

1 move us to a different reservation or you know take
2 our native children and send them to a school and
3 teach them all English or something.

4 But you know, if you go back to this
5 land use analogy, it's very much like an adult
6 store and a liquor store showing up to the
7 elementary school.

8 Well, they may have every right to be there but if
9 your kid is in that school, you don't like it. So
10 I have to agree.

11 I think public safety is different and
12 I hope the Commission will maintain that point of
13 view that protecting citizens and their property is
14 different than commerce.

15 MR. STANLEY: All right, thank you.
16 Doug Lockie has a question up here.

17 MR. LOCKIE: I'm sorry, was there
18 another back there? Thank you. Now that was an
19 example of too little transmitter power.

20 (Laughter.)

21 The warm up session that we had for
22 this. I'm a millimeter wave guy and for the first

1 time in my life I went off and found out about this
2 public safety problem. I went off and looked into
3 it a little bit and had my first discussion with
4 peace officers except when I was at the end of the
5 tablet getting a ticket. And looking into that,
6 first of all, let me say that providing more
7 bandwidth real time to law enforcement communities
8 is a very, very high priority.

9 In California, we're having very few
10 drunk driving cases going to court anymore because
11 they're videotaping a lot of them and the drunk,
12 his lawyer, can't get him off anymore when they
13 look at the video. It's very valuable. In times
14 of stress having bandwidth for peace officers is a
15 huge importance. The same thing for fire and
16 everything.

17 So let me say that more bandwidth for
18 that community is really important.

19 Next, after September 11th, anti-jam
20 capabilities in there is a lot more important. We
21 have never gotten invaded in this country before
22 and we're likely to get invaded a lot more in a lot

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1 of different ways including electromagnetically.
2 So putting the infrastructure in the fine jammers
3 and taking them down fast I think is going to be
4 more important.

5 Now having said that, now I want to say
6 something I hope doesn't get interpreted as anti-
7 peace officer or anti-public safety, but we don't
8 have separate streets for the fire engines. We use
9 the same streets for the fire engines, and when
10 they need the street, they turn on their siren and
11 you get out of the road. And there's no reason we
12 couldn't do that in the public safety community, as
13 well, or at least do some of that. And therein
14 lies a huge solution instantly to this public
15 safety problem. So I think that we ought to
16 establish a Commission within the FCC and others to
17 look into that solution as an interim if not a
18 permanent fix.

19 MR. STANLEY: Okay, thank you. There
20 was a question in the back we jumped over, please.

21 MR. STEVENSON: Actually -- Carl
22 Stevenson and Gear Systems and IEEE 802. Actually

1 I was going to say something very similar to what
2 Doug said in terms of the need for making public
3 safety systems more robust so that they will stand
4 up against attack and will continue to provide the
5 services that they're intended to provide to the
6 public is one thing. Obviously, there will need to
7 be some transition period from legacy technology
8 into newer technologies.

9 I was also going to suggest that at the
10 same time you're providing more bandwidth for those
11 peak needs when something bad happens and public
12 safety needs a large amount of capacity, being able
13 to collaboratively share that spectrum during the
14 quiet periods would provide a lot of benefit to the
15 public as well. So it's very similar to what Doug
16 was going to say.

17 MR. STANLEY: Okay, thank you very
18 much.

19 DR. JACKSON: Okay. It's my turn. And
20 what I'd like to do is follow up on the point that
21 John and Mark made a little bit, and I'd like to
22 sort of pose the question and go down the panel and

1 see what the response is.

2 The question really is could the
3 process of enforcement, and the process of using
4 radios be facilitated if we have a more
5 quantitative or uniformly applied definition of
6 interference, that is, if we had some criteria,
7 perhaps announced in advance, saying this is the
8 interference environment, this is the worst case
9 interference environment that your system is going
10 to have to live with, and as long as it's better
11 than that, don't come and complain to us. You can
12 think of it as advance warning or telling people
13 what the development guidelines are in their
14 neighborhood.

15 And I guess the question is how would
16 something like this relate to a definition of
17 harmful interference. I mean, we saw one session
18 ago the FCC and the ITU's definition of harmful
19 interference, which is in some sense an economic
20 measure when it's interference that you know messes
21 the system up or degrades a very important system.

22

1 Should we maybe have a different
2 definition where we'd just say as long as you have
3 less than, you know, x watts per hertz, you aren't
4 interfered with. So we'll start down there with
5 Phil.

