

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

- - - - -

ECHOSTAR SATELLITE CORP., et	)	
al.,	)	
	)	
Plaintiffs,	)	
	)	
vs.	)	No. SACV 03-950 DOC
	)	Day 4, Volume II
NDS GROUP PLC, et al.,	)	
	)	
Defendants.	)	
_____	)	

REPORTER'S TRANSCRIPT OF PROCEEDINGS  
Jury Trial  
Santa Ana, California  
Tuesday, April 15, 2008

Debbie Gale, CSR 9472, RPR  
Federal Official Court Reporter  
United States District Court  
411 West 4th Street, Room 1-053  
Santa Ana, California 92701  
(714) 558-8141

EchoStar 2008-04-15 D4V2

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## I N D E X

## WITNESSES                      DIRECT    CROSS    REDIRECT    RECROSS

NICOLAS, Christophe

By Mr. Hagan                      4

By Mr. Stone                      9

## EXHIBITS

## EXHIBIT NO.                      IDENTIFICATION                      IN EVIDENCE

683                      12-17-02 e-mail,                      37

Guggenheim to  
Nicolas, et al.

816                      E-mail                      44

1102                      3-18-02 CIS invoice                      28  
with attachments

1148                      Report                      65

1234                      E-mail                      59

1249                      E-mail                      56

1251                      7-2-01 e-mail, Conus                      21  
to Nicolas, et al.

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

2 Day 4, Volume II

3 (10:09 a.m.)

4 (Live reporter switch.)

5 (Previous proceedings reported by Jane Rule  
6 in Volume I.)

7 CHRISTOPHE NICOLAS, PLAINTIFF'S WITNESS, PREVIOUSLY SWORN,

8 CURRENTLY ON THE STAND

9 DIRECT EXAMINATION (Continued)

10 BY MR. HAGAN:

11 Q. Mr. Nicolas, is it fair to it say that the basis for  
12 your knowledge, at least as of December 2000, comes for your  
13 discussions with representatives of NagraStar; isn't that  
14 right?

15 A. That is correct.

16 Q. So, we'll have him later in the trial.

17 But I want to focus now on the time period where you  
18 were given a copy of the defendant's Headend Report,  
19 Exhibit 98, the hack methodology they developed.

20 THE COURT: Just a moment. I may be able to take  
21 this subject to a motion to strike, and we may not have to  
22 keep him, as we're trying not to for both sides.

23 Who is going to testify concerning the allegation  
24 that Mr. Tarnovsky is Nipper or NipperClause?

25 MR. HAGAN: There are several witnesses from

1 NagraStar's side. It will be Alan Guggenheim.

2 THE COURT: Just a moment. And he's going to  
3 testify when? Tomorrow?

4 MR. HAGAN: I believe so, yes, Your Honor.

5 THE COURT: And who else?

6 MR. HAGAN: And also Jerry Gee, J.J. Gee, who will  
7 be testifying later in the trial during the defendant's case  
8 in chief.

9 THE COURT: You're not to take this answer for the  
10 truth that it was quote/unquote Christopher Tarnovsky. But  
11 apparently later in the trial we're going to hear some  
12 foundation, some evidence from somebody else involved in  
13 this alleged investigation that led, apparently, EchoStar to  
14 believe it was a person or persons involved.

15 So I think instead of holding him from returning  
16 to France over the next few days to see how that develops,  
17 or weeks, the wise thing for me to do is take that subject  
18 to a motion to strike. But I caution you in the strongest  
19 terms, if that foundation isn't laid, this information that  
20 you obtained, what could be frankly idle conversation about  
21 a guesstimate, will be stricken and I'll ask you to  
22 disregard it.

23 So, Counsel, I'll allow it subject to a motion to  
24 strike.

25 MR. HAGAN: Thank you, Your Honor.

1 BY MR. HAGAN:

2 Q. Mr. Nicolas, based on your understanding of the  
3 investigation into that posting, who do you believe is  
4 responsible for the December 21st, 2000, Nipper posting?

5 THE COURT: Now, before you get to that ultimate  
6 conclusion, let me ask you to inquire who he got this from,  
7 when this conversation took place, where this occurred, and  
8 with how many people. More specifics --

9 MR. HAGAN: Certainly, Your Honor.

10 THE COURT: -- instead of just an opinion.

11 BY MR. HAGAN:

12 Q. Mr. Nicolas, who were you able to discuss the  
13 investigation with within NagraStar? I'll just limit it to  
14 that because, I know we'll have a number of other witnesses.  
15 But just within the NagraStar corporate entity.

16 A. So on the subject, my main contact was Alan Guggenheim,  
17 which was the CEO of NagraStar at that time.

18 Q. And --

19 THE COURT: Now, just a moment. That's going to  
20 raise later on how Mr. Guggenheim got this information.

21 MR. HAGAN: And we'll --

22 THE COURT: He's an engineer. What's your offer  
23 of proof? What witness is conveying information to  
24 Mr. Guggenheim, who will testify in front of this jury?

25 MR. HAGAN: There are going to be a couple,

1 Your Honor. We anticipate the testimony of Ron Ereiser,  
2 Graham James, Tony Dionisi, and then other witnesses who may  
3 have relevant percipient knowledge on this fact, as well as  
4 Mr. Guggenheim's investigator, J.J. Gee.

5 THE COURT: Once again, subject to this motion to  
6 strike, I'll let him testify as to how he received the  
7 information, but then we'll trace the chain back eventually  
8 and see how Mr. Guggenheim testifies he received that  
9 information.

10 You may proceed.

11 BY MR. HAGAN:

12 Q. Mr. Nicolas, I'll fast-forward to one final issue that  
13 I believe you do have personal knowledge of. Once you saw a  
14 copy of the defendant's Headend Report -- we looked at it  
15 earlier as Exhibit 98 -- that described the hack methodology  
16 they developed for EchoStar's security system, at that point  
17 in time did you have any doubt in your mind who was  
18 responsible for the development of that hack and the  
19 publication of that hack?

20 A. For me at that time I have no doubt that either the  
21 people that have written the report or that have access to  
22 the report have been the one attacking EchoStar system. It  
23 was so clear that those four key weakness of the card have  
24 been used in the very same way in the recipe that is  
25 described both in the NipperClause publication and in the

1 Headend Report, that for me it's no doubt that it's the same  
2 person or people.

3 THE COURT: But you didn't have a specific person  
4 at that time. You believed that the method was the same; is  
5 that correct?

6 THE WITNESS: At the time that I had access to the  
7 Headend Report is recently through the discovery. So if the  
8 question was about that --

9 THE COURT: All right.

10 Counsel, please continue.

11 BY MR. HAGAN:

12 Q. If I understand your testimony correctly, Mr. Nicolas,  
13 when you saw the defendant's report and you performed an  
14 analysis comparing their hack methodology to the Nipper hack  
15 methodology --

16 A. Yes.

17 Q. -- that was the first point in time in your mind that  
18 you became absolutely certain they were responsible for  
19 developing that hack and publishing that hack?

20 A. Yes, correct.

21 MR. HAGAN: Thank you, Mr. Nicolas.

22 Pass the witness.

23 THE COURT: Just a moment. We'll let Debbie  
24 stretch out for a moment.

25 (Pause in the proceedings.)



1 THE COURT: All right. Back on the record.

2 This is Mr. Stone on behalf of Defendant NDS.

3 MR. STONE: Thank you, Your Honor.

4 CROSS-EXAMINATION

5 BY MR. STONE:

6 Q. Good morning, Mr. Nicolas.

7 A. Good morning.

8 Q. I wanted to make sure I understand a few things here.

9 Is it -- you're contending that Exhibit 998 is a posting on  
10 an Internet website?

11 A. 998 is the one I've seen before.

12 MR. STONE: If we could show Exhibit 998.

13 THE WITNESS: Is that the one?

14 BY MR. STONE:

15 Q. Yeah. And that's actually -- if you look at the top of  
16 the page.

17 A. Okay.

18 Q. That's actually a text file, correct?

19 A. Yes, that's correct, yeah.

20 Q. And you mentioned some posting on December 21st.

21 That's the one that you claim was done by NDS or somebody on  
22 NDS's behalf; is that right?

23 A. That's the one I received when we did the analysis,  
24 yes.

25 Q. Have you ever seen any screen shot of any posting from

1 December 21st, 2000? Anyone ever provide that to you?

2 A. Do you mean until today?

3 Q. Yes.

4 A. Just seen one there (indicating), yeah.

5 Q. That's not a screen shot of a posting, sir, is it?  
6 There's no information about a website on that document, is  
7 there?

8 A. Okay. So a screen shot for you is when you have the  
9 website?

10 Q. Yes, sir.

11 A. Yes. I've seen some -- some of, yes.

12 Q. Have you seen any from December 21st, 2000?

13 A. Maybe, yes.

14 Q. I want to show you Exhibit 511-A, please, sir. It's in  
15 evidence. It's on the screen there, sir.

16 A. Okay.

17 MR. STONE: If we could zoom in little bit.

18 BY MR. STONE:

19 Q. Now, this would be a screen shot of a website, correct?

20 A. Yes.

21 Q. And you understand that people can post things on  
22 websites?

23 A. Yeah. I understand that, yes.

24 Q. And the date on that posting that you have in front of  
25 is December 23rd, 2000, correct?

1 A. Yes, that's correct.

2 Q. And the person who posted it used the name xbr21?

3 A. That's apparently the alias used for that posting, yes.

4 Q. And if we can pull it down, I think we can see that's  
5 the same text file you're referring to.

6 MR. HAGAN: Can we get a copy of it?

7 MR. STONE: Yeah, I have one.

8 THE COURT: This is 511-A; is that correct?

9 MR. HAGAN: Yes, sir.

10 THE COURT: We should have that. We went over  
11 those Saturday or Sunday.

12 Please proceed, Counsel. All counsel should have  
13 that.

14 MR. HAGAN: We have a copy. Just for the witness,  
15 can the witness have a copy?

16 THE COURT: Do we have a copy for the witness?

17 MR. STONE: I don't. I apologize, Your Honor. We  
18 weren't anticipating going into --

19 THE COURT: No further questions, then, in this  
20 area, Counsel.

21 BY MR. STONE:

22 Q. Did anyone ever tell you who xbr21 was?

23 A. Not I am aware of.

24 Q. Has anyone ever told you who a gentleman named Stuntguy  
25 is?

1 A. Not that I'm aware of, no.

2 Q. Has anyone told you what the group DISH Plex is?

3 A. DISH Plex sounds familiar. I think it was one of the  
4 group working on our system at that time.

5 Q. And have you heard of a gentleman name Larry Pilon?

6 A. Could you repeat the name?

7 Q. Have you heard the name Larry Pilon, P-I-L-O-N?

8 A. No, that doesn't remind anything. Larry Pilon.

9 Q. Have you ever become aware that Mr. Pilon is a  
10 consultant to NagraStar?

11 A. No, I am not aware of that.

12 Q. Have you ever heard of a group called the Barrie Group?

13 A. Can you spell that?

14 Q. B-A-R-R-I-E.

15 A. No, that doesn't sound familiar to me.

16 Q. Have you ever heard of a person named Jazzercz,  
17 J-A-Z-Z-E-R-C-Z?

18 A. I think that's a nickname that I've seen at that time,  
19 so, yeah.

20 THE COURT: The record should now reflect that he  
21 has 511-A in front of him.

22 MR. STONE: Thank you, Your Honor.

23 THE COURT: Thank you.

24 BY MR. STONE:

25 Q. Did anyone ever tell you that they had a gentleman

1 named Charles Perlman who was associated with the  
2 dr7 website?

