

UNITED STATES DISTRICT COURT  
CENTRAL DISTRICT OF CALIFORNIA  
HONORABLE DAVID O. CARTER, JUDGE PRESIDING

- - - - -

ECHOSTAR SATELLITE	)	
CORPORATION, et al.,	)	
	)	
Plaintiffs,	)	
	)	
vs.	)	No. SACV 03-0950-DOC
	)	
NDS GROUP PLC, et al.,	)	
	)	Day 4, Volume IV
Defendants.	)	
_____	)	

REPORTER'S TRANSCRIPT OF PROCEEDINGS

Jury Trial

Santa Ana, California

Tuesday, April 15, 2008

Jane C.S. Rule, CSR 9316  
Federal Official Court Reporter  
United States District Court  
411 West 4th Street, Room 1-053  
Santa Ana, California 92701  
(714) 558-7755  
08-04-15 EchoStarD4V4

1 APPEARANCES OF COUNSEL:

2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

FOR PLAINTIFFS ECHOSTAR SATELLITE CORPORATION, et al.:

T. WADE WELCH & ASSOCIATES  
Attorneys at Law  
BY: CHAD M. HAGAN  
T. WADE WELCH  
DAVID M. NOLL  
CHRISTINE D. WILLETTS  
Attorneys at Law  
2401 Fountainview  
Suite 700  
Houston, Texas 77057  
(713) 952-4334

FOR DEFENDANTS NDS GROUP PLC, et al.:

O'MELVENY & MYERS, LLP  
Attorneys at Law  
BY: DARIN W. SNYDER  
NATHANIEL L. DILGER  
DAVID R. EBERHART  
Attorneys at Law  
Embarcadero Center West  
275 Battery Street  
Suite 2600  
San Francisco, California 94111-3305  
(415) 984-8700

- AND -

HOGAN & HARTSON, LLP  
Attorneys at Law  
BY: RICHARD L. STONE  
KENNETH D. KLEIN  
Attorneys at Law  
275 Battery Street  
Suite 2600  
San Francisco, California 94111-3305  
(415) 984-8700

ALSO PRESENT:

JEAN-MARIE FEY, French Interpreter

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

## I N D E X

## EXAMINATION

Witness Name	Direct	Cross	Redirect	Recross
NICOLAS, CHRISTOPHE				
By Mr. Stone		4		

## EXHIBITS

Exhibit	Identification	Evidence
Defense No. 1184		28
Defense No. 830		31

1 SANTA ANA, CALIFORNIA, TUESDAY, APRIL 15, 2008

2 DAY 4 - VOLUME IV

3 (2:40 p.m.)

4 (Live reporter switch with Debbie Gale.)

5 (The following proceedings is taken in the  
6 presence of the jury.)

7 CHRISTOPHE NICOLAS, PLAINTIFFS' WITNESS (Continued.)

8 CROSS-EXAMINATION (Continued.)

9 BY MR. STONE:

10 Q I'm sorry, is your answer "yes" or "no"?

11 A Can you repeat the question?

12 Q Okay. The question was, isn't it true that if you had  
13 immediately designed and deployed the software patch after  
14 the black box in October of 2000, and before the internet  
15 postings, the instructions posted on the internet could not  
16 have allowed anyone to commit a buffer overflow attack on  
17 the ROM 3 card?

18 A I'm sorry, I'm starting to get tired. Can you rephrase  
19 that? I don't follow you anymore, or maybe you can help me  
20 with the translation.

21 THE COURT: Just ask the question again.

22 MR. SNYDER: Okay.

23 BY MR. SNYDER:

24 Q Isn't it true that if you had immediately designed and  
25 deployed the software patch after the black box in October

1 of 2000, and before the internet postings, the instructions  
2 posted on the internet could not have been used for a buffer  
3 overflow attack on the ROM 3 card.

4 A That's not correct, no, because if -- if I follow you  
5 correctly, and maybe I'm not following you, the fact that we  
6 design and deploy the patch will protect, to some extent,  
7 all the cards that we received the patch, because when you  
8 broadcast a signal, you need to have your TV on, your set-up  
9 box on, and you'll receive that, but it will not protect any  
10 card that was not in the set-top box at the time we  
11 broadcast that. So it's still a few -- a few million,  
12 maybe, that you will have to find in retail store, and so  
13 on, so all those cards are not protected and the recipe can  
14 be used there.

15 And then, also at that time, there was some hacker --  
16 the commercial group, the E3M group was putting software in  
17 what we call "blocker" that would avoid any upgrade of the  
18 card. So the answer is "yes," it's true for all the card to  
19 have been used at that time and -- and in the normal  
20 behavior of the system. The answer is "no" for all the card  
21 that were not in the system or that were protected by a  
22 blocker software in the card.

23 Q This patch update was in the system, wasn't it, after  
24 it was designed and deployed?

25 A Yeah, correct, yeah.

1 Q So if somebody bought a card that was in a warehouse,  
2 as soon as they activated their system, it would have been  
3 updated with this patch; isn't that true?

4 A Yes, but what the hackers are doing there -- yeah, I  
5 think they were not stupid, so it was published all over the  
6 internet that as soon as you purchase a brand new set-top  
7 box, you remove the card and send the card as soon as  
8 possible to your dealer. It will fix it, it will put the  
9 pirate things and send it back. I think it's pretty clear  
10 for them because since -- since -- at that time, since two  
11 years we are doing regular patches, it was pretty clear for  
12 them as soon as they hooked up the set-top box and the dish,  
13 they would receive a date. So the normal steps, you know,  
14 to do a pirate card was to remove the card as soon as  
15 possible and before hooking the set-top box to the TV and  
16 putting the dish on.

17 Q And sir, isn't it true that any card used in the  
18 receiver after a patch was issued would receive that patch  
19 through the broadcast stream?

20 A Not any card. That's what I mean. So the card that's  
21 been modified before, and while that blocker software has  
22 been put into, will not receive the patch and will not  
23 receive the fix then, and it can still be used -- and the  
24 recipe can still be used against those card.

25 Q Well, then you had the second feature, though, to deal

1 with that called the electronic countermeasure, didn't you,  
2 sir?

3 A We -- we had the countermeasure to deal with that, but  
4 that's the exact point. As soon as the December 2000  
5 posting happened and the recipe was freely available to  
6 everybody, it was not anymore one source that we need to  
7 target with the electronic countermeasure, but tens and then  
8 thousands of sources, okay?

9 So each time you want to do a countermeasure, and I  
10 think it's important that you understand that, first you  
11 need to identify your target, so you need to purchase one of  
12 those card. Then you need to -- to extract the information  
13 in the cards to know what you will identify as the pirate  
14 card, and then design your countermeasure, put that in the  
15 system and broadcast it. It's doable when you have one or  
16 two source of piracy. As soon as you have thousands of  
17 them, which one do you want to pick? So it was useless at  
18 that time to have the countermeasure capability, because you  
19 don't know where to shoot. You are in the dark, and you  
20 don't know where to shoot and which is your target. It  
21 might be one guy publishing every day on the internet, but  
22 it's just for the fun. And yes, only one pirate card, and  
23 you will deploy extensive engineer and testing just to  
24 target one card? I think it has no value. It's just  
25 economically, it doesn't make sense.

1           So when you have one source of hacker, for sure you  
2 focus on that one and try to do countermeasure and to -- to  
3 stop that. When you have thousands of that, and that's what  
4 happened after the publication, you don't know where to  
5 shoot. So the countermeasure, yes, we have that capability,  
6 but it's a useless capability at that time.

7           Q     Didn't your countermeasure know exactly where to shoot?  
8 Didn't it shoot anyone who tried to overflow the buffer and  
9 mark the OTP section of the EEPROM so the card could be  
10 killed later?

11          A     That's one feature that we used, but unfortunately, not  
12 all the set-top box were always stable and not -- so  
13 communication problem at -- at the card level might be seen  
14 for the card as an attack, because the communication will  
15 not flow properly, and the card will say, "Okay, there is  
16 something wrong and may be under attack," and you can  
17 imagine that we cannot decide to kill every Smart Card in  
18 the field that feel they are under attack because there is a  
19 misbehavior on the set-top box because you have a plug --  
20 you have a polar issue or there is a strong ongoing -- so  
21 yes, on inter -- you can identify that, you can put that in  
22 the card, but in practice, you will never take the risk to  
23 shoot all of your religious subscriber, the poor guy paying  
24 because they don't try to hack into the system.

25          Q     Sir, wasn't there an ECM issue that was designed to



1 detect if somebody was sending more bytes to the  
2 communication buffer than it could handle?

3 A Yeah, we did that, yes.

4 Q And the second step of that countermeasure was to mark  
5 the EEPROM permanently with a mark that could then be  
6 spotted by the next transmission and killed, right?

7 A Yes, that's correct. But to my understanding, it was  
8 dissuasive means, and we never used that feature to kill the  
9 card in the end. I think we were told it was too risky to  
10 take that decision. If something -- if just one byte is flip  
11 in the card, you just want to kill the card. You just  
12 imagine the risk and the impact could stop business. It  
13 cannot be taken.

14 So it was a single well-thought engineered design, but  
15 business-wise, nobody will take the risk. There was no  
16 insurance -- if something was going wrong there, you will  
17 not just say, "Okay, sorry. We just tested the wrong byte  
18 or maybe some bytes just flipped in the card, and we just  
19 killed it. So sorry, Mr. Ergen, you are out of business."

20 Q And who made that decision? Was it Mr. Ergen?

21 A On what, on not to use that?

22 Q Yes.

23 A No. I think -- I think most of the times the people  
24 involved there were the senior management of EchoStar, but  
25 not Charlie directly.

1 Q Could the electronic countermeasure detect the fact  
2 that a card had not taken the software patch?

3 A So we have -- we have means to try to check what is in  
4 the card, so we have means to do what we call, and sorry to  
5 be technical again, checksum on part of the memory to say,  
6 "Okay, that part of that memory looks okay." So that means  
7 it might be located by way of the patch there. To do an  
8 entire check of the memory takes times, in time of  
9 computation times.

10 THE COURT: We are going to take a recess at this  
11 time, Counsel.

12 MR. STONE: Thank you, your Honor.

13 THE COURT: Ladies and gentlemen, why don't you  
14 take a recess. You are admonished not to discuss this  
15 matter amongst yourselves, nor form or express any opinion  
16 concerning this case. Thank you very much.

17 Thank you very much, sir. If you will please step  
18 down and return at 10 minutes after the hour.

19 (The following proceedings is taken outside  
20 the presence of the jury.)

21 THE COURT: Counsel, let me hold all of you for  
22 just a moment, and the gentleman who are counsel in the  
23 office -- or in the audience representing some of the  
24 respective parties.

25 Why don't you have a seat, and thank you for your

1 courtesy. I am still shocked when people stand in my court  
2 after being seated for so long on criminal matters, but  
3 thank you.

4 Along the way I've tried to indicate to counsel  
5 for both parties some areas of concern that may place the  
6 parties in a difficult position at the time of argument, and  
7 I think that this is at the beginning of this gentleman's  
8 testimony, and I foresee many other witnesses who are going  
9 to testify for EchoStar, and later for NDS, the same problem  
10 may present itself.

11 Counsel, why don't you have a seat. Thank you.

12 This Court has repeatedly stated this Court's  
13 concern about the respective parties withholding potentially  
14 material information, and I've left that statement in a  
15 rather neutral position over the last three years. This  
16 Court has repeatedly praised the laboring attorneys in this  
17 court, but also, frankly, applied as much pressure as  
18 possible concerning discovery requests and the full  
19 compliance with these orders.