6 MR. BARSKY: In XM's case, when we
7 designed the system we had to do that since there
8 was no definition of harmful interference. We
9 defined what harmful interference was by loss of
10 service. Our system was designed with 99.9 percent
11 availability. So we start at saying I can't accept
12 interference over that, that will block out
13 reception to that particular sort of service level.

14 In addition, what we did since there
15 wasn't any spectral survey of what's going on out
16 there in bands adjacent to DARS, we actually went
17 out -- we submitted a report to the FCC on our
18 findings and we went out and sniffed. And we said
19 what is our environment? What is there?

20 In addition, we looked at what was
21 coming and looked at what neighbors were going to
22 be. Since we're licensees and we have our own

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1 frequency and don't have to share, it wasn't the
2 same as your problem. But surely, because we're a
3 very small signal system, surely somebody with
4 significant out of band, and to us significant just
5 means very, very little bit. Significant out of
6 band energy that ends up in the band would kibosh
7 our system link. That was considered.

8 So we came up with our harmful
9 interference definition based upon the quality of
10 service, based upon bit error rate. But it was
11 specific for our service. We had to understand our
12 service well enough to know what interference we
13 could stand. In fact, we have imparted the wish
14 and want of the DARS community to the FCC to limit
15 out of band interference in our band to a
16 particular level. I hope that answers your
17 question.

18 MR. BARUCH: When it comes to harmful
19 Inspector and the definition, the international
20 definition which is also the domestic definition, I
21 look at and it strikes me that if you read that
22 definition closely, you could have the same level

1 of interference from one source being harmful in
2 one case but not harmful in another. Because it
3 does split between safety, radio navigation and
4 safety services on the one hand and radio
5 communication services on the other.

6 What I take away from that is that any
7 inquiry into harmful interference necessarily
8 focuses on the victim to some degree, more so than
9 perhaps the interferer because that same level of
10 interference can either be harmful or not harmful
11 depending on what is the victim. So when you ask
12 whether the process of enforcement would be helped
13 by more uniformed definition of interference, I
14 don't think it would. I think that harmful
15 interference described that way, which is almost
16 you know it when you see it, is a good ideal. It's
17 out there, but it doesn't answer the question of
18 whether a particular service can accept the level
19 of interference that's being theoretically caused
20 by a proposed new service of actually being caused
21 by a station or another service that's in
22 existence.

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1 So I think when you look at it, when
2 you try to quantify what interference is, you're
3 not quantifying harmful interference, but instead
4 you're identifying the acceptable level of
5 interference, the tolerable level of interference.

6
7 When you do it on an allocation level,
8 it's service to service, I think you speak more
9 generally than when you do it in coordinations,
10 when you have existing licensees on a licensee to
11 licensee, either intra-service or inter-service it
12 becomes much more specific. You can identify
13 objective limits of what would be tolerable and not
14 tolerable, but again you're defining acceptable or
15 unacceptable interference, as the case may be, but
16 not harmful.

17 And I think if the focus is on that in
18 particular sharing scenarios, and that is again a
19 lot of what we've been doing over time in various
20 proceedings. I think that's the right direction.
21 It's not a difficult thing to do. It requires a
22 lot of good faith on both parts to really come

1 toward the middle and lay your cards on the table,
2 so to speak, as to what is acceptable generally and
3 specifically. But that is the objective I would
4 think.

5 DR. JACKSON: Mark, do you have an
6 opinion on this?

7 MR. CROSBY: I don't have any strong
8 feelings on all this. This is difficult. A single
9 definition I don't think is workable. In trying to
10 apply a single definition across the board I don't
11 think works either. I think it depends on is it an
12 unlicensed band or is it a licensed band? And then
13 I think it bifurcates into two other pieces, and
14 that really it's not expectations. The incumbents
15 have a level of expectation when they went in of
16 what the environment would be. And their
17 definition of harmful or hey, I can live with it is
18 something.

19 But I think you have to accommodate the
20 expectations of interference for the incumbents,
21 and clearly, I think it's wise, I think prudent for
22 the Commission to define for the new people this is

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1 the environment, these expectations, this is the
2 type of interference you may or may not receive and
3 don't cause the following types of interference to
4 these incumbents, and if you do.

5 I mean, Commission has done a great job
6 on this on the one point of PCS point to point. I
7 mean, I mentioned this earlier in an earlier
8 session, if you want a perfect example of how to
9 take care of business, I mean FCC has done a really
10 good job. You lay the ground rules out. You said,
11 these guys are coming. These are the ceilings that
12 you'll pay and these are the ground rules and once
13 you got real specific all of the rigamorale and all
14 the verbiage sort of went away and everybody went
15 about their business. And it really worked.