3 A. Charles -- could you spell that.

4 Q. P-E-R-L-M-A-N.

5 A. No, that doesn't sound familiar.

6 Q. Does the nickname GunSmoke or GunSmoke 2 ring a bell?

7 A. Yes. GunSmoke and GunSmoke 2 were aliases discussing  
8 our system at that time, yes.

9 Q. So was the person who used the name GunSmoke or  
10 GunSmoke 2 a pirate, to your understanding?

11 A. Those are people discussing pirate item or pirate  
12 discussion on the Internet. You never know if it's one of  
13 our people, one of our competitor or a pirate discussing  
14 over the Internet.

15 Q. When you say "one of our people," what did you mean?

16 A. Meaning people that are following what is happening on  
17 the Internet. And we need to follow that to get better  
18 understanding of the threat that our customer are suffering.

19 Q. So it would be somebody who was employed by either your  
20 company or NagraStar?

21 A. Nothing's related to that nickname, but it's in general  
22 term people talking or posting on the Internet might be  
23 whoever. Might be you and me.

24 Q. Did you ever learn that there was a gentleman named  
25 Charles Perlman who was a consultant to NagraStar who had

1 access to the dr7 website in December of 2000?

2 A. I think I answer that. I haven't heard about that  
3 name.

4 Q. Now, did you testify that there was a 1998 posting by  
5 someone using the name Nipper of an EEPROM dump?

6 A. Yes, I did that. Yeah, I say that.

7 Q. Are you as sure about that as you are of the rest of  
8 your testimony?

9 A. I think so, yeah, I've seen that. Maybe it's ten years  
10 ago, but probably, yeah. That's what I recall, at least.

11 Q. Have you actually seen the posting by somebody using  
12 Nipper of an EEPROM dump?

13 A. In '98, yes.

14 Q. Did you keep a copy of the screen shot or the posting  
15 from that time frame?

16 A. I think that part of the document is not part of the  
17 trial, so I haven't seen it since that time.

18 Q. What happened to it?

19 A. Sorry?

20 Q. What happened to that document that showed that there  
21 was an EEPROM dump supposedly by somebody using the name  
22 Nipper?

23 A. I'm not so sure it was a document. There was a  
24 publication on the Internet.

25 Q. Did you keep a copy, save it, a screen shot?

1 A. I'm not saving everything what's happening on the  
2 Internet. It's big, too big. Sorry.

3 Q. Did you consider that a significant posting?

4 A. Yeah, definitely it was a significant posting. Yeah.

5 Q. And did you keep a copy of that significant posting?

6 A. Maybe, maybe not. I don't know.

7 Q. You haven't seen that alleged posting in ten years, is  
8 what your testimony is?

9 A. I think the -- from my understanding, the discovery  
10 period was not covering that part. We are not allowed to  
11 use that piece of evidence for that trial, so we didn't  
12 focus on that one anymore since then.

13 Q. Somebody told you you were not supposed to produce  
14 evidence in this case?

15 A. Yeah. Producing evidence is one thing; using evidence  
16 is another things.

17 Q. Are the -- is that posting somewhere maintained in an  
18 investigative file anywhere at NagraCard or NagraVision?

19 A. So all the investigation were done and managed by  
20 NagraStar, so I suppose -- I think at the time I posted  
21 that, that that document is within NagraStar file.

22 Q. Before coming here today to testify, did you see that  
23 document?

24 A. No.

25 Q. And so this is all based on your memory --

1 A. That's correct.

2 Q. -- from ten years ago?

3 A. Exactly.

4 Q. And the black box, where did that come from?

5 A. So we received -- if you mention the same black box I  
6 was mentioned in my testimony, it's a box that we receive in  
7 late 2000, I think, September or October 2000. And that was  
8 coming from NagraStar, from Alan Guggenheim.

9 THE COURT: I'm sorry. Coming from?

10 THE WITNESS: NagraStar, Alan Guggenheim.

11 BY MR. STONE:

12 Q. And exactly where did Mr. Guggenheim get the black box  
13 from?

14 A. That, I don't know. I just received the black box from  
15 him.

16 Q. And did you bring the black box with you here today for  
17 your testimony?

18 A. No. Because the black box were given back, handed back  
19 to Alan Guggenheim after the analysis.

20 Q. And then what happened to it?

21 A. That, I don't know.

22 Q. Have you seen it since you analyzed it in the fall of  
23 2000?

24 A. Can you repeat that?

25 Q. Sure. Have you seen the black box since you analyzed



1 it in the fall of 2000?

2 A. No. I don't remember having seen the black box since  
3 that day. We did the analysis, we handed that back to Alan  
4 and that's it.

5 Q. Do you know what investigation was conducted into the  
6 source of that black box device?

7 A. I think that's just -- because I were not in charge of  
8 that, but I think they were trying to investigate who was  
9 behind the technical hack and the technical knowledge of  
10 that black box.

11 Q. And so getting to the source of who had the black box  
12 would at least be the first step in doing that, would you  
13 agree?

14 A. I don't know. I'm a "poor engineer," so I don't know.

15 Q. And did you talk to any of the "poor investigators"  
16 whose job it was to get to the bottom of the source of the  
17 piracy?

18 A. No.

19 Q. And am I correct, the black box does the same thing as  
20 the Internet posting in December of 2000?

21 A. Which Internet posting? You're referring to the same  
22 one that I've...

23 Q. Yes. The December 23rd, 2000, posting.

24 A. Yeah. The NipperClause used and described the same  
25 recipe as the black box. And as I said, in the recipe you

1 can replace some of the code with different code. And I  
2 think two example have been given in the Headend Report. So  
3 the black box is using another type of code than the recipe  
4 or than the written report. But the recipe is the same.

5 Q. All right. I'm going to come back to the black box in  
6 a little bit, sir. Thank you.

7 A. All right.

8 Q. Have you had an opportunity to speak to your -- the  
9 software security expert who's been retained by plaintiffs  
10 in this case, Dr. Rubin?

11 A. Yes.

12 Q. When was the first time you did that?

13 A. When I arrived here in Santa Ana.

14 Q. So within the last couple of days?

15 A. Yes.

16 Q. And you've not had an opportunity to speak to the  
17 plaintiff's expert prior to then; is that correct?

18 A. That's correct.

19 Q. Did you discuss the black box with Dr. Rubin?

20 A. I think we discussed some of the conclusion he has used  
21 on the black box but not the black box itself in detail.

22 Q. Okay. Who was Mr. Joel Conus?

23 A. So Joel Conus is a Swiss citizen working for NagraCard  
24 since 2001.

25 Q. And what were his job responsibilities generally?

1 A. So he had various position. I think he works as a  
2 software engineer, as I did in the past. And he was also in  
3 charge of what we call monitoring the website, just reading  
4 those various website and reporting what might be  
5 interesting to know about our system or the pirate activity  
6 around digital TV in North America and other place in the  
7 world.

8 Q. I believe it is your testimony that DirecTV made a  
9 decision to stay with NDS in the late 1998 or early 1999  
10 time frame. Does that sound right?

11 A. That sound right, yeah.

12 Q. And Mr. Conus began in 2001 at NagraCard?

13 A. I don't recall exactly, but I would say 2000, 2001 time  
14 frame.

15 Q. And am I correct, the DirecTV system for which NDS  
16 provided the conditional access services was on a different  
17 broadcasting system than the EchoStar system?

18 A. Can you repeat that or rephrase that?

19 Q. The DirecTV system uses a DSS satellite transmission  
20 protocol, correct?

21 A. Yeah. The scrambling, what we call the scrambling of  
22 the audio and video, DirecTV use a scrambling called DSS,  
23 and EchoStar use a scrambling called DVB CSA. So two  
24 distinct scrambling for those two system.

25 Q. Two different broadcasting standards that are not

1 compatible, correct?

2 A. That's correct.

3 Q. And in June 2001 was Mr. Conus asked to collect  
4 information about the DirecTV system, its hacks and its  
5 possible electronic countermeasures?

6 A. That was not his main task. He may have seen and he  
7 may have reported some publication on those website.

8 As I told you at the beginning, I think dr7, which was  
9 one of the main source of information from the web, was used  
10 to be a DirecTV hack website. So a lot of discussion there  
11 were happening on DirecTV. And from time to time some of  
12 those information were reported or so in Joel's report.

13 MR. STONE: Could you show the witness  
14 Exhibit 1251, please.

15 BY MR. STONE:

16 Q. If you would look at the second page, it should be a  
17 larger copy.

18 Now, Exhibit 1251 is an e-mail from Joel Conus to  
19 Mr. Guggenheim, with a copy to you, dated -- it looks like  
20 July 2nd, 2001, if I'm reading the date correctly. Is that  
21 correct, sir?

22 A. Yeah, that's what I'm reading. Yeah.

23 MR. STONE: Okay. Your Honor, I would move  
24 Exhibit 1251 at this time.

25 THE COURT: Any objection, Counsel?

1 MR. HAGAN: Yes, Your Honor. I don't think we've  
2 laid a proper foundation. Assuming Mr. Nicolas testifies  
3 that he had knowledge of this, and it looks like he was on  
4 it, then we would withdraw any objections.

5 THE COURT: What, Counsel?

6 Let's make this simple. Received.

7 (Exhibit 1251 received in evidence.)

8 Thank you very much, Counsel. Your next question.

9 BY MR. STONE:

10 Q. This is an e-mail addressed to you and Mr. Kudelski in  
11 addition to Mr. Guggenheim from July of 2001, correct?

12 A. Yeah. That's an e-mail address to Alan Guggenheim,  
13 Henri Kudelski, which is an engineer working for me, and to  
14 myself, yes.

15 Q. And Mr. Conus worked at NagraCard at the time, correct?

16 A. That's correct, yes.

17 MR. STONE: Your Honor, I would ask for this to be  
18 published to the jury at this time.

19 THE COURT: You may.

20 (Document displayed.)

21 BY MR. STONE:

22 Q. If you look at the top, you can see the folks to whom  
23 this is addressed. And this is July of 2001, correct?

24 A. Sorry. Again?

25 Q. This e-mail is from July of 2001?

1 A. Yes. Still from July 2001, yes.

2 Q. And what is the subject of the e-mail?

3 A. Subject is DTV.

4 Q. And is that a shorthand phrase for DirecTV?

5 A. That can mean digital TV but probably in that case  
6 might -- it stands for DirecTV, yes.

7 Q. And this e-mail apparently at one point had an  
8 attachment that was a zip file. Do you see that next to the  
9 word "attachment"?

10 A. Yeah, I see that. Yeah.

11 Q. What is a zip file?

12 A. So a zip file is a file which is what we call a  
13 compressed file, including one or multiple other file.

14 Q. So, for example, if you have a lot of data that you  
15 want to send to someone, you can compress it and put it on a  
16 zip attachment and send it by e-mail. Is that a fair  
17 summary?