20 Now, this Court humbly recognizes that I have  
21 limited jurisdiction limited to 150 miles, but I've also  
22 repeatedly warned the parties that the best evidence is to  
23 be produced in front of this jury. International companies,  
24 their management, their ownership may perceive that either  
25 distance or lack of jurisdiction make a court impotent.

1 I've repeatedly said to counsel that I would not  
2 allow, at least the justice system I believe in so strongly,  
3 to be manipulated, and there's been a course that I  
4 repeatedly say and continue to say to you on this day of  
5 literally pirates, witnesses and our corporate decisions,  
6 bluntly, leading to depositions being taken by hard-working  
7 attorneys for both sides, and then the choice through  
8 whatever tactical or managerial decisions, whether it's  
9 attorneys or ownership, deciding that this case initially  
10 was going to be postured so that the plaintiff and defendant  
11 would literally have the access to many of these alleged  
12 pirates and literally the power to bring these persons to  
13 court but are not doing so. We need to recall all of those  
14 discussions. This is a repeated mantra, and it will lead to  
15 some of the discovery disputes that are now forthcoming  
16 before this Court.

17 I've stated to counsel, both on the record and in  
18 some of the Saturday sessions, that much of the evidence  
19 that each you rely upon come from an alleged pirate  
20 community across the world that, quite frankly, the Court  
21 doesn't have jurisdiction through -- or of, except through  
22 your willingness to bring people to court so that the jury  
23 has a full and fair proceeding, and that each of you have  
24 the opportunity to cross-examine. And I've repeatedly said  
25 to you that I was concerned with a witness giving consent to

1 have a deposition two years ago in another jurisdiction and  
2 choosing to answer the questions that they chose to answer,  
3 and you were placed in the untenable position as esteemed  
4 counsel of presenting a case were the pirates were really  
5 making a choice or witnesses or corporations were making a  
6 choice who to present.

7           You recall that I've divided out most of the  
8 witnesses in this case trying to labor and find which of  
9 them has received past compensation, present compensation or  
10 have a nexus to your various companies, and that was simply  
11 in an effort, frankly, to apply pressure to you to send  
12 messages to the multinational corporations that a jury needs  
13 to have available witnesses subject to cross-examination  
14 with the most recent discovery possible. And I think we've  
15 all informally agreed and formally agreed and statements  
16 have been made on the record that we probably have  
17 discovered and had more discovery literally in the last few  
18 weeks to a month than we had in the last three years, you  
19 know, of broad and far-reaching discovery requests that  
20 don't seem to have complied with until recently, or some of  
21 them, anyway.

22           So I state to you now, as I've repeatedly stated,  
23 that this Court will not allow, at least in this American  
24 system of jurisprudence, these issues to be decided by  
25 snippets of depositions or by testimony that the pirate

1 community or corporate structure, and I don't include  
2 counsel, but just in case, tactical decisions made by the  
3 attorneys. This is old hat; we've talked about this  
4 numerous times.

5 Now, these depositions have reeked of various  
6 witnesses outside of the Court's jurisdiction failing to  
7 answer questions, choosing not to and, frankly, just  
8 ignoring some of the questions, and it set this Court on  
9 alert early on in the proceedings. Some of the witnesses  
10 were literally available to both the plaintiff and the  
11 defendant, and so this is a broad statement finding fault  
12 with neither party at this point, but you'll see the warning  
13 I'm about to send.

14 And then after literally repeated and threatened  
15 adverse inferences have you been successful as counsel with  
16 the Court's full compliment, frankly, to the trial attorneys  
17 on both sides, I think have been able to persuade whoever  
18 those entities are to bring these witnesses to court, and  
19 it's about as fair, finally, as we can have a proceeding, I  
20 think, with where we started. I think we counted literally  
21 14 to 16 people who were not going to testify who now are  
22 going to testify. I believe the message was certainly  
23 received by each of you as counsel, and I think eventually  
24 by the ownership and management.

25 I've counseled the parties that putting a face

1 also on corporate entities may be critical, and so you've  
2 been forewarned when Mr. Ergen testified and, in fact, was  
3 literally requesting his testimony at the last moment when I  
4 used my discretion. And apparently, Mr. Kudelski, or Henri,  
5 will be present, not Andre. The Court has no intention, of  
6 course, of forcing Andre Kudelski to come to court.

7           But I've also counseled you that the arguments  
8 regarding knowledge of satellite piracy and the conduct that  
9 this Court is hearing could be perceived by a jury or other  
10 entities to be so egregious that privacy of this type can  
11 only be condoned, sanctioned or blinked at at the very  
12 highest levels of corporate management and/or corporations.  
13 And I think just recently I placed both of you on notice  
14 that when it comes to argument, whether Mr. Peled testifies  
15 or not, I've simply counseled you in terms of fairness and  
16 counseled the Kudelskis through their counsel in terms of  
17 fairness, and I believe Mr. Murdoch in terms of fairness,  
18 that if you choose to produce those people, so be it, but if  
19 you choose not to, though, you enter at your own risk,  
20 because jurors are entitled to see when these types of  
21 allegations of satellite piracy to this alleged extent occur  
22 and/or the stealing of NDS's documents in some nondescript  
23 airport near the Arctic Circle in Canada someplace in the  
24 middle of the night that each of the corporate heads or  
25 owners are able to look at the jury in the eyes, as

1 Mr. Ergen did, and state, "I didn't do it. I didn't know  
2 about it. It never came to my attention." So therefore,  
3 everybody is on your own risk.

4 I know you're making up your mind about  
5 Mr. Murdoch, Mr. Peled and one of the Kudelskis. You are on  
6 fair notice about that because the Court intends to have  
7 far-ranging arguments, and I am not going to bring either  
8 party in. So therefore, once again, I'm placing you on  
9 notice about who appears and whether you choose to put a  
10 corporate face lies totally with your responsibility, and  
11 the Court will not countenance or hear at the last moment,  
12 "Judge, this is unfair." You've been placed on notice at  
13 least three times, at least on the record, and on more times  
14 imaginable on our Saturday sessions.

15 Their absence may be detrimental to your  
16 respective arguments, and I'll leave it at that.

17 I want to turn to the real reason for my  
18 discussion with you at this juncture, and that is -- finding  
19 no fault with the last witness, nor with any future  
20 witnesses -- the lack of production of material evidence  
21 that each of you have been chagrined about as counsel and  
22 have made accusations about the other party over the last  
23 three years. I think it's been almost equal.

24 I think, Mr. Hagan, you've been affronted and  
25 concerned on behalf of EchoStar, as Mr. Snyder has been



1     affronted and concerned on behalf of the NDS Group, and  
2     you've come into my court ably at 7:00 in the morning, 7:30,  
3     after hours, I've seen a lot of you in the last couple of  
4     years, and you've repeatedly asked the Court not to put this  
5     case on the fast track because you needed time. These  
6     omissions or the perceived lack of compliance concerning  
7     material evidence that's been requested by the parties over  
8     the last years may now have tragic consequences at trial.

9             This Court may be giving a neutral, a nonspecific  
10     instruction regarding material evidence within the control  
11     of a party. It would not be pinpointed, and the offending  
12     party would not be left with a specified or a specific  
13     instruction. My belief is that at the end of the case, this  
14     may turn out to be coequal with the discovery disputes that  
15     the two of you had in the past, but I'm going to use one  
16     example that just occurred, and then leave it to NDS in the  
17     future or EchoStar at present.

18             In taking example 816, if you have that document  
19     in front of you, counsel may be allowed -- I am not saying  
20     you will be yet -- to argue that the attempt to show  
21     NagraStar hacking of DirecTV or the reverse engineering was  
22     common, which was your attempt on cross-examination,  
23     Mr. Stone, of the present witness.

24             And in the e-mail, there was supposedly a zip  
25     drive or attachment, if you turn to that, that was not

1 produced that you believe that Mr. Nicolas may have in his  
2 position, and my memory is that you asked him about that,  
3 and he basically said, "I don't know," or "I haven't  
4 checked."

5 Now, whatever corporate entity, whether it's your  
6 entity as NDS or EchoStar, choose to present as a witness,  
7 so be it, but so far I've gotten a rather low level, and I  
8 don't mean that disparagingly, but people who are coming in  
9 who, of course, have climbed the corporate chain of  
10 leadership and responsibility, whoever gave allegedly some  
11 of these orders, if they were given, will get lost in the  
12 minutia of the corporation. I'm wise enough to know that.

13 So where does the responsibility lie if these  
14 accusations that each of you are leveling at each other?  
15 This potential instruction will be discussed later with  
16 counsel, but it is only fair to give the parties a chance  
17 to go back and search their files and place themselves in  
18 the most righteous and compliant position in front of this  
19 jury.

20 Three or four weeks from now, I will not  
21 countenance an argument that there is some unfairness in  
22 arguing for either party those material pieces of evidence  
23 that the party has in their control or should have in their  
24 control, so you go forward with this fair warning. Lack of  
25 resources will not be an excuse. The unwillingness to

1 search or just the flippancy of "I didn't look in the file"  
2 will not be an excuse when the best source often exists, but  
3 a thorough search hasn't been undertaken. Inconvenience  
4 with the flying across multinational boundaries will not be  
5 an excuse.

6 So I find no difficulty with Mr. Nicolas'  
7 testimony, but I believe this is simply the beginning of a  
8 long litany for both sides, and therefore, I apologize to  
9 EchoStar if it seems targeted towards Mr. Nicolas, it's not.  
10 Your frustration has been equal to NDS's frustration and  
11 EchoStar's frustration; they've matched. I have no way of  
12 knowing in three or four weeks of how that plays out, but by  
13 placing you on fair warning, I give you a chance to go back  
14 and search your file, have Mr. Nicolas back within 72 hours  
15 or by next Monday or Tuesday.

16 I give NDS fair warning to search their files, but  
17 I promise you the instruction that I draft will be neutral  
18 in that regard and not pinpointed, but a jury listening to  
19 this evidence I think is well going to understand when a  
20 question is asked why an e-mail is produced but the  
21 attachment is not available, and an answer is forthcoming of  
22 "I just didn't check," or that nobody looked in the file for  
23 EchoStar or, later on, NDS, how devastating that will be.

24 Now, I've decided to talk to you about this now  
25 because unless given forewarning, I don't want you to be

1 caught by surprise with such a broad neutral but potentially  
2 devastating instruction in three to four weeks, so you are  
3 all on notice. I am going to give you 10 minutes for a  
4 recess. We will promptly resume at 3:15.

5 (Recess.)

6 (The following proceedings is taken in the  
7 presence of the jury.)