16 So I think it's really dependent on
17 specifications. And the last point is as a band
18 manager, when we're working with customers or
19 putting in systems whether it be voice or data, we
20 participate in and we highly recommend our
21 customers. We go to the site, and you've got to do
22 a lot of work. I mean, you just can't go here, put

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1 this up. All the sites are co-located now, so the
2 problem is getting a little worse. So it behooves
3 the customers -- you've got to go out there and do
4 some work and literally figure out what the
5 environment is, what's coming into this site,
6 what's going out, what are the inter-modulation
7 products. This is getting more complicated and no
8 one should go into this blind. You've got to do
9 some work.

10 DR. JACKSON: Okay.

11 MR. HAGEMAN: I was having a discussion
12 earlier about I was involved in PCS early on when
13 it first started. And I was reading through some
14 of the rules and regulations and I was going back
15 to my cellular days and I said well, if FCC comes
16 up with a formula on how you make a 32 dBu
17 calculation. So I went through the rule parts of
18 PCS and I was trying to find that. I never found
19 it. All it said was it made mention of a 47 dBu.
20 So I called a gentleman at the FCC and I asked him
21 about that and he says well, there's a lot of
22 formulas out there that calculate 47 dBu. Okay.

1 There's my answer.

2 I think that if you're going to do
3 something that way, you need to have clear, defined
4 measurements. You need to come up with some way
5 that the common person out there, the small
6 carrier, can take a spectrum analyzer or some
7 common piece of equipment with some standard things
8 that they have and say I'll stick this antenna up
9 and I'll make this measurement and I turn this knob
10 and set that switch and bang here's my level. And
11 it meets it or it doesn't. And it needs to be the
12 same for every one.

13 DR. JACKSON: What's Portland's view on
14 this?

15 MS. JESUALE: Well, Nextel wasn't
16 transmitting out of band. It wasn't over power.
17 It wasn't in any way illegal for it to do what it
18 did. But it still caused harmful interference to
19 public safety. And our definition of that is this
20 radio doesn't work anymore. It used to work, but
21 it don't work now.

22 DR. JACKSON: Let me give an analogy to

1 that, and I'm bringing this up as a technical
2 analogy and I'm not trying to make any particular
3 points about the specific case I'm bringing up.
4 But a lot of people use hearing aids, and hearing
5 aids have in them a capability, many of them called
6 a T-coil which lets them pick up telephone
7 transmissions. Many hearing aids, when operated or
8 when a digital cellular phone, particularly one
9 that uses time division multiple access, is
10 operated near that hearing aid, the hearing aid
11 will pick up a buzzing noise in the background that
12 can be quite objectionable. Particularly older
13 hearing aids. I don't think -- it's probably been
14 remedied mostly now.

15 Is that a problem of the radio or is
16 that a problem of the hearing aid? I mean are you
17 going to get rid of digital cellular because there
18 are 5 million hearing aids in America that are
19 going to be disabled by it?

20 MS. JESUALE: You know, we had to take
21 in Portland and many other cities, but I'll just
22 talk about Portland because that's where I am. We

1 had to take steps to mitigate interference. And
2 one of the steps was not call the FCC and say do
3 something. Because that didn't work. The steps
4 were we replaced every single antenna on every
5 single tower. We modified the Motorola radio
6 products. All 10,000 of them in the field had to
7 be brought in and modified. We had to design the
8 modification. We had to change our power output
9 and we put a lot of political pressure on Nextel.

10 We called up the newspapers, we went to
11 the state legislature and we embarrassed them into
12 doing frequency coordination with us. And in the
13 end, in Portland, we don't have Nextel interference
14 anymore. But we had to take all these steps and I
15 suppose that if I had a hearing aid like that I'd
16 probably go to my doctor and hope my insurance
17 would cover a new one.

18 (Laughter.)

19 And that's where I'm kind of at now, I
20 want to go to my Federal Government and hope that
21 my insurance will cover new receivers, new transmit
22 technology. Because I really think that the City

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1 of Portland could have a better radio system if, we
2 add another \$60 million.