18 A. I think if you have one or multiple information, you  
19 can use the zip file. And I don't know if it was a lot of  
20 information or not.

21 Q. Isn't that typically what zip files are used for, is to  
22 compress a lot of information, as opposed to just one  
23 attachment?

24 A. I think engineer are using zip file anyhow just not to  
25 have too big e-mail box and to have to archive that too many

1 times. So that's a typical -- good engineer use zip file  
2 for every attachment on the internet.

3 Q. Okay. So if we look at the actual body of the e-mail,  
4 please. It says, "Hi, Alan." That would be Mr. Guggenheim,  
5 correct?

6 A. Yes, that's correct.

7 Q. And Mr. Guggenheim was the CEO of NagraStar in the  
8 United States, correct?

9 A. Yeah. I've said that, yeah.

10 Q. And you've testified that NagraStar was competing  
11 against NDS in the United States, correct?

12 A. Yeah. I think NDS and the Kudelski Group, including  
13 NagraStar, were competitor at that time, yeah.

14 Q. And at this point in time, July of 2001, NDS was  
15 providing the Smart Cards and other conditional access  
16 services to DirecTV; isn't that right?

17 A. Can you repeat that.

18 Q. Sure. NDS was the supplier of the cards and  
19 conditional access system to DirecTV at this point in time?

20 A. Yeah. That's correct, yes.

21 Q. And it says, "Hi, Alan. Here is the information you  
22 requested about the DTV system."

23 That would be the DirecTV system, right?

24 A. Yeah.

25 Q. It says, "I've made a summary that should give you a

1 good overview of the system, its hacks and its possible  
2 ECM's."

3 Do you see that?

4 A. I see that, yeah.

5 Q. And what was in the overview of the system that  
6 Mr. Conus provided to you and Mr. Guggenheim and  
7 Mr. Kudelski?

8 A. That, I don't remember. Probably, but that's an  
9 assumption, a set of key posting on the Internet about  
10 hacking on DirectTV card and then potential reaction of  
11 DirectTV to counteract those hack.

12 Q. Now, if we had this zip file, we might have a better  
13 idea of what was in the overview, correct?

14 A. Yes, correct.

15 Q. Do you know what happened to it?

16 A. I don't know.

17 Q. When was last time you saw it?

18 A. The zip file, you mean?

19 Q. Yes, sir.

20 A. Probably at that date.

21 Q. Did you save a copy?

22 A. I think it might have been in my e-mail archive.

23 THE COURT: In your what?

24 THE WITNESS: E-mail archive.

25



1 BY MR. STONE:

2 Q. And why did you want to know about the hacks of the  
3 DirecTV system?

4 A. I think -- I don't want to know anything there. It's  
5 an e-mail from Joel to Alan Guggenheim.

6 Q. And who did Mr. Conus report to at this point in time?

7 A. He was reporting to me.

8 Q. Did you understand that he was engaging in this project  
9 for Mr. Guggenheim at the time?

10 A. I would not call that a project. I would call it  
11 communication between Alan Guggenheim, which was the CEO of  
12 NagraStar, that probably asks Joel to help him on the  
13 specific topic.

14 Q. Well, when it says "its hacks," there's no question in  
15 your mind that that refers to hacks of the conditional  
16 access system that NDS provided to DirecTV, right?

17 A. I cannot be a hundred percent sure, but in the context,  
18 that would be my guess, yes.

19 Q. And how was Mr. Conus able to get an overview of the  
20 hacks? Do you know?

21 A. Again, I think I mentioned that Joel was in charge of  
22 monitoring the website, various website, one being the  
23 dr7 website where a lot of information on DirecTV hack have  
24 been posted. So most probably when he get that kind of  
25 request, he just pull out from the Internet what he can find

1 and just put that in a zip file and send that to Guggenheim.

2 Q. Now, what about an electronic countermeasure?

3 A. Um-hm.

4 Q. An electronic countermeasure for the NDS DirecTV system  
5 would not work for the Nagra system; is that correct?

6 A. Yeah, that's correct. But the design -- the device  
7 used both on DirecTV and on Nagra are somewhat the same. We  
8 have seen a lot of pirate devices used against DirecTV that  
9 have been reused as raw material against EchoStar.

10 Q. I'm focusing now on the electronic countermeasures. Do  
11 you have any understanding as to how Mr. Conus was able to  
12 figure out possible electronic countermeasures for the NDS  
13 DirecTV system?

14 A. My understanding is that the exact same way he get  
15 information about the hack itself. Hack and countermeasure  
16 are extensively discussed on the Internet when they happen.  
17 So as soon as you get hit by your countermeasure hacker's  
18 code in the Internet -- not hackers, but user also go to the  
19 Internet to try to understand what was happening there. And  
20 they are discussing pros and cons and what was the means of  
21 the countermeasure or ECM.

22 And when that's sent -- and some people collect those  
23 information and regroup those information in FAQ that just  
24 summarize what type of countermeasure is done on one system.  
25 And that has been done on DirecTV, and that has been done on

1 our system.

2 Q. So why as a competitor would you care about hacks of  
3 the DirecTV system and how they might respond to them?

4 A. So I think it might be interesting for us on the  
5 technical side to understand which one will be the next  
6 pirate device used or countermeasure done against our  
7 system.

8 Q. So in your mind it would be legitimate to try to figure  
9 out if there were vulnerabilities in the DirecTV system or  
10 the NDS system and how they might be responded to, correct?

11 A. I think it's -- it's legitimate to gather or to collect  
12 public information on the -- and summarize on the different  
13 system.

14 Q. Did Nagra ever pay for Mr. Guggenheim to subscribe to a  
15 DirecTV system so that he could gather competitive  
16 intelligence about the DirecTV NDS system?

17 A. So I was not aware if Alan was paid for that.

18 Q. Okay. Let me show you Exhibit 1102, please.

19 This is an invoice dated March 18, 2000. On the first  
20 page of Exhibit 1102, it's an invoice from CIS, Inc. You  
21 recognize that as Mr. Guggenheim's company, correct?

22 A. I'm aware that Alan Guggenheim has a consulting firm  
23 that is called CIS, yes.

24 Q. And where it says "bill to Nagra," there's an address  
25 in Tennessee. Is that an office that Nagra had in Tennessee

1 at some point in time?

2 A. I'm not so sure, but if I'm correct, I think we have --  
3 Nagra USA have an office there.

4 Q. And you did understand that Mr. Guggenheim would be  
5 reimbursed for certain business expenses by Nagra during  
6 this time period?

7 A. That was probably the case, but I was not aware of the  
8 details of his contract or relationship with Nagra USA.

9 MR. STONE: Your Honor, I would move  
10 Exhibit 1102 at this time.

11 THE COURT: Any objection?

12 MR. HAGAN: No objection, Your Honor.

13 THE COURT: Received.

14 (Exhibit 1102 received in evidence.)

15 BY MR. STONE:

16 Q. Mr. Nicolas, if we could look at the first page of  
17 Exhibit 1102.

18 A. It's the same one?

19 Q. Yes, sir.

20 (Document displayed.)

21 THE WITNESS: Which page?

22 BY MR. STONE:

23 Q. The first page, sir.

24 A. Okay. Okay.

25 Q. Up at the top is the "CIS, Inc.," which is

1 Mr. Guggenheim's company, correct?

2 A. I know that he has a company with that name. I don't  
3 know if the address is linked or related to that company.  
4 But most probably, yeah. I don't know.

5 Q. And then down below that, the "Bill To" is the Nagra  
6 address you recognize, correct?

7 A. Yeah. I think we had a -- Nagra USA had an address  
8 there.

9 Q. And then I won't go through all these receipts,  
10 obviously, but there's phone bills and meals and all kinds  
11 of stuff.

12 If you go to page 1102-43, please.

13 A. (Witness complies.)

14 (Document displayed.)

15 BY MR. STONE:

16 Q. This is a receipt for a DirectTV bill, correct?

17 A. You are telling me. I have never seen a DirectTV bill  
18 before that, so -- it looks like.

19 Q. Okay. This would have been included as a business  
20 expense by Mr. Guggenheim to Nagra, correct?

21 A. If you tell me that, yes.

22 Q. Did you ever become aware that there was a laboratory  
23 set up in NagraStar's offices in Denver, Colorado?

24 A. What do you mean by a laboratory?

25 Q. A security engineering laboratory.

1 A. So we were doing -- I think we explained before that we  
2 are delivering the countermeasure from NagraCard to  
3 NagraStar, and NagraStar is in charge of broadcasting that  
4 countermeasure. And for that, before broadcasting, they are  
5 doing additional tests, and they have a laboratory for that.  
6 So if it's the one you're referring to, yes, there is a  
7 laboratory in NagraStar.

8 Q. And were there a couple of DirectTV receivers in that  
9 laboratory?

10 A. I'm not aware of, but maybe they have some DirectTV  
11 set-top box there.

12 Q. Was the security lab used to monitor DirectTV and NDS  
13 countermeasures?

14 A. I don't think it was the main purpose of that, but they  
15 may have done that. I don't know.

16 Q. Was the laboratory used to analyze pirate devices that  
17 were used against the NDS DirectTV system?

18 A. So we were using NagraStar as the first point to  
19 identify if the pirate device is working or not on our  
20 system. And then the pirate device was shipped to  
21 Switzerland. So if it's what you mean, yes, we were  
22 analyzing pirate devices for our system.

23 Q. For what?

24 A. For our system.

25 Q. No. My question is, sir: Were you reverse-engineering

1 and analyzing pirate devices that were used against the NDS  
2 DirecTV system at the laboratory in Denver, Colorado?

3 A. So my understanding, there is -- there was no reverse  
4 engineering, I think, in my definition of reverse  
5 engineering done there. There was probably some testing  
6 done from pirate devices, including DirecTV, in that lab to  
7 see if the new device is working or not on the system.

8 Q. Well, the way you would determine they were working or  
9 not was how?

10 A. Can you repeat that? The way?

11 Q. Sure. How did you determine that the pirate devices  
12 used against the NDS DirecTV system were working or not?

13 A. I don't know what they were doing there. But typically  
14 what we do on our system is that when we receive the first  
15 devices, we try to use the device on a legit set-top box to  
16 see if we can have access to the various programming without  
17 paying. So that's typically, I think, what we -- they will  
18 do if they were trying that same things on DirecTV.

19 Q. And what was the reason you were analyzing the NDS  
20 DirecTV pirate devices?

21 A. I think it was important for us to understand where the  
22 pirate were going. We have told you before that we have  
23 been suffered from various pirate devices, some of them  
24 coming from the DirecTV piracy world. So that's probably  
25 the reason they were doing that, on top of understanding

1 what the main competitor was doing or was suffering from.

2 THE COURT: Reanswer the question slowly.

3 THE WITNESS: I think if they have DirectTV set-top  
4 box there, it was probably to test if the pirate devices for  
5 a given system was working. The way we test -- we do the  
6 very first test is that you take the pirate device, you  
7 insert that in the set-top box. If nothing happen, it's  
8 probably either something wrong with the device or it's not  
9 a pirate devices.

10 If you insert that in the set-top box and it's  
11 working, probably you have some enhanced pirate devices. So  
12 for that you need to have access to set-top boxes. And you  
13 have then to have a normal, legit subscription to do that.  
14 And then you remove your legit Smart Card and you insert the  
15 pirate devices to see if it works.