8 THE COURT: All right. The jury is present, all  
9 counsel are present, and the witness is present.

10 And Counsel, your next question.

11 Mr. Nicolas?

12 Thank you, sir.

13 MR. STONE: Thank you, your Honor. I'd like to  
14 approach with these two demonstratives.

15 THE COURT: Counsel, you may.

16 CHRISTOPHE NICOLAS, PLAINTIFFS' WITNESS, RESUMED.

17 CROSS-EXAMINATION (Continued.)

18 BY MR. STONE:

19 Q The first one has a number A040, and it's basically the  
20 buffer memory. And all I want to do, Mr. Nicolas, is just  
21 give the folks on the jury just a sense of what we were  
22 talking about when we say "buffer overflow." And if I  
23 understand it correctly, you've got a buffer of a certain  
24 size, and this is 64 bytes, which is actually hexadecimal  
25 bytes. I think the decimal is a hundred bytes with the

1 ROM 3 card; does that sound about right?

2 A I think it's more than 64 bytes, so maybe the 100 is  
3 right. I think we need to check that when I --

4 Q Depending on whether it's hex or decimals --

5 A Yeah.

6 Q Well, it won't matter for purposes of my demonstration,  
7 but as bytes come in, it goes down through the buffer,  
8 right? And when you get to 64, that's the limit of the  
9 buffer. But if you put more in, it will wrap around because  
10 of the memory aliasing effect, and then it comes back up to  
11 RAM, correct --

12 A That's correct.

13 Q -- in essence?

14 So to stop the overflow, what you want to do is put  
15 some code that says, "Hey, when you get an incoming message  
16 that's 64 bytes or less, okay; if it's more than 64 bytes,  
17 I'm going to stop listening"?

18 A That's correct.

19 Q Okay. So all the code does is count the number of  
20 bytes coming in to the buffer and cuts it off if it's beyond  
21 the size?

22 A That's correct.

23 Q All right. The next demonstrative is 1586. It's  
24 actually an exhibit. It's the original code from the ROM 3.

25 And your Honor, for the record, I'm just going to write

1 in blue marker on Exhibit 1586.

2 THE COURT: No demonstrative will be going into  
3 evidence. You may be able to use them in argument, but no  
4 demonstratives are going in for evidence.

5 MR. STONE: For record purposes, it's  
6 been designated as 1586.

7 THE COURT: Thank you.

8 BY MR. STONE:

9 Q Mr. Nicolas, I don't know if you can see it.

10 A I have a copy of it in front. That's fine.

11 Q And these would be the comments to the ROM code for the  
12 IO buff, or the communications buffer; is that correct?

13 A That's correct, yes, sir.

14 Q And these are the comments that Mr. Osen wrote?

15 A Yeah, that was the comment in the file, so most  
16 probably Mr. Osen. I cannot make sure that it's him, but  
17 most probably.

18 Q And what we've done is blurred the code itself, but  
19 these are the comments that correlate to the code.

20 And that's his comment that says, "Note, that one  
21 should better check the value of APDU\_index to make sure it  
22 does not go beyond the end of IO buff." The APDUX -- excuse  
23 me, the APDU\_index is the index variable, correct?

24 A I think it's another index. The index variable will  
25 finger-point to the byte of where you need to write. The

1 APDU index is the length of the message that you need to  
2 store in the buffer.

3 Q And so you can check that value if it's more than the  
4 64 or less than the 64 as we showed --

5 A That's correct.

6 Q All right. The next demonstrative is the patch code.  
7 It's actually just the comments to the patch code.

8 And for the record, your Honor, I'll just write 1587 on  
9 the demonstrative.

10 And can you read what Mr. Osen wrote there?

11 A Yes. That was part of the patch code, not all of the  
12 patch code. I think it's important to understand, and  
13 that's the part which will deal with the execution if that  
14 APDU LEN or lens in the code is greater than the buffer  
15 size.

16 Q And I know we can't see the code, but am I correct that  
17 the author of the code is doing two separate and different  
18 checks for buffer overflow?

19 A If I recall -- let me read the comment again.

20 I think on that part of the software it's not where you  
21 check the length. I think the lengths has already been  
22 checked before, that part of the code. And here, what you  
23 do is you do a clean up of the variable use, so you clear  
24 the LEN and you clear the APDU, and that's the first  
25 comment, so you would erase that information, and then you

1 would set one byt in the OTP, as you mentioned that we have  
2 depicted an attempt to write onto the card. So that part of  
3 the code has nothing to do with the check itself. It's more  
4 of the steps followed after the -- the overflow has been  
5 detected.

6 Q Yeah, I didn't -- I didn't make a demonstrative of the  
7 test, but there was a test that dealt with the APDU index  
8 and a test that dealt with the buffer, LEN, correct?

9 A Yeah, maybe. I don't recall the --

10 Q But there were two checks to make sure that the message  
11 coming in was the correct size, right?

12 A That's what I don't remember, so if you can show me  
13 that, I can tell you. Without showing me that, it's  
14 difficult.

15 Q Well, you can see that there are two remedial measures  
16 here that clears LEN, that is one remedial measure --

17 A No. I think that's the two variable that was used, the  
18 length of the message and the APDU index, and those two are  
19 clear there because it's -- the detection has already been  
20 done, and you just clean up the -- the -- the -- the  
21 parmmitter (phonetic) used there, and you just flag the flag  
22 that you have detected something wrong.

23 Q When you say "cleared," do you mean that if it was more  
24 than the 64 bytes, it would stop receiving the communication  
25 and then clear it?



1 A Again, if you reach that part of the software, you have  
2 already detected the fact that you are -- you have an  
3 attempt to use that buffer for overflow. It's not the part  
4 of the software which is used to detect that buffer  
5 overflow.

6 Q No, I understand. There is a detection mechanism, and  
7 once it's detected, it actually clears these variables so  
8 that nothing bad, no hanky-panky can occur, right?

9 A Yeah. The fact is that you clean up that to make sure  
10 that we will not start to receive more byte from the  
11 outside. Until you have the APDU index, which has reached  
12 zero, you are still thinking that you will receive more  
13 byte, so by clearing them -- by forcing them to zero, you  
14 make sure that you stop the reception of the byte in the --

15 Q I'm sorry. Go ahead.

16 A -- in the card.

17 Q And then there is no way to overflow the buffer with  
18 this check and these clearing of the LEN and APDU index,  
19 correct?

20 A Can you repeat that?

21 Q There is no way to overflow the buffer once this  
22 process has been followed, correct?

23 A Again, it's not that process that prevent an attempt to  
24 overflow the buffer. It's another part of the code.

25 Q And this makes sure that it doesn't happen, correct?

1 A Not really. Again, it's another part of the software  
2 that do that.

3 Q Maybe I can be clearer.

4 What is it about clearing LEN and APDU index ensures  
5 there is no hanky-panky?

6 A Again, if I recall correctly, after the check, we just  
7 want to make sure that we don't keep any trace of a  
8 parameter which stall a value which exceeds the size of the  
9 buffer. We will suffer different types of attack  
10 afterwards, and if you can glitch or disable the check, the  
11 previous check, you don't want to have the card continue  
12 executing the reception of the byte there, so we detect  
13 those things. We remove all the wrong information in the  
14 card that may be misinterpreted by the code, and you mark in  
15 the OTP the fact that you have seen something wrong  
16 happening, and then you stop the card.

17 Q And did this change indeed make the card more robust?

18 A So those change for sure alter the -- the -- the usage  
19 of the recipe as it was designed there until -- for some  
20 times, and then unfortunately they find all the flavor or  
21 other mean to attack against the ROM 3 card.

22 Q When you say "other mean," do you mean glitching?

23 A Yeah, glitching is one, and as soon as -- just to take  
24 a few seconds to explain that. By "glitching" we mean an  
25 electrical glitch done on the card, and that glitch, which

1 is mainly hackers playing with the polar line on the card,  
2 will avoid the normal execution in the card of the software.  
3 So let's say you have a little check, and you glitch the  
4 recent time that the CPU needs to execute those code, you  
5 make a glitch, and the code is seen as a no -- a no  
6 operation, so the -- the -- the check itself is not done,  
7 and then you are back in business as a hacker, because the  
8 test that you have added to prevent the usage of the recipe  
9 is gone, and that was really what happened after a few  
10 times.

11 So we did the patch, and it was successful for some  
12 times, and as soon as they were mastering the glitch effect,  
13 by knowing the exact piece of information they need to  
14 glitch, by knowing the exact exit patch, the patch that we  
15 were using to do that by just glitching at the right time at  
16 the right instruction, the card was full open again.

17 Q Now, sir, the ROM 3 card came with security registers  
18 that could detect attempts to glitch, correct?

19 A I think the card came with very basic, unfortunately,  
20 ways to detect attempt of the glitch, which was definitely  
21 not strong enough for that type of attack.

22 Q Are you aware that that security register was not even  
23 used in the ROM 3 card?

24 A Because I think that one has been -- we tried, if I  
25 recall correctly, to use them, to use it, but in the normal

1 set-top box, it was detecting almost glitching every --  
2 every time, because the set-top box communication was so bad  
3 in terms of perturbation, electrical perturbation, the card  
4 was thinking it was under attack, so we cannot afford to --  
5 to have a card that --

6 Q Sir, my question was simply, isn't it true that the  
7 security register to detect glitching was not set in the ROM  
8 3 code?

9 A Yeah, that's my point. We tried, and then we said it  
10 was not usable, so we didn't use it.

11 Q Okay. I'd like to direct your attention to  
12 Exhibit 1184, please.

13 A Is that the new one?

14 Q It's the new one, I'm sorry.

15 A Thank you.

16 Q Do you recognize Exhibit 1184, an e-mail exchange  
17 including yourself and Andre Kudelski and Mr. Guggenheim?

18 A Yes, I do.

19 MR. STONE: Your Honor, I would move 1184.

20 THE COURT: Any objection?

21 MR. HAGAN: No objection, your Honor.

22 THE COURT: Received.

23 (Defense Exhibit No. 1184 is received in  
24 evidence.)

25

1 BY MR. STONE:

2 Q Okay. Looking at the top, there is a question from  
3 Mr. Guggenheim to Henri, and that's Henri Kudelski?

4 A I don't have either of the first e-mail, but there is  
5 Henri mentioned in the other one, so I can assume that it's  
6 Henri, yes.

7 Q Did you say or testify earlier that Mr. Kudelski worked  
8 with you?

9 A Yeah, that's correct.

10 Q And did he work on the patch and the electronic  
11 countermeasure for the ROM 3 code?

12 A Henri was not directly working on the design there. He  
13 was more working -- sorry, not on the design, on the  
14 development. He was working on the design of the  
15 countermeasure in general terms.

16 Q Okay. The question to Henri from Alan Guggenheim was,  
17 "Thanks, but can we say categorically that the method  
18 described does not work anymore, and that the patch blocks  
19 all attacks of that type?" And then down below there is  
20 Mr. Kudelski's e-mail that included a copy to you that says,  
21 "Hi Alan, the last post gives you the answer," and it goes  
22 on to quote a post that's an attachment. It says, "I  
23 haven't analyzed the February update yet, but if it does  
24 check, to make sure the packet size is under 64 byte, then  
25 there is no way to send the packet to wrap around and

1 overwrite the stack." Do you see that?

2 A Yeah. I'm a bit confused the way you interpret that,  
3 because normally in a chain of e-mail, the answer -- you  
4 have the question, and then the answer come on top and not  
5 below that.

6 Q Was Mr. Guggenheim the customer for the cards that  
7 received the patch?

8 A What do you mean by "the customer"?

9 Q Well, the cards were issued to NagraStar, correct?

10 A The card was issued to NagraStar, that's correct, yes.

11 Q And Mr. Guggenheim was the CEO of NagraStar, correct?

12 A That's correct.

13 Q So he's the customer, correct?

14 A Yeah, he's the -- the CEO of the company that we sell  
15 the card, from NagraCard to NagraStar, that's correct, yes.