3 DR. JACKSON: Well, I guess John's
4 point is that when you bought that system, if you
5 looked at the zoning rules, you would have said
6 gee, these receivers aren't going to do the job
7 under some scenarios. And you would have at least
8 been able to point to the files saying well, yeah
9 we knew there was a chance this would happen, but
10 we took the risk or something like that. I'll just
11 say it -- am I putting words in your mouth, John?

12 MR. STORCH: No. Just a slight
13 deviation, I think the zoning did change over time
14 and potentially changed on the City of Portland,
15 but there's also the NIPSKA channels that came in
16 there, post-Nextel, if you will, in the sense of
17 operation. So I think certainly looking in that
18 full environment -- should I jump ahead?

19 DR. JACKSON: Go ahead. I wanted Dick
20 to go last on this anyway.

21 MR. STORCH: Okay, okay. Excellent. I
22 think the issue of bandwidth brought up by the

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1 gentlemen for law enforcement is an interesting
2 one. And it's a perplexion. Nextel, from their
3 own public disclosure and commentary, has brought
4 to light how much of the government and public
5 safety community that they provide service for.

6 Similarly, on the same system on the
7 City of Portland, beyond the police and fire
8 operators are the trash collectors, are the street
9 sweepers, and if you will, the parks and recreation
10 folks. And so this concept of the fire engine and
11 the siren is kind of interesting, because does
12 this, and I'll use AT&T Wireless and Seattle
13 specifically, but does the CDPD data transmission
14 traffic take priority given the location of that
15 officer down, over his voice transmission which
16 cannot be understood for some reason he is
17 incapacitated from speaking. So you sit there with
18 a quandary to say the cellular system has priority
19 or does the 800 megahertz City of Seattle system
20 have priority, because and that's going to the
21 definition. It's more of who is the user versus
22 the ownership. That system in there happens to be

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1 owned a private organization, or if you will, a
2 governmental organization, the City of Portland.

3 We provide a degree of
4 telecommunications in the City of Midland to the
5 police department, predominantly data and some
6 voice. So there's ownership but there's also
7 usage, and I think the definition there's huge
8 debate around what is interference, harmful nature
9 and all that. But I don't think the definition
10 adequately addresses, if you will, the priority
11 nature of the usage and how to manage that moment
12 of dealing with your, and I'll call it interference
13 management because again the position of
14 interference is there to be managed, not to be
15 mitigated. It's not potential it's there and it's
16 that genie in the bottle. So let's wrap it up.

17 DR. JACKSON: Dick, I think you've had
18 more experience trying to deal with real world
19 interference problems than the rest of the panel
20 put together. And I guess we want to stick with
21 the same question, but really given your experience
22 how could the Commission better define interference

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1 so it would be easier for the users and easier for
2 the FCC to deal with?

3 MR. SMITH: Well, I must admit I have
4 mixed feelings about it because although Mark says
5 he doubts the ability of us to continue or have a
6 single overall definition of interference, I think
7 if that's done in a general way, and I think our
8 current definition is relatively general, that has
9 certain advantages. It is somewhat then for the
10 interpretation by the Commission to be enforced.
11 Cooperation amongst the users is expected, and when
12 the Commission says we determined that this is an
13 interference situation and this party is to take
14 corrective action, we expect that corrective
15 action. The FCC expects that correction action to
16 be taken.

17 This works pretty well when everyone is
18 cooperative. But I'm thinking in the future that
19 things are going to get more complicated. That
20 spectrum is being suggested to be shared by more
21 diverse than somewhat different systems.
22 Incumbents may be opposed to that sharing and may

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1 not be so cooperative. And we may find court cases
2 cropping up much more frequently than they have in
3 the past.

4 In the last 30 years of my career, I
5 don't remember more than a half a dozen cases that
6 we actually wound up in court over an issue of
7 definition of interference. There were a few, and
8 we won them all. But in the future, there could be
9 a lot of really complicated protracted litigation
10 type cases involving imprecise, perhaps imprecise
11 definition of interference that would be very
12 troublesome and very difficult to resolve.

13 I don't think I have a solution to this
14 particular aspect, only to suggest that things
15 likely will get worse and that the Commission
16 should, as it had always in the past, tried to stay
17 ahead of the game and be thinking about that and
18 how to deal with that in the future because I think
19 this has real potential.

20 DR. JACKSON: I guess we'll take a few
21 questions from the floor now. We have somebody
22 over there?

1 Could you identify yourself?

2 MR. WIGGINS: I'm Stan Wiggins, I'm an
3 attorney in the Wireless Bureau. Engineers have a
4 concern with interference which I will characterize
5 for the purposes of this question as a quasi-
6 property right, a right to be protected. In the
7 legal context, property rights have both positive
8 in a sense of affirmative and defensive
9 connotations and in economics rights have even
10 different definitions.