16 BY MR. STONE:

17 Q. And, sir, how do you get the schematics for the  
18 software and hardware out of a pirate device?

19 A. What do you call "schematics"?

20 Q. A diagram of the circuitry of the hardware or the logic  
21 of the software of a pirate device used against NDS and  
22 DirecTV.

23 A. So to extract that information, you need a specific  
24 laboratory which is equipped to do physical analysis of  
25 hardware. And you will use that equipment to first



1 reverse-engineer the card, meaning that you need to  
2 understand the block or how you call -- you call that the  
3 schematics of the card. And then you will need to extract  
4 the memory content to have access to the software. And as  
5 soon as you have access to the software, you can start  
6 working on the reverse.

7 Q. Now, am I correct that pirate devices used against the  
8 NDS DirecTV system would typically have within them actual  
9 legitimate code of the NDS DirecTV system? Right?

10 A. That, I don't know. They will have to emulate to some  
11 extent the behavior of the system.

12 Q. Now, is the DirecTV broadcast stream capable of being  
13 received in Switzerland?

14 A. Not I'm aware of, no.

15 Q. And these devices were sometimes sent back to  
16 Switzerland for analysis?

17 A. I think not the devices. Sometimes the devices --  
18 again, if the device are either used or will be used against  
19 us, just to understand which hardware is being used on the  
20 device. A typical pirate device is what we call a printed  
21 circuit board, a PCB, where you will have several chip on  
22 top. And that will just emulate the behavior of the Smart  
23 Card. So that's one way.

24 And that device can be seen as a small computer, if you  
25 want. And as any small computer, you can reprogram that for

1 another behavior or another goal. And we've seen that  
2 with -- I think I mentioned a battery card, which was one  
3 pirate devices used against DirecTV that has been reused  
4 against EchoStar, reprogrammed for to be used against  
5 EchoStar.

6 Q. And am I correct that to monitor electronic  
7 countermeasures for the NDS DirecTV system, you would need  
8 to log the broadcast stream?

9 A. Well, I don't think I said that we -- I'm not aware of  
10 any monitoring of the countermeasure, the DirecTV  
11 countermeasure.

12 Q. Well, if Mr. Guggenheim had testified in his deposition  
13 that such monitoring occurred, can you think of any way to  
14 do that other than through logging the broadcast stream?

15 MR. HAGAN: Your Honor, I object. I think we  
16 talked about this on Saturday.

17 THE COURT: Overruled. First of all, the question  
18 was simply about whether monitoring countermeasures for NDS  
19 DirecTV would need to log a broadcast stream.

20 You're being asked, because of your technical  
21 capability, to answer that question. You did not answer  
22 that question.

23 THE WITNESS: Okay. I got you.

24 THE COURT: You have that technical know-how.

25 THE WITNESS: Okay. I think I got you.

1 THE COURT: And so it doesn't matter if, in fact,  
2 you know or don't know whether this took place. Other  
3 witnesses will testify to that.

4 THE WITNESS: Okay.

5 THE COURT: Please answer the question.

6 THE WITNESS: Okay. I got you.

7 Yeah. If you want to monitor the behavior of the  
8 countermeasure on DirectTV on other system, you need to  
9 monitor the effect of that countermeasure on the system,  
10 meaning on the set-top box or on the card. And for doing  
11 that you need to monitor maybe what is sent in the stream  
12 and what is sent between the set-top box and the Smart Card.

13 That's the technical explanation of my  
14 understanding of the monitoring of countermeasure.

15 BY MR. STONE:

16 Q. And to do that, what you're saying is you would log the  
17 communication stream between the satellite signal and the  
18 box, correct?

19 A. I think logging that information might be difficult at  
20 that place, but you need to log that somewhere, and might be  
21 at the satellite level, but it's a bit more difficult, or in  
22 the box itself.

23 Q. And then you would monitor the communication between  
24 the box and the card, correct?

25 A. Yeah, that's correct.

1 Q. And would you use something like a sniffer device or a  
2 logger to do that?

3 A. You need a logger in that, and that sniffer or  
4 logger -- I don't know if it's the right term. But, yeah,  
5 you need to log the communication. So you need, really,  
6 something that will record all bytes going from the set-top  
7 box to the Smart Card and all byte or information going back  
8 from the Smart Card to the set-top box.

9 Q. And then for the NDS DirecTV system, if you were  
10 monitoring that, wouldn't you have to have some  
11 understanding of the encryption methods used?

12 A. I think you need to understand the format of the  
13 message sent between the set-top box and the card to see if  
14 there is an unusual or undocumented message sent to the  
15 card. And that will be -- then give you some information  
16 about something new is happening, so that might be a  
17 countermeasure.

18 Q. Was Mr. Conus monitoring electronic countermeasures in  
19 Switzerland for the NDS DirecTV system?

20 A. No, he was not.

21 Q. Let me show you Exhibit 683, please.

22 A. Thank you.

23 Q. Exhibit 683 is an e-mail dated December 17, 2002, from  
24 Mr. Guggenheim to Peter Kuykendall, with a copy to you,  
25 Mr. Gee, Mr. Conus and some other folks in Switzerland,

1 correct?

2 A. Yeah, that's correct.

3 MR. STONE: At this time I would move Exhibit 683,  
4 Your Honor.

5 THE COURT: Any objection?

6 MR. HAGAN: No objections, Your Honor.

7 THE COURT: Received.

8 (Exhibit 683 received in evidence.)

9 MR. STONE: If we could bring up Exhibit 683.

10 (Document displayed.)

11 BY MR. STONE:

12 Q. There you go. And up at the top is the date and the  
13 folks who were receiving this e-mail, correct?

14 A. Yeah. Apparently, yeah.

15 Q. And who is Mr. Kuykendall?

16 A. My understanding is that it was one engineer working at  
17 NagraStar for Alan Guggenheim.

18 Q. And Mr. Conus we've talked about, correct?

19 A. Can you repeat that?

20 Q. Mr. Conus we've talked about. He was in Switzerland.

21 A. Yeah, that's correct.

22 Q. And Cedric Groux, G-R-O-U-X, was also in Switzerland?

23 A. That's correct.

24 Q. And you, of course, were in Switzerland?

25 A. Correct.

1 Q. As was Henri Kudelski?

2 A. That's correct.

3 Q. And going down to the text of the e-mail, please, where  
4 it says "Peter."

5 (Document displayed.)

6 BY MR. STONE:

7 Q. It says, "This is to confirm what we expect and how we  
8 are getting organized for the 'security lab' in Denver."

9 Is that correct?

10 A. Yeah.

11 Q. And do you recall being involved in the decision to set  
12 up that security lab in Denver?

13 A. My understanding, I was -- I was informed that Alan  
14 wants to do more in Denver to be able to be more active when  
15 a pirate device is operating in the field. And as clearly  
16 mentioned, we don't have access to the stream of EchoStar  
17 nor DirecTV, and therefore to test or validate that the  
18 device is working, you need the set-top box and you need  
19 also the stream, so the satellite footprint. And you cannot  
20 do that outside the U.S.

21 Q. Well, this says under Point No. 2, "Set up and maintain  
22 the security lab with" -- and the second item is B-E-V. I  
23 assume that's Bell ExpressVu?

24 A. Yes, that's correct.

25 Q. It says, "One to three devices most prevalent"; is that

1 correct?

2 A. That's what I'm reading, yeah.

3 Q. And did the Bell ExpressVu stream extend into Colorado?

4 A. That's my understanding, yes.

5 Q. And then underneath that it says, "DirecTV one device  
6 the most popular." What does that refer to?

7 A. My understanding, if you read the two -- first line, it  
8 means EchoStar want each of the main device -- we are  
9 talking about set-top box, same for Bell ExpressVu. So I  
10 can guess that for DirecTV, it's talking about also one  
11 DirecTV set-top box.

12 Q. So at any point in time you would have in this security  
13 lab in Denver the most popular NDS DirecTV pirate device,  
14 correct?

15 A. My understanding is that we are talking about set-top  
16 box, not pirate devices.

17 Q. Well, it says underneath No. 4, "Send to Cheseaux  
18 regular updates on all new devices."

19 Now, Cheseaux is the city in Switzerland where  
20 NagraCard was?

21 A. That's correct, yeah.

22 Q. So when we see e-mails that say "Cheseaux," that means  
23 you and your group, correct?

24 A. That's correct.

25 Q. Now, "all new devices" would be all new pirate devices,

1 correct?

2 A. That's my understanding, yeah.

3 Q. And that would include the NDS DirectTV devices we  
4 talked about, sir?

5 A. It might be, yeah.

6 Q. Well, do you recall receiving those in Switzerland,  
7 sir?

8 A. We may have received one or two, yeah. But I don't  
9 recall specifically one.

10 Q. Do you recall Mr. Guggenheim's wife, Suzanne  
11 Guggenheim, sending you DirectTV pirate devices to  
12 Switzerland?

13 A. Yeah, that may have happened, which --

14 THE COURT: Excuse me. I've cautioned all of the  
15 witnesses; I'll caution you.

16 The words "may have happened."

17 THE WITNESS: Okay.

18 THE COURT: Did they or not? In other words, with  
19 all of the witnesses, we've received some of that kind of  
20 testimony. This jury is entitled to know whether that  
21 occurred or not. And qualifying words like "may," "could  
22 have" are not acceptable.

23 THE WITNESS: Okay.

24 THE COURT: If you don't know, state you do not  
25 know. If you know the answer, please don't qualify it.



1 THE WITNESS: Okay.

2 THE COURT: Counsel, reask the question.

3 BY MR. STONE:

4 Q. Sure. Did Alan Guggenheim's wife, Suzanne Guggenheim,  
5 send to Switzerland NDS DirectTV pirate devices for analysis?

6 A. So I don't recall any specific date for that, but --  
7 sorry, I want to say "may" because that's the -- during  
8 those ten years we -- we might have received specific  
9 devices. I don't recall a specific date or a specific  
10 devices.

11 Q. What ten-year period are you referring to, sir?

12 A. During the beginning -- I'm in the company, within  
13 Kudelski since 12 years, and the system is on since ten  
14 years almost. So that's what I'm referring to.

15 Q. Now, looking at No. 4, still of Exhibit 683, it says,  
16 "Send to Cheseaux regular updates on all new devices,  
17 including schematics, software, hardware, how to make it  
18 work for Dummies document."

19 Did I read that correctly?

20 A. Yes.

21 Q. Now, we've talked about how one obtains schematics,  
22 we've talked about hardware and software. What is "how to  
23 make it work for Dummies document"?

24 A. My understanding is that some of those pirate devices  
25 need to be assembled to be working. So sometimes you will

1 have not only the finished devices but a set of chips that  
2 you need to solder on a printed circuit board to make it  
3 work.

4 So my understanding of how to make it work for Dummies  
5 is how do you assemble that devices and where do you insert  
6 that devices in the set-top box to make it happen and to  
7 make it used.

8 Q. And who was supposed to figure that all out for you  
9 folks in Switzerland so they could write a document called  
10 "How to make it work for Dummies"?