16 Q And Mr. Guggenheim, the CEO, your customer, never said  
17 anything to you to indicate the patch did not prevent all  
18 buffer overflow attacks; isn't that true?

19 A Can you see that again?

20 Q Sure. Mr. Guggenheim, the CEO, the customer, never  
21 told you anything to indicate that he didn't believe the  
22 patch prevented all buffer overflow attacks.

23 (Witness consulting with Interpreter.)

24 THE WITNESS: We did talk about the effect of the  
25 patch with Mr. Guggenheim, if I understand correctly your

1 answer. Is there a statement from Mr. Guggenheim that there  
2 is other way to do the attack? I don't recall that specific  
3 statement.

4 BY MR. STONE:

5 Q Okay. If you could go to Exhibit 830, please.

6 Do you recognize Exhibit 830?

7 A It's an e-mail from Joel Conus to a lot of people along  
8 with myself.

9 MR. STONE: At this time I would move Exhibit 830?

10 THE COURT: Any objection?

11 MR. HAGAN: No objection, your Honor.

12 THE COURT: Received.

13 (Defense Exhibit No. 830 is received in  
14 evidence.)

15 BY MR. STONE:

16 Q And the date of this is February 23rd, 2001, correct?

17 A Correct, yes.

18 Q And one of Mr. Conus' responsibilities was to monitor  
19 the effectiveness of patches or electronic countermeasures,  
20 correct?

21 A That's correct, yes.

22 Q And it looks like this e-mail was also sent to  
23 Mr. Guggenheim who, as we've heard, is the CEO of the  
24 customer NagraStar, right?

25 A Yes.

1 Q And on the first page underneath the heading "Device"  
2 or "Devices Status"; do you see that?

3 A Yes, I see that.

4 Q And the reference to DNASP 003 would be the ROM 3 card,  
5 correct?

6 A That's correct, yes.

7 Q And the status that Mr. Conus listed was secured,  
8 correct?

9 A I think we have already debated that during the  
10 deposition. I think the status that he gave is secure but  
11 also VIP write in some card and card in -- in blocker not  
12 affected by -- by the update. So I think we -- we have  
13 described already before that after the -- the -- the  
14 broadcast of the patch, Smart Card that were in the set-top  
15 box may have received the -- the -- the patch, and then we  
16 would be secured against that flavor of the recipe. But  
17 some of the card would have already VIP write or 3M write in  
18 the card, and those write will remain in the card, so those  
19 are not secured. And the third type of card is the one that  
20 has a blocker software that will avoid the reception of the  
21 recipe in the card, and those card would not be secured. So  
22 it's a three-step answer to your question, not only the  
23 first part.

24 Q What is the difference between "compromised" and  
25 "secured"?



1 A I think compromised, we have approved that something  
2 has happened on the card, and that some people might take  
3 advantage of that compromise. And "secured" means that we  
4 are just in the process to try to resecure the card by doing  
5 a patch, and you will see in those report for a given ROM,  
6 the status is moving from uncompromised, then compromised  
7 and then secured or resecured, going back to compromised  
8 each time the hacker starts to attack our card.

9 Q Well, did you ever report to your customer for the  
10 ROM 3 that it was no longer secured or that the hole was no  
11 longer closed?

12 A Yeah, probably we were hoping that the patch was --  
13 will be successful to keep the -- the card secure,  
14 definitely, yes.

15 Q So it's your recollection that Mr. Conus sent some kind  
16 of e-mail at some point after 2001 that listed the ROM 3  
17 status as something other than secured or hole closed?

18 A I think that's -- that the time he's using, so  
19 according to the date, we were just after the broadcast of  
20 the patch, so hopefully just after that, we can say that the  
21 card that received the patch are in a secure state.

22 (Live reporter switch with Sharon Seffens.)

23 -oOo-

24

25

1 -oOo-

2 CERTIFICATE

3  
4 I hereby certify that pursuant to Section 753,  
5 Title 28, United States Code, the foregoing is a true and  
6 correct transcript of the stenographically reported  
7 proceedings held in the above-entitled matter and that the  
8 transcript page format is in conformance with the  
9 regulations of the Judicial Conference of the United States.

10  
11 Date: April 16, 2008

12  
13  
14 \_\_\_\_\_  
15 JANE C.S. RULE, U.S. COURT REPORTER

16 CSR NO. 9316  
17  
18  
19  
20  
21  
22  
23  
24  
25

<b>A</b>	<b>APDU</b> 23:1,14,24 24:7,18 25:11 25:18 26:4	<b>author</b> 23:17	<b>broadcast</b> 5:8,11 6:19 7:15 32:14 33:19	30:6,9
<b>able</b> 14:17 15:25 22:3	<b>APDUX</b> 22:22	<b>available</b> 7:5 13:13 14:10 19:21	<b>buff</b> 22:12,22	<b>CARTER</b> 1:3
<b>ably</b> 17:2	<b>APDU_index</b> 22:21,23	<b>avoid</b> 5:17 27:2 32:20	<b>buffer</b> 4:16 5:2 8:8 9:2 20:20,22 20:23 21:7,9,20 22:12 23:2,14 23:18 24:8 25:3 25:4,17,21,24 26:9 30:18,22	<b>case</b> 10:16 12:9 13:4,8 14:2 17:5 17:13
<b>above-entitled</b> 34:7	<b>apologize</b> 19:8	<b>aware</b> 27:22	<b>business</b> 9:12,19 27:7	<b>categorically</b> 29:17
<b>absence</b> 16:15	<b>apparently</b> 15:4	<b>A040</b> 20:19	<b>business-wise</b> 9:15	<b>caught</b> 20:1
<b>access</b> 12:11	<b>APPEARANCES</b> 2:1	<b>B</b>	<b>byt</b> 9:10 24:1	<b>Center</b> 2:14
<b>accusations</b> 16:22 18:14	<b>appears</b> 16:9	<b>back</b> 6:9 18:17 19:13,14 21:10 27:7 33:7	<b>byte</b> 9:17 22:25 25:10,13,14 26:12 29:24	<b>CENTRAL</b> 1:2
<b>activated</b> 6:2	<b>applied</b> 11:17	<b>bad</b> 25:8 28:2	<b>bytes</b> 9:1,18 20:24 20:25,25 21:2,7 21:16,16,20 24:24	<b>CEO</b> 30:11,14,16 30:20 31:23
<b>added</b> 27:8	<b>apply</b> 13:11	<b>basic</b> 27:19		<b>certain</b> 20:23
<b>admonished</b> 10:14	<b>approach</b> 20:14	<b>basically</b> 18:3 20:19	<b>C</b>	<b>certainly</b> 14:22
<b>advantage</b> 33:3	<b>approved</b> 33:1	<b>Battery</b> 2:14,20	<b>California</b> 1:2,17 1:23 2:15,21 4:1	<b>CERTIFICATE</b> 34:2
<b>adverse</b> 14:15	<b>April</b> 1:18 4:1 34:11	<b>beginning</b> 11:7 19:7	<b>call</b> 5:17 10:4	<b>certify</b> 34:4
<b>afford</b> 28:4	<b>Arctic</b> 15:23	<b>behavior</b> 5:20	<b>called</b> 7:1	<b>CHAD</b> 2:5
<b>affronted</b> 16:24 17:1	<b>areas</b> 11:5	<b>belief</b> 17:13	<b>Canada</b> 15:23	<b>chagrined</b> 16:21
<b>ago</b> 13:1	<b>argue</b> 17:20	<b>believe</b> 12:2 14:22 15:17 18:1 19:7 30:21	<b>capability</b> 7:18 8:5,6	<b>chain</b> 18:9 30:3
<b>agreed</b> 13:15,15	<b>arguing</b> 18:22	<b>best</b> 11:22 19:2	<b>card</b> 4:17 5:3,10 5:18,18,20,22 6:1,7,7,14,14,17 6:20,20,24 7:12 7:14,22,24 8:9 8:13,14,15,17 8:22 9:9,11,11 9:18 10:2,4 21:1 24:2 25:16 26:11,14,16,17 26:21,25 27:1,2 27:16,17,19,23 28:3,5 30:10,15 32:4,11,11,14 32:17,18,18,19 32:21,21 33:2,4 33:8,13,21	<b>change</b> 18:16 19:13
<b>ahead</b> 25:15	<b>argument</b> 11:6 15:14 18:21 22:3	<b>better</b> 22:21	<b>cards</b> 5:7,13 7:13	<b>change</b> 26:17,18
<b>airport</b> 15:23	<b>arguments</b> 15:7 16:7,16	<b>beyond</b> 21:20 22:22		<b>Charlie</b> 9:25
<b>al</b> 1:6,9 2:3,10	<b>asked</b> 17:4 18:2 19:20	<b>bit</b> 30:2		<b>check</b> 10:3,8 19:22 21:3 22:21 23:3,21 24:3 25:18 26:6 26:10,11 27:3,6 29:24
<b>Alan</b> 29:16,21	<b>ASSOCIATES</b> 2:4	<b>black</b> 4:14,25		<b>checked</b> 18:4 23:22
<b>alert</b> 14:9	<b>assume</b> 29:5	<b>blinked</b> 15:11		<b>checks</b> 23:18 24:10
<b>aliasing</b> 21:10	<b>attachment</b> 17:25 19:21 29:22	<b>blocker</b> 5:17,22 6:21 32:11,20		<b>checksum</b> 10:5
<b>allegations</b> 15:21	<b>attack</b> 4:16 5:3 8:14,16,18 26:9 26:21 27:21 28:4 31:2 33:8	<b>blocks</b> 29:18		<b>choice</b> 12:7 13:5,6
<b>alleged</b> 12:11,19 15:21	<b>attacks</b> 29:19 30:18,22	<b>blue</b> 22:1		<b>choose</b> 15:18,19 16:9 18:6
<b>allegedly</b> 18:10	<b>attempt</b> 17:20,22 24:2 25:3,23 27:20	<b>bluntly</b> 12:6		<b>choosing</b> 13:2 14:7
<b>allow</b> 12:2 13:23	<b>attempts</b> 27:18	<b>blurred</b> 22:18		<b>chose</b> 13:2
<b>allowed</b> 4:16 17:19	<b>attention</b> 16:2 28:11	<b>bought</b> 6:1		<b>CHRISTINE</b> 2:6
<b>alter</b> 26:18	<b>attorneys</b> 2:4,7,11 2:13,18,20 11:16 12:7,9 14:3,16	<b>boundaries</b> 19:4		<b>CHRISTOPHE</b> 3:7 4:7 20:16
<b>American</b> 13:23	<b>audience</b> 10:23	<b>box</b> 4:14,25 5:9 5:10 6:7,12,15 8:12,19 28:1,2 32:15		<b>Circle</b> 15:23
<b>Ana</b> 1:17,23 4:1		<b>brand</b> 6:6		<b>clean</b> 23:23 24:20 25:9
<b>analyzed</b> 29:23		<b>bring</b> 12:12,22 14:18 16:7		<b>clear</b> 6:9,11 23:23 23:24 24:19,25
<b>Andre</b> 15:5,6 28:17		<b>broad</b> 13:19 14:11 20:1		<b>cleared</b> 24:23
<b>and/or</b> 15:12,22				
<b>answer</b> 4:10 5:18 5:20 13:2,2 14:7 19:21 29:21 30:3,4 31:1 32:22				
<b>anymore</b> 4:19 7:6 29:18				
<b>anyway</b> 13:21				

