like in this situation in LightSquared, with GPS and other security needs and so on. And I think that that work at the select working group has been doing throughout the spring, summer and fall has real urgency, and I am sure that the FCC would agree with that.

And Mr. Chairman, I look forward to working in the next session of Congress on both sides of the aisle to start to figure out what we do with some of these issues. Because unfortunately, I think it was Mr. Knapp who said that in his 30 plus years at the agency, he hasn't seen a situation like this. But I think everybody would agree if we can't start to think about what we are doing with our spectrum, we are going to see more and more situations and more and more demands bumping up against each other.

I see both of our witnesses nodding their heads yes.

So thank you for having this hearing, and I look forward to continuing to work with you.

Mr. Stearns. I thank the gentlelady.

I thank the witnesses for their testimony this morning.

In conclusion, I would like to thank all the members for staying here. I remind members they have 10 business days to submit questions for the record.

And I ask the witnesses to all agree to promptly respond to these questions.

And with that, this is my last hearing as a Member of Congress, and I just want to thank the members on both sides for their participation and more importantly the staff. The staff has done a great job throughout my tenure as chairman of the Oversight Committee, and I appreciate all their hard work.

[Whereupon, at 10:40 a.m., the subcommittee was adjourned.]