11 A. That's something that we were receiving, not sending.  
12 Sent to Cheseaux, not sent from Cheseaux.

13 Q. Well, who would prepare the "How to make it work for  
14 Dummies document"?

15 A. My understanding, looking at that e-mail, it's the  
16 description of the job of Peter Kuykendall.

17 Q. In the laboratory in Denver?

18 A. Correct.

19 Q. And do you know what happened to all the reports that  
20 were generated of the analysis of these NDS DirectTV devices?

21 A. I don't know.

22 Q. Where would those reports have been kept?

23 A. That I don't know.

24 Q. Now, No. 5 says, "Report on effect on your lab of ECMs  
25 and fixes." Did I read that correctly?

1 A. Yeah, that's correct.

2 Q. When it says "your lab," I assume it means the  
3 receivers and devices you had set up in the laboratory?

4 A. When you mentioned "you," who do you mean?

5 Q. Well, "you" meaning NagraStar, NagraVision.

6 A. Yeah, my understanding there is it's mentioning the lab  
7 that will be set up in 2002 at NagraStar to do that type of  
8 testing. So my understanding of that was what Peter  
9 Kuykendall was doing since December 2002: He was trying to  
10 maintain a set of set-top boxes for EchoStar and to make  
11 sure he can test and validate the efficiency of  
12 countermeasure there and to then to inform Cheseaux about if  
13 that one is working or not. It was kind of a pre-filtering  
14 on knowing if one devices was working or not. Because on  
15 Internet you have a lot of scam devices. You sell a lot of  
16 things, and maybe not all of them are working, so you need  
17 to test that. And that was, from my recollection, the job  
18 description of Peter Kuykendall and the usage of that lab.

19 Q. Now, Mr. Nicolas, based on your review of the Headend  
20 Report, you understand that Mr. Mordinson analyzed the ROM  
21 code from a ROM 3 card and disassembled it and studied it.

22 A. At least he had the information on that, and he write  
23 that in his report for sure, yeah.

24 Q. And the ROM code is not visible to the physical eye, is  
25 it?

1 A. Can you explain or rephrase that?

2 Q. Well, if you look at a Smart Card, you can't see the  
3 ROM code; it's in the chip, correct?

4 A. Yeah, that's correct. You need to attack the chip and  
5 remove the chip from the Smart Card to access that.

6 Q. And the ROM code is the same in every card of that  
7 version, correct?

8 A. Yes, that's correct.

9 Q. And if I could show you Exhibit 816, please.

10 Exhibit 816 is an e-mail from Joel Conus to you and  
11 Mr. Guggenheim and Mr. Gee and some other folk in  
12 Switzerland, dated November 21st, 2001, correct?

13 A. Yeah, that's correct.

14 Q. And you recognize all the names on this e-mail,  
15 correct?

16 A. That's correct, yes.

17 MR. STONE: And at this time I would move  
18 Exhibit 816 into evidence.

19 THE COURT: Any objection?

20 MR. HAGAN: No, objections, Your Honor.

21 THE COURT: Received.

22 (Exhibit No. 816 received in evidence.)

23 BY MR. STONE:

24 Q. Now, what was your position with the company in  
25 November 2001?

1 A. In November 2001, I was probably VP R&D, research and  
2 development, for NagraCard, so heading the development team  
3 for Smart Card and as well as the team doing the  
4 countermeasure, the electronic countermeasure for  
5 NagraStar -- for NagraCard, sorry.

6 Q. And November 2001 was long after DirecTV had said they  
7 would stick with NDS and were not going to use Nagra,  
8 correct?

9 A. Yeah, that's correct. Yeah.

10 Q. Okay. And on the second page, if you would, please, of  
11 Exhibit 816, sir, there's an e-mail from Christophe  
12 Gaillard, G-A-I-L-L-A-R-D. Who is Mr. Gaillard?

13 A. So Christophe Gaillard is a Swiss citizen working now  
14 for NagraVision, and I think at that time he was based in  
15 Denver working for NagraStar.

16 Q. And if we could go down -- well, strike that.

17 This is an e-mail to Mr. Guggenheim on November 20th,  
18 the day before, the first page, correct?

19 A. That's what's written there, yeah.

20 Q. If we could look at the text -- it's in French, I  
21 know -- but I believe you testified that this language  
22 means, "The floppy that you gave to me looks like the dump  
23 of ROM code to DirecTV and not just keys"?

24 A. Yeah, that's correct.

25 Q. And the way you read this is that Mr. Gaillard had a

1 floppy disc with dumps of the ROM code from six DirecTV HU  
2 cards, right?

3 A. To be precise, I think he's saying he received that  
4 floppy disc from Alan Guggenheim, and he reports to him that  
5 at first glimpse, the floppy is containing not only keys,  
6 DirecTV keys, but more, meaning source code or ROM code.

7 Q. And you understood at this point in time that NDS was  
8 providing the ROM code to the DirecTV system in the Smart  
9 Cards?

10 A. Yeah, that's my understanding. Yes.

11 Q. And a dump of ROM code would be getting the code out of  
12 the chips of the NDS card, correct?

13 A. Can you repeat that?

14 Q. Sure. Getting a dump of the ROM code would be pulling  
15 the ROM code out of the chips in the NDS cards, correct?

16 A. What do you mean by "giving"? You said, "giving the  
17 ROM code"?

18 Q. Getting.

19 A. Oh, getting.

20 Q. Obtaining.

21 A. Okay. Yes, someone needs to do that to extract the ROM  
22 code, yeah.

23 Q. And I believe it's your testimony you don't know how  
24 Mr. Gaillard or Mr. Guggenheim was able to extract that ROM  
25 code; is that correct?

1 A. That's correct, yes.

2 Q. So you have no idea how Mr. Guggenheim all of a sudden  
3 had a floppy disc that had ROM code to an NDS card on it,  
4 correct?

5 A. That's correct, yeah.

6 Q. And you never asked him; isn't that correct?

7 A. No. I think after the -- if you go back to the other  
8 page, I think that was sent to Joel, which explained that  
9 that was information published on the Internet. And he  
10 explained also what does it mean, so that they confirm that  
11 is part of the ROM code for DirecTV and that publication on  
12 the Internet is definitely damaging for DirecTV and might be  
13 used by hackers.

14 Q. Okay. My question was simply when Mr. Guggenheim ever  
15 told you how he was able to get ROM code out of NDS cards.

16 A. You said how?

17 Q. How.

18 A. How, no, he never told me that.

19 Q. And you never asked, correct?

20 MR. HAGAN: Your Honor, I'm going to object.

21 Mr. Stone is mischaracterizing the witness's testimony. He  
22 said that the code came from the Internet, not that  
23 Mr. Guggenheim extracted it.

24 THE COURT: Overruled. Counsel, no more speaking  
25 objections.

1 Thank you.

2 BY MR. STONE:

3 Q. And wasn't it your testimony that when you discovered  
4 the information on the floppy disc with ROM code did not  
5 concern Nagra, you did not pursue any further analysis of  
6 the floppy disc?

7 A. Yes, that's correct.

8 Q. But the very first e-mail from Mr. Gaillard on  
9 November 20th made it clear this was DirectTV ROM code,  
10 correct?

11 A. You say -- translate that.

12 THE INTERPRETER: (Translates.)

13 THE WITNESS: It looks like a dump. It was not  
14 fully affirmative. It looks like.

15 BY MR. STONE:

16 Q. Well, would a dump of the NDS DirectTV ROM code concern  
17 Nagra or not concern Nagra?

18 A. What do you mean by "concern"?

19 THE INTERPRETER: (Explains.)

20 THE WITNESS: It would not be a concern for Nagra,  
21 no.

22 BY MR. STONE:

23 Q. But despite the fact that Mr. Gaillard's original  
24 e-mail says this appears to be DirectTV ROM code, further  
25 analysis was conducted on this, wasn't it?



1 A. What do you mean by "further analysis"?

2 MR. STONE: Well, if I may approach, Your Honor,  
3 to set up a demonstrative?

4 THE COURT: You may.

5 (Document displayed.)

6 BY MR. STONE:

7 Q. What I'm going to do is go over the first page of that  
8 exhibit with you, sir.

9 All right. Looking at the first page of  
10 Exhibit 816, please. The very bottom, it looks like  
11 Mr. Guggenheim forwarded the floppy disc with the ROM code  
12 to Mr. Conus of NagraCard, correct?

13 A. That's correct, yes.

14 Q. And Mr. -- and also to you as well, it looks like, if  
15 I'm reading the e-mail line correctly?

16 A. That's correct, yes.

17 Q. That's on November 21st, 2001?

18 A. That's correct.

19 Q. And in Mr. Guggenheim's e-mail, he said, "This is the  
20 file mentioned by Renee in her e-mail. We need to get  
21 familiar with this. What's the value?" Correct?

22 A. Correct.

23 Q. And didn't you testify you have no understanding why  
24 Mr. Guggenheim was advocating getting familiar with the six  
25 ROM code dumps from the NDS DirecTV system?

1 A. That's correct, yes.

2 Q. And it's your testimony you have never discussed with  
3 Mr. Guggenheim why he wanted to get familiar with the NDS  
4 DirecTV ROM dumps; isn't that right?

5 A. That's correct, yes.

6 Q. And after Mr. Guggenheim wrote, "We need to get  
7 familiar with this," he wrote, "What's the value?" Right?

8 A. That's what's written there, yeah.

9 Q. What did he mean by "what's the value" of ROM dumps of  
10 NDS DirecTV code?

11 MR. HAGAN: Calls for speculation.

12 THE COURT: Overruled.

13 THE WITNESS: I don't know.

14 BY MR. STONE:

15 Q. Well, let's look.

16 Up at the top, after Mr. Conus got familiar with the  
17 ROM dumps, he wrote back to Mr. Guggenheim in the last  
18 sentence of his e-mail at the top, "This is highly valuable  
19 information for the DSS community." Do you see that?

20 A. Yes, I see that.

21 Q. And it was your testimony that "the DSS community"  
22 refers to the black market community of pirates attacking  
23 DirecTV, right?

24 A. At least my understanding is the community discussing  
25 piracy on the Internet about DirecTV.

1 Q. And it's your testimony you don't know what  
2 Mr. Guggenheim had in mind when he wanted to know the value  
3 of these ROM dumps to the DirecTV pirate community.

4 A. That's correct, yes.

5 Q. Now, that's odd. Is there any doubt in your mind the  
6 dump of ROM code would be valuable to pirates to have?

7 A. Yeah, that's correct. If it's a dump of the ROM code,  
8 yeah, some value to DirecTV -- to pirate against DirecTV,  
9 yes.

10 Q. And so is it your testimony that Mr. Conus would not  
11 know before getting familiar with that code that ROM code  
12 would be valuable to pirates?

13 A. I think that he would be aware that it might have value  
14 to pirates, yes, for sure.

15 Q. What does it mean to disassemble ROM code?

16 A. You mean technical terms, what does it mean?

17 Q. No. I mean, just generally for a layperson like me.  
18 What does that mean, to disassemble ROM code?

19 A. A ROM code, you can have different -- how can I call  
20 that -- different representation of ROM code. It can be a  
21 binary image, zero and one. It can be a hexadecimal image.  
22 And out of that you need to go back to the source code. So  
23 you need to go back to a code which is readable by a human.  
24 And my understanding that disassembling the code is going  
25 from binary or hexadecimal image to a readable code.