<b>clearer</b> 26:3	<b>concerned</b> 12:25	20:9,10,15	33:19 34:11	<b>designed</b> 4:13,24
<b>clearing</b> 25:13,18	16:25 17:1	<b>counseled</b> 14:25	<b>DAVID</b> 1:3 2:6,13	5:24 8:25 26:19
26:4	<b>concerning</b> 10:16	15:7,15,16	<b>day</b> 1:10 4:2 7:21	<b>detect</b> 9:1 10:1
<b>clears</b> 24:16 25:7	11:18 17:6	<b>count</b> 21:19	12:4	25:4 26:12
<b>climbed</b> 18:9	<b>condoned</b> 15:11	<b>counted</b> 14:20	<b>deal</b> 6:25 7:3	27:18,20 28:7
<b>closed</b> 33:11,17	<b>conduct</b> 15:8	<b>countenance</b>	23:13	<b>detected</b> 24:5,22
<b>code</b> 21:15,19,24	<b>Conference</b> 34:9	16:11 18:21	<b>dealer</b> 6:8	25:2,7
22:11,18,19	<b>conformance</b>	<b>countermeasure</b>	<b>dealt</b> 24:7,8	<b>detecting</b> 28:1
23:6,7,11,12,14	34:8	7:1,3,7,9,14,18	<b>debated</b> 32:9	<b>detection</b> 24:19
23:16,17,22	<b>confused</b> 30:2	8:2,5,7 9:4 10:1	<b>Debbie</b> 4:4	25:6
24:3 25:24	<b>consent</b> 12:25	29:11,15	<b>December</b> 7:4	<b>detrimental</b> 16:15
26:14 27:4,5	<b>consequences</b>	<b>countermeasures</b>	<b>decide</b> 8:17	<b>devastating</b> 19:23
28:8 29:11 34:5	17:8	31:19	<b>decided</b> 13:24	20:2
<b>coequal</b> 17:14	<b>consulting</b> 30:23	<b>couple</b> 17:3	19:24	<b>development</b>
<b>come</b> 12:19 15:6	<b>continue</b> 12:4	<b>course</b> 12:3 15:6	<b>deciding</b> 12:9	29:14
17:2 21:7 30:4	26:11	18:9	<b>decimal</b> 20:25	<b>Device</b> 32:1
<b>comes</b> 15:14	<b>Continued</b> 4:7,8	<b>court</b> 1:1,22,22	<b>decimals</b> 21:4	<b>Devices</b> 32:2
21:10	20:17	4:21 10:10,13	<b>decision</b> 9:10,20	<b>difference</b> 32:24
<b>coming</b> 18:8	<b>control</b> 17:10	10:21 11:1,12	<b>decisions</b> 12:5,8	<b>different</b> 23:17
21:20 24:11	18:23,24	11:16,17,20,25	14:2	26:9
<b>comment</b> 22:15	<b>Conus</b> 31:7,18	12:13,16,20,22	<b>defendant</b> 12:10	<b>difficult</b> 11:6
22:20 23:19,25	32:7 33:15	13:23 14:8,18	14:11	24:14
<b>comments</b> 22:11	<b>copy</b> 22:10 29:20	15:5,6,9 16:6,11	<b>Defendants</b> 1:10	<b>difficulty</b> 19:6
22:14,19 23:7	<b>corporate</b> 12:5	17:2,4,9 20:8,15	2:10	<b>DILGER</b> 2:12
<b>commercial</b> 5:16	14:1 15:1,12,24	22:2,7 28:20,22	<b>Defense</b> 3:14,15	<b>direct</b> 3:6 28:11
<b>commit</b> 4:16	16:10 18:5,9	31:10,12 34:14	28:23 31:13	<b>directly</b> 9:25
<b>common</b> 17:22	<b>corporation</b> 1:6	<b>courtesy</b> 11:1	<b>definitely</b> 27:20	29:12
<b>communication</b>	2:3 18:12	<b>Court's</b> 11:12	33:14	<b>DirectTV</b> 17:21
8:13,14 9:2	<b>corporations</b> 13:5	14:6,16	<b>demonstration</b>	<b>disable</b> 26:10
24:24 28:2	13:12 15:12	<b>CPU</b> 27:4	21:6	<b>discovered</b> 13:17
<b>communications</b>	<b>correct</b> 5:4,25 9:7	<b>criminal</b> 11:2	<b>demonstrative</b>	<b>discovery</b> 11:18
22:12	21:11,12,18,22	<b>critical</b> 15:1	21:23 22:2 23:6	12:15 13:14,17
<b>community</b> 12:20	22:12,13,23	<b>Cross</b> 3:6	23:9 24:6	13:19 17:14
14:1	23:5,16 24:8,11	<b>cross-examinati...</b>	<b>demonstratives</b>	<b>discretion</b> 15:4
<b>companies</b> 11:23	25:19,22,25	4:8 13:13 17:22	20:14 22:4	<b>discuss</b> 10:14
13:10	27:18 29:9 30:9	20:17	<b>Depending</b> 21:4	<b>discussed</b> 18:15
<b>company</b> 30:14	30:10,11,12,13	<b>cross-examine</b>	<b>depicted</b> 24:2	<b>discussion</b> 16:18
<b>compensation</b>	30:15 31:16,17	12:24	<b>deploy</b> 5:6 7:23	<b>discussions</b> 12:14
13:9,9	31:20,21 32:5,6	<b>CSR</b> 1:21 34:15	<b>deployed</b> 4:13,25	<b>dish</b> 6:12,16
<b>compliance</b> 11:19	32:8 34:6	<b>customer</b> 30:6,8	5:24	<b>disparagingly</b>
17:6	<b>correctly</b> 5:5	30:13,16,20	<b>deposition</b> 13:1	18:8
<b>compliant</b> 18:18	20:23 26:6	31:24 33:9	32:10	<b>disputes</b> 12:15
<b>complied</b> 13:20	27:25 30:25	<b>cuts</b> 21:20	<b>depositions</b> 12:6	17:14
<b>compliment</b>	<b>correlate</b> 22:19	<b>C.S</b> 1:21 34:14	13:25 14:5	<b>dissuasive</b> 9:8
14:16	<b>counsel</b> 2:1 10:11		<b>described</b> 29:18	<b>distance</b> 11:25
<b>compromise</b> 33:3	10:21,22 11:4	<b>D</b>	32:13	<b>District</b> 1:1,2,22
<b>compromised</b>	11:11 12:1,17	<b>D</b> 2:6,19 3:1	<b>design</b> 5:6 7:14	<b>divided</b> 13:7
32:24 33:1,6,7	13:4 14:2,15,23	<b>DARIN</b> 2:12	9:14 29:12,13	<b>DNASP</b> 32:4
<b>computation</b> 10:9	15:16 16:21	<b>dark</b> 7:19	29:14	<b>doable</b> 7:15
<b>concern</b> 11:5,13	17:19 18:16	<b>date</b> 6:13 31:16	<b>designated</b> 22:6	<b>document</b> 17:18

<b>documents</b> 15:22	<b>erase</b> 23:25	25:2,9 26:15	10:19 20:6	28:1,7
<b>doing</b> 6:4,11	<b>Ergen</b> 9:19,20	<b>failing</b> 14:6	<b>forcing</b> 15:6	<b>go</b> 18:17,24 19:13
12:13 23:17	15:2 16:1	<b>fair</b> 12:23 14:19	25:13	22:22 25:15
33:4	<b>essence</b> 21:13	16:6 18:16,24	<b>foregoing</b> 34:5	31:5
<b>draft</b> 19:17	<b>esteemed</b> 13:3	19:13,16	<b>foresee</b> 11:8	<b>goes</b> 21:7 29:21
<b>drive</b> 17:25	<b>et</b> 1:6,9 2:3,10	<b>fairness</b> 15:15,17	<b>forewarned</b> 15:2	<b>going</b> 9:16 10:10
	<b>eventually</b> 14:23	15:17	<b>forewarning</b>	11:8 12:10
	<b>everybody</b> 7:6	<b>far</b> 18:7	19:25	14:21,22 16:7
	16:3	<b>far-ranging</b> 16:7	<b>form</b> 10:15	17:15 19:19
<hr/> <b>E</b> <hr/>	<b>evidence</b> 3:13	<b>far-reaching</b>	<b>formally</b> 13:15	20:3 21:17,25
<b>E</b> 3:1	11:22 12:18	13:19	<b>format</b> 34:8	22:2,4 33:7
<b>earlier</b> 29:7	16:20 17:7,10	<b>fast</b> 17:5	<b>forthcoming</b>	<b>gotten</b> 18:7
<b>early</b> 14:9	18:22 19:19	<b>fault</b> 14:11 16:19	12:15 19:21	<b>greater</b> 23:14
<b>EBERHART</b>	22:3,4 28:24	<b>feature</b> 6:25 8:11	<b>forward</b> 18:24	<b>group</b> 1:9 2:10
2:13	31:14	9:8	<b>Fountainview</b> 2:7	5:16,16 17:1
<b>EchoStar</b> 1:6 2:3	<b>exact</b> 7:4 27:13,14	<b>February</b> 29:23	<b>four</b> 18:20 19:12	<b>Guggenheim</b>
9:24 11:9 16:25	<b>exactly</b> 8:7	31:16	20:2	28:17 29:3,16
17:17 18:6 19:9	<b>EXAMINATION</b>	<b>Federal</b> 1:22	<b>Francisco</b> 2:15,21	30:6,11,16,20
19:23	3:4	<b>feel</b> 8:18	<b>frankly</b> 11:17	30:25 31:1,23
<b>EchoStarD4V4</b>	<b>example</b> 17:16,18	<b>FEY</b> 2:24	12:20 13:11	<b>guy</b> 7:21 8:23
1:25	<b>exceeds</b> 26:8	<b>field</b> 8:18	14:7,16	
<b>EchoStar's</b> 19:11	<b>exchange</b> 28:16	<b>file</b> 19:1,14,22	<b>freely</b> 7:5	<hr/> <b>H</b> <hr/>
<b>ECM</b> 8:25	<b>excuse</b> 18:25 19:2	22:15	<b>French</b> 2:24	<b>hack</b> 8:24
<b>economically</b>	19:5 22:22	<b>files</b> 18:17 19:16	<b>front</b> 11:23 17:19	<b>hacker</b> 5:15 8:1
7:25	<b>execute</b> 27:4	<b>finally</b> 14:19	18:18 22:10	27:7 33:8
<b>EEPROM</b> 8:9 9:5	<b>executing</b> 26:12	<b>find</b> 5:12 13:8	<b>frustration</b> 19:10	<b>hackers</b> 6:4 27:1
<b>effect</b> 21:10 27:12	<b>execution</b> 23:13	19:6 26:20	19:10,11	<b>hacking</b> 17:21
30:24	27:2	<b>finding</b> 14:11	<b>full</b> 11:18 12:23	<b>Hagan</b> 2:5 16:24
<b>effectiveness</b>	<b>exhibit</b> 3:13 21:24	16:18	14:16 27:16	28:21 31:11
31:19	22:1 28:12,16	<b>fine</b> 22:10	<b>fun</b> 7:22	<b>handle</b> 9:2
<b>effort</b> 13:11	28:23 31:5,6,9	<b>finger-point</b>	<b>future</b> 16:19	<b>hanky-panky</b>
<b>egregious</b> 15:10	31:13	22:25	17:17	25:8 26:5
<b>either</b> 11:24 16:7	<b>EXHIBITS</b> 3:11	<b>first</b> 7:10 20:19		<b>happen</b> 25:25
18:22 29:4	<b>exists</b> 19:2	23:24 29:4 32:1	<hr/> <b>G</b> <hr/>	<b>happened</b> 7:5 8:4
<b>electrical</b> 26:25	<b>exit</b> 27:14	32:23	<b>Gale</b> 4:4	27:9 33:2
28:3	<b>explain</b> 26:24	<b>fix</b> 6:8,23	<b>general</b> 29:15	<b>happening</b> 26:16
<b>electronic</b> 7:1,7	<b>express</b> 10:15	<b>flag</b> 24:21,21	<b>gentleman</b> 10:22	<b>hard-working</b>
10:1 29:10	<b>extensive</b> 7:23	<b>flavor</b> 26:20	<b>gentleman's</b> 11:7	12:6
31:19	<b>extent</b> 5:6 15:21	32:16	<b>gentlemen</b> 10:13	<b>HARTSON</b> 2:18
<b>Embarcadero</b>	<b>extract</b> 7:12	<b>flip</b> 9:10	<b>give</b> 18:16 19:13	<b>hat</b> 14:3
2:14	<b>eyes</b> 15:25	<b>flippancy</b> 19:1	19:16 20:3,21	<b>heading</b> 32:1
<b>engineer</b> 7:23	<b>e-mail</b> 17:24	<b>flipped</b> 9:18	<b>given</b> 18:11 19:25	<b>heads</b> 15:24
<b>engineered</b> 9:14	19:20 28:16	<b>flow</b> 8:15	33:5	<b>hear</b> 16:11
<b>engineering</b> 17:21	29:4,20 30:3	<b>flying</b> 19:4	<b>gives</b> 29:21	<b>heard</b> 31:23
<b>ensures</b> 26:4	31:7,22 33:16	<b>focus</b> 8:2	<b>giving</b> 12:25 17:9	<b>hearing</b> 15:9
<b>enter</b> 15:19	<b>E3M</b> 5:16	<b>folks</b> 20:21	<b>glitch</b> 26:10,25,25	<b>held</b> 34:7
<b>entire</b> 10:8		<b>follow</b> 4:19 5:4	27:3,5,12,14,18	<b>help</b> 4:19
<b>entities</b> 14:18		<b>followed</b> 24:4	27:20	<b>Henri</b> 15:4 29:3,3
15:1,10		25:22	<b>glitching</b> 26:22,23	29:5,6,12,16
<b>entitled</b> 15:20	<hr/> <b>F</b> <hr/>	<b>following</b> 4:5 5:5	26:24 27:15	<b>hex</b> 21:4
<b>entity</b> 18:5,6	<b>face</b> 14:25 16:10			
<b>equal</b> 16:23 19:10	<b>fact</b> 5:5 10:1 15:2			