11 The concern I have as we look forward
12 over the next 10 or 20 years and the rapidity of
13 change that we've talked about today and in the
14 sessions yesterday, in setting aside for a moment
15 the sort of incommensurable differences between
16 public safety and commercial and just look at a
17 commercial set of spectrum blocks for the moment.
18 Don't we need a definition of the rights that we're
19 trying to enforce, protect, affirm, whatever then
20 in a sense is as agile as the technologies? If we
21 define interference rights or, if you will, legal
22 property rights or

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1 quasi-property rights on some basis in 2002, the
2 technology is going to come along in 5 or 10 years
3 and it's not adequate to say well, you should have
4 looked at the master plan and realized that they
5 might build a rendering plant down the street 5 or
6 10 years from now when you built the house, because
7 the master plan couldn't foresee what's going to be
8 down there 10 years from now. It's going to be
9 technology that no one was thinking about.

10 This really is just a question, but it
11 does seem to me, and I started thinking about this
12 this morning when the gentleman to my right was
13 talking about living out in Colorado where you have
14 mineral rights below the surface and maybe I'm
15 twisted because I had oil and gas law in law school
16 -- don't ask me how that got me into
17 communications, but it's not without relevance
18 because it seems to me that we really are, we build
19 this whole structure on our concepts of rights, or
20 our attempt to codify concepts of rights. But when
21 the technology is moving this rapidly, I think we
22 really need to drop back a notch and take another

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1 look at it. But that's really just a question for
2 reactions. I certainly don't have an answer to it.
3 I'm not a beautiful mind. I'm a pretty homely
4 mind.

5 (Laughter.)

6 DR. JACKSON: Okay, any other questions
7 here? In the back there?

8 MR. LONGMAN: Wayne Longman, private
9 party. I guess I'd be a little concerned if the
10 FCC came into the role of allocating noise. I
11 think you'd find the same issues with frequency
12 allocations with noise allocations. You'd find
13 fixed mobile and low noise, fixed mobile and high
14 noise and public safety people would get the low
15 noise. So you'd be in effect establishing for
16 certain technologies quality of service for
17 particular users and particular parts of the band.

18 DR. JACKSON: Okay. I guess time for
19 one more? I'm told one more. Okay. Nobody on
20 this side wants to talk. Go ahead.

21 MR. FOX: Paul Fox, I'm an consultant
22 in town. I want to go back to the 800 and your

1 question about detailing the Commission's
2 assumptions on interference. Back when 800 was
3 designed, everyone would have done their
4 calculations for regional coverage. That's indeed,
5 i.e., the single large transmitter in the center of
6 the huge metropolitan service area. That was what
7 everybody expected 800 to be. That was the natural
8 way to serve that market, at least everybody
9 thought at that point.

10 If the Commission had detailed their
11 calculations, those are the calculations they would
12 have detailed and Portland built their system
13 around that assumption about it. The next part I
14 get awfully hand wavy and I have a feeling Peter
15 Pitsch will undoubtedly tell me where I'm wrong on
16 this. But it seems to me that you could -- part of
17 what happened was that Nextel started reacting to
18 economic incentives and found from their part of a
19 view a more valuable use of the spectrum, i.e.,
20 more intensive use of going down to sales. And the
21 problem was was that was unanticipated. They moved
22 in an unanticipated way that created this problem.

1
2 So I think what I'm wondering this is
3 not an indicator of the kinds of problems we would
4 have if we start going to market incentives to
5 reuse the spectrum in substantially different ways
6 without having had an adequate definition of
7 property rights developed. As I say, I'm hand
8 waving at this point and I'll shut up at this
9 point.

10 DR. JACKSON: Okay. Tom? Thank you
11 very much. I guess 800 has got quite a work out
12 here. Let's shift back to a slightly different
13 kind of a line of discussion. And you can correct
14 me if I'm wrong here, Mark. You will whether I'm
15 wrong or not. Paul brought up the history of 800.

16 I just want to remind everybody that when the FCC
17 made 800 available, much of the community said who
18 wants 800? We can't use it. It's too high in the
19 spectrum. It's a stupid waste of time. So just
20 remember that.

21 MR. CROSBY: Actually, when it first
22 came out, Doug's right, they didn't even do it by