1 Q. And that was the process that Mr. Mordinson did on the  
2 ROM code in the Headend Report, correct?

3 A. That's a small part that is documented in the Headend  
4 Report, yes.

5 Q. And am I correct, it's your testimony that you don't  
6 know whether Mr. Conus disassembled the NDS DirectTV ROM code  
7 when he got familiar with it?

8 A. Can you repeat that?

9 Q. You don't know whether Mr. Conus disassembled the NDS  
10 DirectTV ROM code when he got familiar with it; is that  
11 correct?

12 A. Yeah, that's correct, but I think he didn't do anything  
13 there.

14 Q. And am I correct that you did not ask NDS or DirectTV's  
15 permission before getting familiar with their ROM code?

16 A. I think we need to be clear on familiar and not  
17 familiar. The answer of Joel Conus is given, if you look at  
18 the time of the e-mail, something like 30 minutes after  
19 receiving the e-mail. So I don't know what he's done during  
20 those 30 minutes, but I think it's not an extensive work on  
21 that file.

22 Q. Did you ask for permission from NDS or DirectTV to get  
23 familiar with their ROM code?

24 A. No. I'm not aware of that.

25 Q. Now, you were in charge of the production of documents

1 by NagraVision in response to NDS' requests in this case; is  
2 that right?

3 A. That's correct.

4 THE COURT: Excuse me, Counsel. Are you done with  
5 this exhibit now?

6 MR. STONE: Yes.

7 THE COURT: Take it down. Thank you.

8 BY MR. STONE:

9 Q. Do you know why the file containing the NDS DirecTV ROM  
10 dumps have not been turned over to NDS despite its requests?

11 A. I don't know.

12 Q. Do you know what happened to the file containing the  
13 ROM dumps?

14 A. I don't know.

15 Q. Do you know why the e-mail from Renee referenced on the  
16 first page of Exhibit 816 has not been turned over in this  
17 case?

18 A. I don't know.

19 Q. Do you know what happened to that e-mail?

20 A. Which one?

21 Q. The one from Renee, where Mr. Guggenheim says, "This is  
22 the file mentioned by Renee in her e-mail"?

23 A. No, I don't know.

24 Q. Okay. I'd like to back up a little bit, Mr. Nicolas.

25 Now, am I correct that you joined NagraVision

1 straight out of school from the Swiss Federal Institute for  
2 Technology?

3 A. That's correct, yes.

4 Q. And I believe you said that was April 1996?

5 A. April '96, yes.

6 Q. And working for NagraVision was your first full-time  
7 job, correct?

8 A. That's correct, yes.

9 Q. And I believe you testified that when you joined  
10 NagraVision in 1996, the ROM 3 card was almost completely  
11 developed?

12 A. The ROM 2 was completely developed and in production.  
13 The ROM 3 was almost developed, yeah.

14 Q. And when was the development of the ROM 3 cards  
15 completed?

16 A. I think we -- what we call "released" the ROM code. So  
17 we finalized the ROM code. It was somewhere in October or  
18 November of that same year, October or November '96.

19 Q. Now, in performing your job duties, did you ever become  
20 aware of an NDS card supplied to DirectTV called the P4 card?

21 A. What? Sorry.

22 Q. In performing your job duties for NagraCard, did you  
23 ever become aware of an NDS card supplied to DirectTV called  
24 the P4 card?

25 A. Yeah. When it appeared it was not in '96, so it was

1 after.

2 Q. If I could show you Exhibit 1249, please.

3 Exhibit 1249 is another e-mail from Joel Clonus to you  
4 and some others dated March 5th, 2002, correct?

5 A. My exhibit says May 2002.

6 Q. I'm sorry. You're correct. It's May 3rd, 2002. I  
7 apologize. It's the continental dating.

8 You recognize this e-mail, I take it?

9 A. What do you mean by "take it"?

10 THE COURT: Excuse me. That should be clear to  
11 the jury also.

12 In Europe the date is reversed from our  
13 perspective. From their perspective, it's reversed from the  
14 United States perspective. So the "May" would appear as  
15 "05" on this document.

16 Why don't you put that up on the screen, because  
17 later on the jury's going to be looking at a series of  
18 United States-generated e-mails and European e-mails. And  
19 Counsel, would you just explain for a moment.

20 MR. STONE: Yeah. Thank you, Your Honor. I  
21 apologize.

22 If you go down, in the PGP section, Charlie, there  
23 will be the actual numbers 'cause that's in French.

24 THE COURT: And this will be equally valuable to  
25 the plaintiffs and defendants. It doesn't matter who's

1 explaining this, but just explain that briefly.

2 MR. STONE: Sure.

3 BY MR. STONE:

4 Q. The PGP signature is done at the time the e-mail is  
5 encrypted and sent, correct?

6 A. That part of the signature, the part called "signed,"  
7 yes. The part verified is when it's written, it's read.

8 Q. And that will match the day of the e-mail typically?

9 A. That's correct.

10 Q. And where it says "3/5/2002," in the European system,  
11 the "3" would be the date; in other words, the 3rd?

12 A. That's correct.

13 Q. And the "05" would be the month, which would be May?

14 A. That's correct.

15 Q. And then the year, of course, is 2002?

16 A. (Nods.)

17 THE COURT: Thank you.

18 MR. STONE: I would move 1249 at this point,  
19 Your Honor.

20 THE COURT: Any objection?

21 MR. HAGAN: No, objections, Your Honor.

22 THE COURT: Received.

23 (Exhibit No. 1249 received in evidence.)

24 BY MR. STONE:

25 Q. Now, once again, Mr. Conus has attached some kind of



1 file related to DirecTV to this e-mail. Do you see that?

2 A. Yes, I see that, yeah.

3 Q. And do you know what happened to that file?

4 A. I don't know.

5 Q. Was there a particular place where information about  
6 the NDS DirecTV system was maintained at NagraCard or  
7 NagraVision?

8 A. Not that I'm aware of.

9 Q. Going down to the e-mail itself, looking at the very  
10 first line, looks like Mr. Conus is reporting on information  
11 in Satellite Business News that reported that the P4 has  
12 been cracked. Many hackers have expressed their opinions on  
13 various DTV forums. Here is what comes out. Did I read  
14 that correctly?

15 A. Yes.

16 Q. And the P4 card was the latest generation of the NDS  
17 DirecTV card at this point in time?

18 A. Yeah, that's correct. Yeah.

19 Q. And was one of Mr. Conus' responsibilities to track the  
20 state of piracy of the P4 card?

21 A. I think it was not his task.

22 Q. Pardon? I couldn't hear you.

23 A. I don't think it was his specific task to track the  
24 state of specific card from competition.

25 Q. Do you know why this e-mail was exclusively devoted to

1 the P4 card by NDS?

2 A. My understanding reading the e-mail, it seems that the  
3 Satellite Business News, which is a publication, reported  
4 that the P4 card has been hacked. And my understanding is  
5 that he's explaining what does it mean, this technical  
6 aspect, from what was read from the publication.

7 Q. So this entire e-mail deals exclusively with the NDS P4  
8 card, correct?

9 A. That's my understanding. It deals on the Satellite  
10 Business News publication reporting about that P4 hack.

11 Q. Well, the very last sentence says, "The attachment also  
12 contains some interesting technical information."

13 A. That's what I read -- I'm reading, yes.

14 Q. Pardon?

15 A. That's what I'm reading, yes.

16 Q. My question is, do you recall what interesting  
17 technical information about the P4 card was provided by  
18 Mr. Conus?

19 A. No, I don't recall that.

20 Q. And that would have been in the attachment to this  
21 e-mail, correct?

22 A. The attachment seems to be only one file, so -- a text  
23 file, so it might have been in there or somewhere else.

24 Q. Have you heard the term "Cam, C-A-M, ID" before?

25 A. Yes.

1 Q. Okay. If I understand it, CAM means "Conditional  
2 Access Module," which is the same thing as a Smart Card,  
3 right?

4 A. Yes. That's my understanding, yes.

5 Q. And "ID" refers to the identification number, correct?

6 A. That's correct.

7 Q. And if you could look at Exhibit 1234, please.

8 (Document displayed.)

9 BY MR. STONE:

10 Q. This is no surprise. Another e-mail from Mr. Conus.  
11 This one is dated October 15th, 2002, and you are one of the  
12 recipients of this e-mail, correct, sir?

13 A. Yes, that's correct.

14 Q. And what's subject of this e-mail?

15 A. I think there's the same subject, DTV, so stands for  
16 DirecTV.

17 Q. Which means DirecTV, right?

18 A. That's my understanding, yes.

19 MR. STONE: I would move 1234 at this time.

20 THE COURT: Any objection?

21 MR. HAGAN: No, objections, Your Honor.

22 THE COURT: Received.

23 (Exhibit No. 1234 received in evidence.)

24 BY MR. STONE:

25 Q. Was there a particular reason Mr. Conus was routinely

1 reporting on the status of the DirecTV system? Do you have  
2 any understanding?

3 A. I think that I explained that Joel Conus' job was to  
4 monitor pirate website where amongst all pirate information  
5 DirecTV or NDS pirate information have been published also.  
6 And from time to time he was reporting that information the  
7 same way he was reporting our information.

8 Q. Okay. And it looks like he attached another attachment  
9 that related to DirecTV 2002, correct?

10 A. Yeah, I think the way all the reporting from Joel is  
11 done is each time he kind of does a kind of executive  
12 summary in the body of the e-mail, and in the attachment you  
13 will find the extract of the website where the quote or the  
14 publication have been done.

15 Q. Well, at the bottom where it says -- or in the text, I  
16 apologize -- it says, "The CAM ID slash ZKT pair posted on a  
17 form yesterday doesn't come from a P4 card." Do you see  
18 that?

19 A. I see that, yeah.

20 Q. And that's Mr. Conus' writing?

21 A. Apparently. It's one he made from him, so...

22 Q. He says, "While the CAM ID is in the P4 range, it  
23 doesn't pass all the ZKT challenges," correct?

24 A. That's correct, yes.

25 Q. Now, "the P4 range" would mean a card number that

1 DirectTV assigned to its P4 cards?

2 A. Yes. Probably, yeah.

3 Q. And ZKT is a zero-knowledge table that is used in an  
4 encrypted password challenge in the NDS DirectTV system to  
5 make sure the Smart Card is in the right receiver; isn't  
6 that correct?

7 A. That I don't know.

8 Q. Well, your system doesn't use a zero-knowledge table as  
9 part of its authentication process, does it?

10 A. If you can explain me what a zero-key table -- I can  
11 answer that question, but...

12 Q. My understanding is limited, but I believe it was  
13 developed by Adi Shamir, and it's asymmetrical encryption  
14 system used to authenticate Smart Card communications  
15 between a Smart Card and a receiver?

16 A. Okay. So on the ROM 3 or DNASP-II family, we are not  
17 using that scheme.

18 Q. Do you know how Mr. Conus was able to determine that  
19 the CAM ID was in the P4 range?

20 A. That I don't know.

21 Q. Do you know how Mr. Conus was able to determine that  
22 that CAM ID did not pass all the zero-knowledge table  
23 challenges?

24 A. That I don't know.

25 Q. Can you think of any way Mr. Conus would be able to

1 determine whether a particular P4 card ID would not pass the  
2 encryption challenge response?