<b>hexadecimal</b> 20:24	<b>informally</b> 13:15	<hr/> <b>K</b> <hr/>	<b>line</b> 27:1	<b>measures</b> 24:15
<b>Hey</b> 21:15	<b>information</b> 7:12 11:14 23:25	<b>keep</b> 26:7 33:13	<b>listed</b> 32:7 33:16	<b>mechanism</b> 25:6
<b>Hi</b> 29:21	26:13 27:13	<b>KENNETH</b> 2:19	<b>listening</b> 19:18 21:17	<b>memory</b> 10:5,6,8 18:2 20:20 21:10
<b>highest</b> 15:12	<b>initially</b> 12:9	<b>kill</b> 8:17 9:8,11	<b>litany</b> 19:8	<b>mentioned</b> 24:1 29:5
<b>HOGAN</b> 2:18	<b>instruction</b> 17:10 17:13 18:15	<b>killed</b> 8:10 9:6,19	<b>literally</b> 12:5,11 12:12 13:17 14:10,14,20 15:3	<b>message</b> 14:22 21:15 23:1 24:10,18
<b>hold</b> 10:21	19:17 20:2 27:16	<b>kind</b> 33:15	<b>LLP</b> 2:11,18	<b>messages</b> 13:12
<b>hole</b> 33:10,17	<b>instructions</b> 4:15 5:1	<b>KLEIN</b> 2:19	<b>located</b> 10:7	<b>method</b> 29:17
<b>Honor</b> 10:12 20:13 21:25 23:8 28:19,21 31:11	<b>insurance</b> 9:16	<b>know</b> 6:13 7:13 7:19,20 8:4,7 13:19 16:1,4 18:3,12 22:9 23:16	<b>long</b> 11:2 19:8	<b>middle</b> 15:24
<b>HONORABLE</b> 1:3	<b>intends</b> 16:6	<b>knowing</b> 19:12 27:13,14	<b>longer</b> 33:10,11	<b>miles</b> 11:21
<b>hooked</b> 6:12	<b>intention</b> 15:5	<b>knowledge</b> 15:8	<b>look</b> 15:25 19:1	<b>million</b> 5:11
<b>hooking</b> 6:15	<b>inter</b> 8:21	<b>Kudelski</b> 15:4,6 28:17 29:3,7	<b>looked</b> 19:22	<b>mind</b> 16:4
<b>hopefully</b> 33:20	<b>International</b> 11:23	<b>Kudelskis</b> 15:16 16:5	<b>Looking</b> 29:2	<b>minutes</b> 10:18 20:3
<b>hoping</b> 33:12	<b>internet</b> 4:14,15 5:1,2 6:6 7:21	<b>Kudelski's</b> 29:20	<b>looks</b> 10:6 31:22	<b>minutia</b> 18:12
<b>hour</b> 10:18	<b>interpret</b> 30:2	<hr/> <b>L</b> <hr/>	<b>lost</b> 18:11	<b>misbehavior</b> 8:19
<b>hours</b> 17:3 19:14	<b>Interpreter</b> 2:24 30:23	<b>L</b> 2:12,19	<b>lot</b> 17:3 31:7	<b>misinterpreted</b> 26:14
<b>Houston</b> 2:8	<b>involved</b> 9:24	<b>labor</b> 13:8	<b>low</b> 18:7	<b>modified</b> 6:21
<b>humbly</b> 11:20	<b>IO</b> 22:12,22	<b>laboring</b> 11:16	<hr/> <b>M</b> <hr/>	<b>moment</b> 10:22 15:3 16:11
<b>hundred</b> 20:25	<b>issue</b> 8:20,25	<b>lack</b> 11:25 16:20 17:6 18:24	<b>M</b> 2:5,6	<b>Monday</b> 19:15
<hr/> <b>I</b> <hr/>	<b>issued</b> 6:18 30:9 30:10	<b>Ladies</b> 10:13	<b>making</b> 13:5,5 16:4	<b>monitor</b> 31:18
<b>Identification</b> 3:13	<b>issues</b> 13:24	<b>Law</b> 2:4,7,11,13 2:18,20	<b>management</b> 9:24 11:24 14:24 15:12	<b>month</b> 13:18
<b>identify</b> 7:11,13 8:21	<b>IV</b> 1:10 4:2	<b>lead</b> 12:14	<b>managerial</b> 12:8	<b>morning</b> 17:2
<b>ignoring</b> 14:8	<hr/> <b>J</b> <hr/>	<b>leadership</b> 18:10	<b>manipulated</b> 12:3	<b>move</b> 28:19 31:9
<b>imaginable</b> 16:14	<b>Jane</b> 1:21 34:14	<b>leading</b> 12:6	<b>mantra</b> 12:14	<b>moving</b> 33:6
<b>imagine</b> 8:17 9:12	<b>JEAN-MARIE</b> 2:24	<b>leave</b> 16:16 17:16	<b>mark</b> 8:9 9:4,5 26:14	<b>multinational</b> 13:12 19:4
<b>immediately</b> 4:13 4:24	<b>Joel</b> 31:7	<b>left</b> 11:14 17:12	<b>marker</b> 22:1	<b>Murdoch</b> 15:17 16:5
<b>impact</b> 9:12	<b>Judge</b> 1:3 16:12	<b>LEN</b> 23:14,24 24:8,16 25:18 26:4	<b>mastering</b> 27:12	<b>MYERS</b> 2:11
<b>important</b> 7:10 23:12	<b>Judicial</b> 34:9	<b>length</b> 23:1,21 24:18	<b>matched</b> 19:11	<hr/> <b>N</b> <hr/>
<b>impotent</b> 11:25	<b>juncture</b> 16:18	<b>lengths</b> 23:21	<b>material</b> 11:14 16:20 17:7,10 18:22	<b>N</b> 3:1
<b>include</b> 14:1	<b>jurisdiction</b> 11:21 11:25 12:21 13:1 14:6	<b>lens</b> 23:14	<b>matter</b> 10:15 21:6 34:7	<b>NagraCard</b> 30:15
<b>included</b> 29:20	<b>jurisprudence</b> 13:24	<b>let's</b> 27:3	<b>matters</b> 11:2	<b>NagraStar</b> 17:21 30:9,10,11,15 31:24
<b>including</b> 28:17	<b>jurors</b> 15:20	<b>level</b> 8:13 18:7	<b>mean</b> 6:20 18:8 24:23 26:21,22 26:22,24 30:8	<b>Name</b> 3:6
<b>incoming</b> 21:15	<b>jury</b> 1:16 4:6 10:20 11:23 12:22 13:12 15:9,25 18:19 19:18 20:7,8,21	<b>leveling</b> 18:14	<b>means</b> 9:8 10:3,4 10:6 33:3	<b>NATHANIEL</b> 2:12
<b>Inconvenience</b> 19:3	<b>justice</b> 12:2	<b>levels</b> 15:12	<b>measure</b> 24:16	<b>NDS</b> 1:9 2:10 11:9 17:1,16 18:6 19:16,23 NDS's 15:22
<b>index</b> 22:23,24,24 23:1 24:7,18 25:11,18 26:4		<b>lie</b> 18:13		
<b>indicate</b> 11:4 30:17,21		<b>lies</b> 16:10		
<b>inferences</b> 14:15		<b>limit</b> 21:8		
		<b>limited</b> 11:21,21		

19:10	<b>once</b> 16:8 25:7,21	29:10,18 30:7	<b>polar</b> 8:20 27:1	<b>properly</b> 8:15
<b>near</b> 15:23	<b>ongoing</b> 8:20	30:17,22,25	<b>poor</b> 8:23	<b>protect</b> 5:6,9
<b>need</b> 5:8 7:6,11,11	<b>oOo</b> 33:23 34:1	32:14,15 33:5	<b>position</b> 11:6,15	<b>protected</b> 5:13,21
7:12 12:13 21:3	<b>open</b> 27:16	33:12,20,21	13:3 18:2,18	<b>publication</b> 8:4
22:25 23:1	<b>operation</b> 27:6	<b>patches</b> 6:11	<b>possible</b> 6:8,15	<b>published</b> 6:5
27:13	<b>opinion</b> 10:15	31:19	11:18 13:14	<b>publishing</b> 7:21
<b>needed</b> 17:5	<b>opportunity</b>	<b>paying</b> 8:23	<b>post</b> 29:21,22	<b>purchase</b> 6:6 7:11
<b>needs</b> 13:12 27:4	12:24	<b>Peled</b> 15:14 16:5	<b>posted</b> 4:15 5:2	<b>purposes</b> 21:6
<b>neither</b> 14:12	<b>orders</b> 11:19	<b>people</b> 9:23 11:1	<b>posting</b> 7:5	22:5
<b>neutral</b> 11:15	18:11	12:22 14:21	<b>postings</b> 4:15 5:1	<b>pursuant</b> 34:4
17:9 19:17 20:1	<b>original</b> 21:24	15:18 18:8 31:7	<b>postured</b> 12:10	<b>put</b> 6:8,22 7:14
<b>never</b> 8:22 9:8	<b>Osen</b> 22:14,16	33:2	<b>potential</b> 18:15	8:21 16:9 17:4
16:2 30:16,20	23:10	<b>perceive</b> 11:24	<b>potentially</b> 11:13	21:9,14
<b>new</b> 6:6 28:13,14	<b>OTP</b> 8:9 24:1	<b>perceived</b> 15:9	20:1	<b>putting</b> 5:16 6:16
<b>nexus</b> 13:10	26:15	17:6	<b>power</b> 12:12	14:25
<b>Nicolas</b> 3:7 4:7	<b>outside</b> 10:19	<b>permanently</b> 9:5	<b>practice</b> 8:22	<b>p.m</b> 4:3
18:1 19:6,9,14	14:6 25:11	<b>persons</b> 12:12	<b>praised</b> 11:16	
20:11,16,20	<b>overflow</b> 4:16 5:3	<b>persuade</b> 14:17	<b>presence</b> 4:6	<b>Q</b>
22:9	8:8 20:22 21:14	<b>perturbation</b> 28:3	10:20 20:7	<b>question</b> 4:11,12
<b>night</b> 15:24	23:18 24:4 25:3	28:3	<b>present</b> 2:23	4:21 19:20
<b>NOLL</b> 2:6	25:5,17,21,24	<b>phonetic</b> 24:21	11:10 13:6,9	20:10 28:6 29:2
<b>nondescript</b>	30:18,22	<b>pick</b> 7:17	15:5 17:17,23	29:16 30:4
15:22	<b>overwrite</b> 30:1	<b>piece</b> 27:13	18:6 20:8,9,9	32:22
<b>nonspecific</b> 17:9	<b>owners</b> 15:25	<b>pieces</b> 18:22	<b>presenting</b> 13:4	<b>questions</b> 13:2
<b>normal</b> 5:19 6:13	<b>ownership</b> 11:24	<b>pinpointed</b> 17:11	<b>PRESIDING</b> 1:3	14:7,8
27:2,25	12:9 14:24	19:18	<b>pressure</b> 11:17	<b>quite</b> 12:20
<b>normally</b> 30:3	<b>O'MELVENY</b>	<b>piracy</b> 7:16 15:8	13:11	<b>quote</b> 29:22
<b>Note</b> 22:20	2:11	15:21	<b>pretty</b> 6:9,11	
<b>notice</b> 15:13 16:6	<b>P</b>	<b>pirate</b> 6:9,14 7:13	<b>prevent</b> 25:23	<b>R</b>
16:9,12 20:3	<b>packet</b> 29:24,25	7:22 12:19	27:8 30:17	<b>R</b> 2:13
<b>number</b> 20:19	<b>page</b> 32:1 34:8	13:25	<b>prevented</b> 30:22	<b>RAM</b> 21:11
21:19	<b>parmitter</b> 24:21	<b>pirates</b> 12:5,12	<b>previous</b> 26:11	<b>reach</b> 25:1
<b>numerous</b> 14:4	26:8	13:4	<b>privacy</b> 15:10	<b>reached</b> 25:11
<b>O</b>	<b>part</b> 10:5,6 23:11	<b>place</b> 11:5 18:17	<b>probably</b> 13:16	<b>read</b> 23:10,19
<b>O</b> 1:3	23:13,20,22	<b>placed</b> 13:3 15:13	22:16,17 33:12	<b>real</b> 16:17
<b>objection</b> 28:20	24:2 25:1,3,24	16:12	<b>problem</b> 8:13	<b>really</b> 13:4 26:1
28:21 31:10,11	26:1 32:23	<b>placing</b> 16:8	11:9	27:9
<b>occur</b> 15:21 25:8	<b>parties</b> 10:24 11:5	19:13	<b>proceeding</b> 12:23	<b>reason</b> 16:17
<b>occurred</b> 17:16	11:6,13,22	<b>plaintiff</b> 12:10	14:19	<b>recall</b> 12:13 13:7
<b>October</b> 4:14,25	14:25 17:7	14:10	<b>proceedings</b> 1:15	23:19 24:9 26:6
<b>offending</b> 17:11	18:16	<b>Plaintiffs</b> 1:7 2:3	4:5 10:19 14:9	27:25 31:2
<b>office</b> 10:23	<b>party</b> 14:12 16:8	4:7 20:16	20:6 34:7	<b>receive</b> 5:9 6:13
<b>Official</b> 1:22	16:22 17:11,12	<b>playing</b> 27:1	<b>process</b> 25:22,23	6:18,22,23
<b>okay</b> 4:12,22 7:8	18:22,23	<b>plays</b> 19:12	33:4	25:10,12
8:15 9:17 10:6,6	<b>patch</b> 4:13,25 5:6	<b>PLC</b> 1:9 2:10	<b>produce</b> 15:18	<b>received</b> 5:7 13:9
21:16,19 28:11	5:7,23 6:3,18,18	<b>please</b> 10:17	<b>produced</b> 11:23	14:23 28:22,23
29:2,16 31:5	6:22 10:2,7 23:6	28:12 31:5	18:1 19:20	30:7 31:12,13
<b>old</b> 14:3	23:7,11,12	<b>plug</b> 8:19	<b>production</b> 16:20	32:15 33:21
<b>omissions</b> 17:6	27:11,14,14	<b>point</b> 7:4 14:12	<b>promise</b> 19:17	<b>receiver</b> 6:18
		28:9 33:16	<b>promptly</b> 20:4	<b>receiving</b> 24:24

<p><b>reception</b> 25:14 26:12 32:20</p> <p><b>recess</b> 10:10,14 20:4,5</p> <p><b>recipe</b> 5:13 6:24 7:5 26:19 27:8 32:16,21</p> <p><b>recognize</b> 28:16 31:6</p> <p><b>recognizes</b> 11:20</p> <p><b>recollection</b> 33:15</p> <p><b>record</b> 12:17 13:16 16:13 21:25 22:5 23:8</p> <p><b>Recross</b> 3:6</p> <p><b>Redirect</b> 3:6</p> <p><b>reeked</b> 14:5</p> <p><b>reference</b> 32:4</p> <p><b>regard</b> 19:18</p> <p><b>regarding</b> 15:8 17:10</p> <p><b>register</b> 27:22 28:7</p> <p><b>registers</b> 27:17</p> <p><b>regular</b> 6:11</p> <p><b>regulations</b> 34:9</p> <p><b>religious</b> 8:23</p> <p><b>rely</b> 12:19</p> <p><b>remain</b> 32:18</p> <p><b>remedial</b> 24:15,16</p> <p><b>remember</b> 24:12</p> <p><b>remove</b> 6:7,14 26:13</p> <p><b>repeat</b> 4:11 25:20</p> <p><b>repeated</b> 12:14 14:14</p> <p><b>repeatedly</b> 11:12 11:16,22 12:1,4 12:24 13:22 17:4</p> <p><b>rephrase</b> 4:18</p> <p><b>report</b> 33:5,9</p> <p><b>reported</b> 34:6</p> <p><b>reporter</b> 1:22 4:4 33:22 34:14</p> <p><b>REPORTER'S</b> 1:15</p> <p><b>representing</b> 10:23</p> <p><b>requested</b> 17:7</p>	<p><b>requesting</b> 15:3</p> <p><b>requests</b> 11:18 13:19</p> <p><b>resecure</b> 33:4</p> <p><b>resecured</b> 33:7</p> <p><b>resources</b> 18:25</p> <p><b>respective</b> 10:24 11:13 16:16</p> <p><b>responsibilities</b> 31:18</p> <p><b>responsibility</b> 16:10 18:10,13</p> <p><b>resume</b> 20:4</p> <p><b>RESUMED</b> 20:16</p> <p><b>retail</b> 5:12</p> <p><b>return</b> 10:18</p> <p><b>reverse</b> 17:21</p> <p><b>RICHARD</b> 2:19</p> <p><b>right</b> 9:6 20:8 21:1,3,8,23 23:6 24:11 25:8 27:15,16 31:24</p> <p><b>righteous</b> 18:18</p> <p><b>risk</b> 8:22 9:12,15 15:19 16:3</p> <p><b>risky</b> 9:9</p> <p><b>robust</b> 26:17</p> <p><b>ROM</b> 4:17 5:3 21:1,24 22:11 26:21 27:17,23 28:7 29:11 32:4 33:5,10,16</p> <p><b>Room</b> 1:23</p> <p><b>Rule</b> 1:21 34:14</p> <hr/> <p style="text-align: center;"><b>S</b></p> <hr/> <p><b>SACV</b> 1:8</p> <p><b>San</b> 2:15,21</p> <p><b>sanctioned</b> 15:11</p> <p><b>Santa</b> 1:17,23 4:1</p> <p><b>satellite</b> 1:6 2:3 15:8,21</p> <p><b>Saturday</b> 12:18 16:14</p> <p><b>saying</b> 17:19</p> <p><b>says</b> 21:15 22:20 29:20,22</p> <p><b>search</b> 18:17 19:1 19:3,14,16</p> <p><b>seat</b> 10:25 11:11</p>	<p><b>seated</b> 11:2</p> <p><b>second</b> 6:25 9:4</p> <p><b>seconds</b> 26:24</p> <p><b>section</b> 8:9 34:4</p> <p><b>secure</b> 32:10 33:13,21</p> <p><b>secured</b> 32:7,16 32:19,21,25 33:3,7,10,17</p> <p><b>security</b> 27:17,22 28:7</p> <p><b>see</b> 14:12 15:20 22:9 23:16 24:15 30:1,19 32:2,3 33:5</p> <p><b>seen</b> 8:13 17:3 26:15 27:5</p> <p><b>Seffens</b> 33:22</p> <p><b>sell</b> 30:14</p> <p><b>send</b> 6:7,9 13:11 14:13 29:25</p> <p><b>sending</b> 9:1</p> <p><b>senior</b> 9:24</p> <p><b>sense</b> 7:25 20:21</p> <p><b>sent</b> 31:22 33:15</p> <p><b>separate</b> 23:17</p> <p><b>sessions</b> 12:18 16:14</p> <p><b>set</b> 14:8 24:1 28:7</p> <p><b>set-top</b> 5:10 6:6 6:12,15 8:12,19 28:1,2 32:14</p> <p><b>set-up</b> 5:8</p> <p><b>Sharon</b> 33:22</p> <p><b>shocked</b> 11:1</p> <p><b>shoot</b> 7:19,20 8:5 8:7,8,23</p> <p><b>show</b> 17:20 24:12</p> <p><b>showed</b> 23:4</p> <p><b>showing</b> 24:13</p> <p><b>sides</b> 12:7 14:17 19:8</p> <p><b>signal</b> 5:8</p> <p><b>simply</b> 13:10 15:15 19:7 28:6</p> <p><b>single</b> 9:14</p> <p><b>sir</b> 6:17 7:2 8:25 10:17 20:12 22:13 27:17 28:6</p>	<p><b>size</b> 20:24 21:21 23:15 24:11 26:8 29:24</p> <p><b>Smart</b> 8:17 32:14</p> <p><b>snippets</b> 13:25</p> <p><b>Snyder</b> 2:12 4:22 4:23 16:25</p> <p><b>software</b> 4:13,25 5:16,22 6:21 10:2 23:20 25:1 25:4 26:1 27:2 32:20</p> <p><b>somebody</b> 6:1 9:1</p> <p><b>someplace</b> 15:23</p> <p><b>soon</b> 6:2,6,7,12,14 7:4,16 26:23 27:12</p> <p><b>sorry</b> 4:10,18 9:17,19 10:4 25:15 28:14 29:13</p> <p><b>sound</b> 21:1</p> <p><b>source</b> 7:6,16 8:1 19:2</p> <p><b>sources</b> 7:8</p> <p><b>specific</b> 17:12 31:2</p> <p><b>specified</b> 17:12</p> <p><b>spotted</b> 9:6</p> <p><b>stable</b> 8:12</p> <p><b>stack</b> 30:1</p> <p><b>stall</b> 26:8</p> <p><b>stand</b> 11:1</p> <p><b>start</b> 25:10</p> <p><b>started</b> 14:20</p> <p><b>starting</b> 4:18</p> <p><b>starts</b> 33:8</p> <p><b>state</b> 13:22 16:1 33:21</p> <p><b>stated</b> 11:12 12:17 13:22</p> <p><b>statement</b> 11:14 14:11 31:1,3</p> <p><b>statements</b> 13:15</p> <p><b>States</b> 1:1,22 34:5 34:9</p> <p><b>status</b> 32:2,7,10 33:6,17</p> <p><b>stealing</b> 15:22</p> <p><b>stenographically</b></p>	<p>34:6</p> <p><b>step</b> 9:4 10:17</p> <p><b>steps</b> 6:13 24:4</p> <p><b>Stone</b> 2:19 3:7 4:9 10:12 17:23 20:13,18 22:5,8 28:19 29:1 31:4 31:9,15</p> <p><b>stop</b> 8:3 9:12 21:14,17 24:24 25:14 26:16</p> <p><b>store</b> 5:12 23:2</p> <p><b>stream</b> 6:19</p> <p><b>Street</b> 1:23 2:14 2:20</p> <p><b>strong</b> 8:20 27:21</p> <p><b>strongly</b> 12:2</p> <p><b>structure</b> 14:1</p> <p><b>stupid</b> 6:5</p> <p><b>subject</b> 13:13</p> <p><b>subscriber</b> 8:23</p> <p><b>successful</b> 14:15 27:11 33:13</p> <p><b>suffer</b> 26:9</p> <p><b>Suite</b> 2:8,15,21</p> <p><b>supposedly</b> 17:24</p> <p><b>sure</b> 8:1 22:16,21 24:10 25:9,14 25:25 26:7,18 29:24 30:20</p> <p><b>surprise</b> 20:1</p> <p><b>switch</b> 4:4 33:22</p> <p><b>system</b> 5:20,21,23 6:2 7:15 8:24 12:2 13:24</p> <hr/> <p style="text-align: center;"><b>T</b></p> <hr/> <p><b>T</b> 2:4,5</p> <p><b>tactical</b> 12:8 14:2</p> <p><b>take</b> 8:22 9:10,15 10:10,14 26:23 33:2</p> <p><b>taken</b> 4:5 9:13 10:2,19 12:6 20:6</p> <p><b>takes</b> 10:8</p> <p><b>talk</b> 19:24 30:24</p> <p><b>talked</b> 14:3</p> <p><b>talking</b> 20:22</p> <p><b>target</b> 7:7,11,20</p>
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------