3 A. Sure. I think the only way he can have that  
4 information, it means that those information have been  
5 published on those pirate website he was monitoring. And  
6 reading that information, he get the -- he get the  
7 knowledge, he get the knowledge of that information, and  
8 that was about report.

9 What we see, for example, on our system hackers report,  
10 the card ID or CAM ID range to differentiate one version to  
11 the other because it's easier for them if we do a  
12 countermeasure on one version to know if the CAM ID in their  
13 own box will suffer from the countermeasure or not.

14 Q. Well, if you didn't use the ZKT, how is this knowledge  
15 helpful to improving the Nagra system?

16 A. I think it was not.

17 Q. Had Mr. Conus or anyone at Nagra analyzed a P4 card to  
18 allow him to make these determinations?

19 A. Not I'm aware of.

20 Q. Am I correct that there was never any evidence that the  
21 P4 card was used in EchoStar piracy?

22 A. The P4 card was not used on EchoStar piracy; that is  
23 correct.

24 Q. Now at some point in time, did Kudelski or NagraVision  
25 begin developing an ASIC for its Smart Cards, an

1 application-specific integrated circuit?

2 A. Yeah, that's correct.

3 Q. And the NDS DirectTV system had used an ASIC since the  
4 late '90s, including in the P3 card, as far as you knew,  
5 right?

6 A. That I don't know. I'm aware about the P4. Seems to  
7 use that, but I don't know all the detail.

8 Q. Did Kudelski or NagraVision hire any former DirectTV  
9 employees or consultants who worked on the P4 card?

10 A. I know that we were -- we are working with different  
11 consultants, and maybe some of them have -- might work with  
12 DirectTV at that time, yes.

13 Q. Including Mr. Kocher?

14 A. Are you referring about Paul Kocher?

15 Q. Yes, sir.

16 A. Yeah, we are working with Paul Kocher today.

17 Q. And when did Kudelski first start beginning development  
18 of an ASIC for its cards like DirectTV had already done?

19 A. I think -- I think we start developing that in 2003,  
20 2004.

21 Q. Now, does NagraCard or NagraVision have any  
22 laboratories in Switzerland that can be used to analyze  
23 Smart Cards?

24 A. Yes, we have laboratory. Yes.

25 Q. What kind of equipment?

1 A. Very basic equipment. We don't have all the tools to  
2 do a full reverse engineering of those card.

3 Q. Do you have equipment that's used to conduct quality  
4 assurance checks on the manufacturing?

5 A. Could you repeat?

6 Q. Sure. Do you have equipment used for quality assurance  
7 checks?

8 A. Yes, we do.

9 Q. And where is the laboratory located in Switzerland? Is  
10 it in Cheseaux?

11 A. It's in Cheseaux, yeah.

12 Q. Did you ever learn that NagraStar hired a private  
13 investigator to purchase P4 cards from a satellite pirate  
14 business in Canada so they could be analyzed in Switzerland?

15 A. I'm not aware of that, no.

16 MR. STONE: Could you show the witness  
17 Exhibit 1148, please.

18 (Document displayed.)

19 BY MR. STONE:

20 Q. By looking at Exhibit 1148, this is a  
21 June 28, 2002, Pinkerton investigation report to NagraStar,  
22 "Attention J.J. Gee, Special Projects Investigator."

23 Do you see that?

24 A. I see that, yeah.

25 Q. And NagraStar was the company that was responsible for



1 investigating piracy, amongst other things, correct?

2 A. Yes. That's correct.

3 Q. And you know Mr. Gee, right?

4 A. I know J. J., yeah.

5 Q. And you were aware that Mr. Gee had hired private  
6 investigative firms on occasion to conduct investigations?

7 A. I'm aware of that, yes.

8 MR. STONE: Your Honor, I would move 1148 subject  
9 to connection.

10 THE COURT: Any objection?

11 MR. HAGAN: Subject to motion to strike, no  
12 objection, Your Honor.

13 THE COURT: Received into evidence.

14 (Exhibit No. 1148 received in evidence.)

15 BY MR. STONE:

16 Q. Have you looked at the assignment that Mr. Gee gave to  
17 Pinkerton? It's the first paragraph?

18 It says, "We are directed to research  
19 satansplayhouse.com and confirm their operating locations in  
20 the greater Toronto area. In addition, we were tasked to  
21 purchase in person their P4 access card, instructed to  
22 purchase three cards if modified and two units if not  
23 modified." Do you see that?

24 A. I see that, yeah.

25 Q. And did you ever learn from Mr. Gee that they had sent

1 a private investigative firm to Canada to purchase P4 cards?

2 A. I was not aware of that.

3 Q. And were any of those P4 cards ever sent to  
4 Switzerland?

5 A. I don't think so.

6 Q. Do you have any understanding why NagraStar would need  
7 to purchase NDS P4 cards from satansplayhouse?

8 A. I don't know.

9 Q. Didn't you testify that the laboratory in Colorado had  
10 a DirectTV receiver in it?

11 A. Reading the file, that's my understanding, yes.

12 Q. Let me show you, please, Exhibit 1190.

13 Now, Mr. Nicolas, since you were in your charge of the  
14 production by NagraVision, I take it you recognize the Bates  
15 stamp at the bottom "NVNC," which stands for NagraVision  
16 NagraCard, correct?

17 A. Yes.

18 Q. And this is a picture of a P4 card, correct?

19 A. Yes, correct.

20 Q. And this was produced by NagraVision NagraCard in this  
21 case, correct?

22 A. That's correct, yes.

23 Q. And I assume you produced a photograph rather than the  
24 card itself?

25 A. No. I recall that posting. That was, I think, one

1 posting done on Internet, the very first time the hackers  
2 have seen the P4 operating in the field. So if you hook  
3 that posting with the report that was with that, you will  
4 probably confirm my understanding.

5 Q. I have not seen any portion connected to this  
6 photograph in the production, sir. You're saying this is a  
7 photograph taken off of some website?

8 A. Yeah, that's typically the way hackers publish those  
9 things. The fact that they have put in black the com ID was  
10 to make sure that they will not be tracked or recognized.

11 Q. Isn't what happened that the folks in Switzerland  
12 blacked out the CAM ID because they were analyzing the P4  
13 card?

14 A. I don't see -- so first I tell you that I don't think  
15 we received any P4 card. So I don't know why we will have  
16 blackened a number or so there if we have received one of  
17 those cards.

18 Q. Would you have blackened a number if kP4 cards were  
19 purchased from satansplayhouse in Toronto, Canada?

20 A. I don't know why we would have first received that card  
21 and then blackened the number.

22 Q. Well, by blackening the number, it can't be traced.  
23 Isn't that what you said?

24 A. Yeah. And that was the purpose of the publication.  
25 That's my understanding.

1 Q. And do you know why the alleged website posting that  
2 went with this was not produced with the photograph of the  
3 P4 card?

4 A. I don't know if it was produced or not. That's what  
5 you are saying.

6 Q. Who was the person who was in charge of the development  
7 of the ROM 3 version card?

8 A. So when I joined the team, Cal Osen, O-S-E-N, was in  
9 charge of the development of the ROM 3 card.

10 Q. And had you ever worked on the development of a secure  
11 Smart Card prior to working on the ROM 3 development team?

12 A. No.

13 Q. Had you had any experience prior to joining NagraVision  
14 in writing or developing software for any Smart Card?

15 A. No.

16 Q. And do you have any understanding of what Mr. Osen's  
17 qualifications were to design a secure Smart Card for a  
18 conditional access system?

19 A. Yeah. It was the principal engineer that was involved  
20 in all development of all our Smart Card before that. So  
21 before the digital or the DNASP-II family, we developed an  
22 analog system using Smart Card since, I think, late '80s  
23 until '96. So Cal was the principal engineer in charge of  
24 that development from -- as I said, '88, '89 until '96, when  
25 I joined.

1 Q. And am I correct that the chairman of the company,  
2 Henri Kudelski, was also involved in the design of the  
3 security aspects of the ROM 3 card?

4 A. I don't know he was directly involved in the  
5 development of the ROM 3. He was probably involved in the  
6 overall design of the system before that, but not in the  
7 specific design and development of the card itself.

8 MR. STONE: Your Honor, I would like to play from  
9 Mr. Nicolas' deposition Page 25, Lines 12 through 23.

10 THE COURT: You may.

11 MR. STONE: Thank you, Your Honor.

12 (Deposition played as follows:)

13 QUESTION: "Okay. I apologize. Who was  
14 responsible for designing the security aspects of the ROM 3  
15 card, as you understand it?

16 ANSWER: "Mr. Osen was responsible for the  
17 development of the card.

18 QUESTION: "Mr. Osen was responsible for the  
19 development of the card?

20 ANSWER: "In terms of the design and conception,  
21 other people were also involved.

22 QUESTION: "Who else was involved in the design of  
23 the security aspects of the ROM 3 card as you recall it?

24 ANSWER: "I think that in view of the importance  
25 of the project, Andrea Kudelski himself was involved in the

1 project."

2 BY MR. STONE:

3 Q. And you headed up the project to develop the  
4 ROM 7 version, correct?

5 A. Can you repeat that?

6 Q. Sure. Were you in charge of the development of the  
7 ROM 7 card?

8 A. So I was involved in ROM 7 and ROM 10, the develop, I  
9 don't recall if I was in charge of ROM 7 already. I think I  
10 was in charge of ROM 10 for sure, but ROM 7, it might be the  
11 case.

12 Q. So you might have been in charge of the ROM 7  
13 development?

14 A. Yes, correct.

15 Q. And when might you have been involved and in charge of  
16 the development of ROM 7?

17 A. You say when?

18 Q. Yes.

19 A. So we finish the development of ROM 3, it was the end  
20 of '96, so probably during the time of '97 somewhere we  
21 started developing the ROM 7. So it will be my guess '97,  
22 '98 time frame.

23 Q. When was the development completed on the ROM 7  
24 version?

25 A. Yeah, I will say somewhere end of '97 or in '98. But I

1 don't recall the exact date.

2 Q. I assume there would be records of that somewhere?

3 A. Yeah. I think we can find that, yeah.

4 Q. Was the ROM 7 card ever deployed in North America?

5 A. My understanding is that that was not deployed at  
6 EchoStar, and I need to check, but it might have been  
7 deployed at Bell ExpressVu in Canada, but I don't recall  
8 exactly.

9 Q. Were there any ROM versions that you worked on between  
10 ROM 3 and ROM 7?

11 A. So we are developing a ROM 4 also for another system,  
12 and I think that's it. So after ROM 3, there was ROM 4 and  
13 ROM 7.

14 Q. And then you headed you development of the ROM 10 card,  
15 correct?

16 A. Sorry. Can you repeat?

17 Q. Sure. You were in charge of development of the ROM 10  
18 card?

19 A. Yeah, that's correct. Yes.

20 Q. And the ROM 10 card was the next generation after  
21 ROM 7, correct?

22 A. So it was still part of the same DNASP-II family, but  
23 we were introducing a new hardware platform. So I think we  
24 have seen before the ST16CF54 platform used for ROM 2 and 3.  
25 We introduced a new hardware platform for ROM 10 within that

1 DNASP-II family.

2 Q. And -- I'm sorry -- were there any ROM versions in  
3 between ROM 7 and 10?

4 A. No.

5 Q. And when did the development of the ROM 10 card begin?

6 A. I would say, I think, in '99, 2000 time frame.

7 Probably '99.

8 Q. 1999?

9 A. Yes.

10 Q. And what happened to Mr. Osen? Do you know why he  
11 wasn't in charge of ROM 7 and ROM 10?

12 A. At that time he was still involved in the development.  
13 He was not the project manager of that project.

14 Q. All right. So you worked on the ROM 3 development  
15 right out of school, and then eventually you were in charge  
16 of the development of the ROM 10 in 1999?