7:24 <b>targeted</b> 19:9 <b>technical</b> 10:5 <b>tell</b> 24:13 <b>tens</b> 7:7 <b>terms</b> 15:15,16,17 28:3 29:15 <b>test</b> 24:7,7,8 27:8 <b>tested</b> 9:17 <b>testified</b> 15:2 <b>testifies</b> 15:14 <b>testify</b> 11:9 14:21 14:22 29:7 <b>testimony</b> 11:8 13:25 15:3 19:7 <b>testing</b> 7:23 <b>Texas</b> 2:8 <b>thank</b> 10:12,16,17 10:25 11:3,11 20:12,13 22:7 28:15 <b>Thanks</b> 29:17 <b>things</b> 6:9 26:13 <b>think</b> 6:5,9 7:10 7:24 9:9,23,23 11:7 13:14 14:17,20,20,23 15:13 16:23,24 19:19 20:25 21:2,3 22:24 23:12,20,21 24:17 27:19,24 32:9,10,12 33:1 33:18 <b>thinking</b> 25:12 28:4 <b>third</b> 32:19 <b>thorough</b> 19:3 <b>thousands</b> 7:8,16 8:3 <b>threatened</b> 14:14 <b>three</b> 11:15 13:18 16:13,23 18:20 19:12 20:2 <b>three-step</b> 32:22 <b>time</b> 5:10,15,19 6:10 7:9,18 8:6 10:8,11 11:6 17:5 27:4,15 28:2 31:9 33:8	33:18 <b>times</b> 9:23 10:8,9 14:4 16:13,13 26:20 27:10,12 <b>tired</b> 4:18 <b>Title</b> 34:5 <b>told</b> 9:9 30:21 <b>top</b> 29:2 30:4 <b>totally</b> 16:10 <b>trace</b> 26:7 <b>track</b> 17:5 <b>tragic</b> 17:8 <b>transcript</b> 1:15 34:6,8 <b>translation</b> 4:20 <b>transmission</b> 9:6 <b>trial</b> 1:16 14:16 17:8 <b>tried</b> 8:8 11:4 27:24 28:9 <b>true</b> 4:12,24 5:18 6:3,17 28:6 30:18 34:5 <b>try</b> 8:2,24 10:3 33:4 <b>trying</b> 13:8 <b>Tuesday</b> 1:18 4:1 19:15 <b>turn</b> 16:17 17:14 17:25 <b>TV</b> 5:8 6:15 <b>two</b> 6:10 7:16 13:1 17:15 20:14 23:17 24:10,15,17,18 <b>type</b> 15:10 27:21 29:19 32:19 <b>types</b> 15:20 26:9	<b>unfair</b> 16:12 <b>unfairness</b> 18:21 <b>unfortunately</b> 8:11 26:20 27:19 <b>United</b> 1:1,22 34:5,9 <b>untenable</b> 13:3 <b>unwillingness</b> 18:25 <b>update</b> 5:23 29:23 32:12 <b>updated</b> 6:3 <b>upgrade</b> 5:17 <b>usable</b> 28:10 <b>usage</b> 26:18 27:8 <b>use</b> 9:21 17:15 22:3 23:23 25:3 27:25,25 28:10 <b>useless</b> 7:17 8:6 <b>U.S</b> 34:14	<b>weeks</b> 13:18 18:20 19:12 20:2 <b>WELCH</b> 2:4,5 <b>well-thought</b> 9:14 <b>West</b> 1:23 2:14 <b>we've</b> 13:14 14:3 22:18 31:23 <b>WILLETTS</b> 2:6 <b>willingness</b> 12:22 <b>wise</b> 18:12 <b>withholding</b> 11:13 <b>witness</b> 3:6 4:7 12:25 16:19 17:23 18:6 20:9 20:16 30:23,24 <b>witnesses</b> 11:8 12:5 13:5,8,13 14:6,9,18 16:20 <b>work</b> 29:10,18 <b>worked</b> 29:7 <b>working</b> 29:12,13 29:14 <b>world</b> 12:20 <b>wrap</b> 21:9 29:25 <b>write</b> 21:25 22:25 23:8 24:2 32:11 32:17,17,18 <b>wrong</b> 8:16 9:16 9:17 24:22 26:13,15 <b>wrote</b> 22:14 23:10	<b>0</b> <b>003</b> 32:4 <b>03-0950-DOC</b> 1:8 <b>08-04-15</b> 1:25	
				<b>1</b> <b>1-053</b> 1:23 <b>10</b> 10:18 20:3 <b>100</b> 21:2 <b>1184</b> 3:14 28:12 28:16,19,23 <b>14</b> 14:21 <b>15</b> 1:18 4:1 <b>150</b> 11:21 <b>1586</b> 21:23 22:1,6 <b>1587</b> 23:8 <b>16</b> 14:21 34:11	
				<b>2</b> <b>2:40</b> 4:3 <b>2000</b> 4:14 5:1 7:4 <b>2001</b> 31:16 33:16 <b>2008</b> 1:18 4:1 34:11 <b>23rd</b> 31:16 <b>2401</b> 2:7 <b>2600</b> 2:15,21 <b>275</b> 2:14,20 <b>28</b> 3:14 34:5	
				<b>3</b> <b>3</b> 4:17 5:3 21:1,24 26:21 27:17,23 28:8 29:11 32:4 33:10,16 <b>3M</b> 32:17 <b>3:15</b> 20:4 <b>31</b> 3:15	
				<b>4</b> <b>4</b> 1:10 3:7 4:2 <b>4th</b> 1:23 <b>411</b> 1:23 <b>415</b> 2:16,22	
				<b>5</b> <b>558-7755</b> 1:24	
				<b>6</b> <b>64</b> 20:24 21:2,8,16	
		<b>U</b> <b>uncompromised</b> 33:6 <b>underneath</b> 32:1 <b>understand</b> 7:10 19:19 20:23 23:12 25:6 30:25 <b>understanding</b> 9:7 <b>undertaken</b> 19:3	<b>V</b> <b>value</b> 7:24 22:21 23:3 26:8 <b>variable</b> 22:23,24 23:23 24:17 <b>variables</b> 25:7 <b>various</b> 13:10 14:5 <b>VIP</b> 32:11,17 <b>Volume</b> 1:10 4:2 <b>vs</b> 1:8	<b>W</b> <b>W</b> 2:12 <b>WADE</b> 2:4,5 <b>want</b> 7:9,17 9:11 16:17 19:25 20:20 21:14 26:7,11 <b>warehouse</b> 6:1 <b>warned</b> 11:22 <b>warning</b> 14:12 18:24 19:13,16 <b>wasn't</b> 5:23 8:25 <b>way</b> 10:7 11:4 19:11 25:17,21 29:25 30:2 31:2 <b>ways</b> 27:20	<b>X</b> <b>X</b> 3:1
				<b>Y</b> <b>yeah</b> 5:25,25 6:4 9:3 21:5 22:15 24:6,9 25:9 26:23 28:9 29:9 30:2,14 33:12 <b>years</b> 6:11 11:15 13:1,18 16:23 17:4,8	
				<b>Z</b> <b>zero</b> 25:12,13 <b>zip</b> 17:24	

21:16 23:4,4 24:24 29:24				
<hr/> <b>7</b> <hr/>				
<b>7:00</b> 17:2 <b>7:30</b> 17:2 <b>700</b> 2:8 <b>713</b> 2:9 <b>714</b> 1:24 <b>72</b> 19:14 <b>753</b> 34:4 <b>77057</b> 2:8				
<hr/> <b>8</b> <hr/>				
<b>816</b> 17:18 <b>830</b> 3:15 31:5,6,9 31:13				
<hr/> <b>9</b> <hr/>				
<b>92701</b> 1:23 <b>9316</b> 1:21 34:15 <b>94111-3305</b> 2:15 2:21 <b>952-4334</b> 2:9 <b>984-8700</b> 2:16,22				