17 A. I think I said 1999/2000 for the ROM 10, yes.

18 Q. And am I correct that the hardware chip chosen for the  
19 ROM 10 card that was used in 1999 does not have this memory  
20 aliasing feature in it, correct?

21 A. That's correct. But now -- now, you mentioned that, I  
22 think we were not aware still of the ROM ghost effect when  
23 we pick the next platform.

24 Q. So it was just by luck that you happened to pick a new  
25 chip that was not subject to memory aliasing?



1 A. Yeah. I think we pick the new ST family. So we move  
2 from ST16 family to ST19, and that was the next one which  
3 was available.

4 Q. And the ROM 10 card was finalized in February of 2000,  
5 the code, that is; is that correct?

6 A. That we need to check. I think it will be somewhere in  
7 that time frame.

8 Q. I will tell you we've looked at the ROM 10 source code,  
9 and it indicates it was completed in February of 2000. Does  
10 that sound right to you?

11 A. I trust you if you checked that, yeah.

12 Q. And it went out in the field in March of 2000 or to the  
13 customer?

14 A. That's probably the right time frame. I don't know the  
15 exact date, but I don't have all those dates in mind.  
16 That's probably the right time frame.

17 Q. And would you tell the ladies and gentlemen of the jury  
18 if the ROM 10 card suffers from any buffer overflow  
19 vulnerability?

20 A. So the RAM ghost effect that I've tried to explain to  
21 you was hardware weaknesses that were in the ST16 chip. And  
22 the ROM 10 card, based on a new chip, the so-called ST19,  
23 was not suffering from that hardware weaknesses. So we were  
24 still managing the buffer the same way, but not the -- that  
25 feature or that weakness didn't exist in that ST19 family.

1 Q. That's not exactly correct, sir.

2 Isn't it true that the ROM 10 code specifically checks  
3 to make sure the buffer cannot be overflowed?

4 A. That we need to check. That might be something that  
5 was -- I did at that time.

6 Q. You were in charge of the ROM 10 development. Do you  
7 recall that you made a conscious decision to check the  
8 communications buffer in the ROM 10 to make sure it could  
9 not be overflowing?

10 A. Yeah, that's my point. I don't recall. But if you  
11 check the code yourself and you tell me that, I will trust  
12 you for sure.

13 Q. You have no reason to dispute that fact. Is that a  
14 fair statement?

15 A. If you say that it's in there, I fully understand it's  
16 in there.

17 Q. I say it and I'll have my expert say it because I don't  
18 really understand code, so...

19 A. Fine.

20 THE COURT: While you're here, we can check that  
21 over the lunch hour, can't we?

22 THE WITNESS: Yeah. If I have the source code,  
23 sure.

24 MR. STONE: This might be a good time, then,  
25 Your Honor.

1 THE COURT: No, it's not.

2 BY MR. STONE:

3 Q. Okay. Now, when the ROM 10 card was created, it was  
4 created for which customer?

5 A. I think the way we were developing cards, we were  
6 trying to introduce a new generation of cards every one or  
7 two years. And the same family, DNASP-II family, was shared  
8 amongst all our customer at that time. So DNASP-X  
9 introduction was for -- they did get it both for EchoStar,  
10 but also for other customers.

11 Q. Who was the largest customer of the ROM 10 version  
12 card?

13 A. I think it's difficult. I think EchoStar that had the  
14 most volume of the ROM 10 code card in production, yeah.

15 Q. Now, when the ROM 10 card was produced, how many  
16 millions were shipped to EchoStar in the year 2000?

17 A. So again, just try understand. How many ROM 10 code  
18 Smart Card were produced and sent to EchoStar in 2000? Was  
19 that your question?

20 Q. Yes, sir. Yes, sir.

21 A. At that time I don't know, but I think multiple  
22 million. I don't know the exact number. But --

23 Q. Does 9.6 million sound about right to you?

24 A. In 2000, I think, yeah, EchoStar was growing something  
25 like that number, but we need to check. I don't have the

1 number. But it looks fair.

2 Q. Do you recall that in 2000 the total subscribers to the  
3 EchoStar DISH Network were slightly more than 5 million?

4 A. If you say so, I will trust you, too.

5 Q. It's in the 10-K, so yes, sir.

6 A. Yeah.

7 Q. How many ROM 3 cards -- well, strike that.

8 Before the ROM 10 came out, there was both ROM 2 and  
9 ROM 3, right?

10 A. Again, for EchoStar?

11 Q. Yes, sir.

12 A. Yes.

13 Q. And if I recall from the 10-Ks correctly, there were  
14 little over 3 million, 3.4 million, I think, subscribers in  
15 1999, and a little over 5 million subscribers in 2000 to  
16 EchoStar. Do you recall how many ROM 2 cards existed in  
17 that system in 2000 and how many ROM 3?

18 A. No, I don't recall. I don't recall the split.

19 Q. But there was some split between subscribers between  
20 ROM 2 and ROM 3? In other words, they weren't all ROM 3  
21 cards in the year '99 or 2000?

22 A. No. There were probably a few million of each version,  
23 yes.

24 Q. And a few million, you would agree, is less than  
25 9 million?

1 A. I think it's a hard question, yeah -- but yeah.

2 Q. And when EchoStar got the 9 million ROM 10 cards that  
3 don't have memory aliasing and aren't subject to buffer  
4 overflow, did they immediately change out all the ROM 3  
5 cards with those?

6 A. My understanding is that we didn't start any card  
7 exchange until -- we started that, I think, in 2002 to  
8 exchange the full -- the whole DNASP-II family.

9 Q. Do you have an understanding what EchoStar was doing  
10 with the 9 million ROM 10 cards that have no memory aliasing  
11 and no buffer overflow in the year 2000?

12 A. I'm missing a piece. What do you mean by 9 million  
13 Smart Card?

14 Q. 9 million total.

15 A. Delivered to them?

16 Q. Yes, sir.

17 A. So my understanding, all the card that we were  
18 delivering at that time were going in the field for  
19 customer.

20 Q. And were they replacing the ROM 3 and ROM 2 cards?

21 A. Well, I think the main purpose was to use those cards  
22 for new subscriber.

23 Q. Now, when you got the black box device in -- I think  
24 you said September of 2000 -- and you said that uses a  
25 buffer overflow method and is similar to the recipe on the

1 Internet. Do you recall that testimony?

2 A. Yeah, I recall that.

3 Q. Did you call up EchoStar and say, "You know what? You  
4 ought to go and swap all your ROM 3 cards for our new ROM 10  
5 card"?

6 A. I think we were -- we were clear that at that time that  
7 there is a major attack on both on ROM 3 card, but also on  
8 the DNASP-II family because the family shared some secret  
9 between different ROM. So ROM 2, ROM 3, and therefore  
10 ROM 10 and 11 are sharing the same secret code and secret  
11 information amongst that family. So no matter what we  
12 decide to do on ROM 3, the whole family is exposed and under  
13 attack.

14 Q. Sir, isn't it true that there is no buffer overflow  
15 attack that would work on a ROM 10 card?

16 A. I think overflow the way we have seen that on ROM 3 in  
17 conjunction with the ROM ghost effect, it is not possible on  
18 ROM 10. That's correct.

19 Q. How many lines of code does it take in assembly  
20 language to check one communications buffer to ensure it  
21 does not overflow?

22 A. I think it depends on the way you design that.

23 Q. How many did it take in the ROM 10? Do you have any  
24 recollection?

25 A. I think -- so what we have done is that we have

1 completely reviewed the way we were doing the communication  
2 and changed the code structure to take that into account.  
3 And probably we will have to check it over lunch, but it's  
4 probably a few lines of code to achieve that.

5 Q. Does two lines of code --

6 A. A few line of code.

7 Q. Does two sound about right?

8 A. Might be.

9 Q. Two?

10 A. It might be.

11 Q. And with those two lines of code, there is no way to  
12 overflow the one communications buffer in the ROM 10 card;  
13 isn't that correct?

14 A. That's my understanding, yes, if it's in there and if  
15 there is no ROM ghost effect. So it means that there is no  
16 "treat" like that, we cannot do a buffer overflow on the  
17 buffer.

18 Q. Even without the memory aliasing or RAM ghost effect,  
19 as you call it, if you can't overflow the communications  
20 buffer in the first instance, you can't make use of the  
21 memory aliasing; isn't that correct?

22 A. I'm not sure I'm following you. But can you rephrase  
23 that, please?

24 Q. Sure.

25 The memory aliasing cannot be used for any malicious

1 purpose unless you can overflow the buffer in the first  
2 place; isn't that correct?

3 A. That's a good question. I haven't think about it, all  
4 the detail, but on the exact same recipe you cannot use that  
5 one, but didn't mean that you cannot do anything else.

6 Q. Pardon?

7 A. Maybe you can do something else in term of attack using  
8 that --

9 Q. I'm just talking about a buffer overflow attack.

10 A. Yeah.

11 Q. There's no way to take any advantage of this RAM ghost  
12 effect or memory aliasing unless you can overflow the  
13 communications buffer as a first step. Isn't that a true  
14 statement?

15 A. No. That's my point. I didn't note about all the  
16 other type of attack you can do with that information. So  
17 the buffer overflow is one of them, but I cannot state today  
18 that it's the only one. That's what you are trying to --

19 Q. I'm focusing on the buffer overflow.

20 A. Got that, yeah.

21 Q. Is the accusation in this case?

22 A. Sorry?

23 Q. Which is the accusation in this case. I'm focusing on  
24 buffer overflow.

25 A. Yes.



1 Q. Am I correct that without using a buffer overflow in  
2 the first instance, you cannot take advantage of memory  
3 aliasing for purposes of an attack?

4 THE COURT: Raise your voice.

5 BY MR. STONE:

6 Q. -- purposes of an attack?

7 A. I think you cannot do that purpose of the attack. You  
8 might do other one.

9 Q. Are you aware of another way?

10 A. I don't think so, no.

11 MR. STONE: Your Honor, would now be a good time?

12 THE COURT: Good time.

13 Ladies and gentlemen, you're admonished not to  
14 discuss this matter amongst yourselves or express any  
15 opinion concerning the case.

16 We'll see you at 1:00 o'clock. Have a nice lunch.

17 You can step down, please.

18 THE WITNESS: Okay.

19 (Witness steps down.)

20 (Jury adjourned for lunch.)

21 THE COURT: All right. Counsel, 1:00 o'clock.

22 Have a nice lunch.

23 (Lunch recess held at 11:58 a.m.)

24 (Further proceedings reported in Volume III.)

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2  
3 CERTIFICATE

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

11  
12 Date: April 16, 2008

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16 DEBBIE GALE, U.S. COURT REPORTER

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