

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

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ECHOSTAR SATELLITE)	
CORPORATION, et al.,)	
)	
Plaintiffs,)	
)	
vs.)	No. SACV 03-0950-DOC
)	
NDS GROUP PLC, et al.,)	
)	Day 4, Volume I
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
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08-04-15 EchoStarD4V1

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I N D E X

EXAMINATION

Witness Name	Direct	Cross	Redirect	Recross
NICOLAS, CHRISTOPHE				
By Mr. Hagan	8			

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

2 DAY 4 - VOLUME I

3 (7:58 a.m.)

4 (The following proceedings is taken outside
5 the presence of the jury.)

6 THE COURT: We are on the record. All counsel are
7 present, the jury is not present.

8 The Court is going to order all counsel not to
9 refer to Judge Smith or make his presence known this
10 morning. The reason for that is it would give, I think, the
11 plaintiffs an unfair, prejudicial advantage. There is a
12 concern on this Court's part that the present code has any
13 true value. There have been patches, and, in fact, the swap
14 has taken place. And by referring to Judge Smith as a
15 special master and the, you know, black-box effect that he
16 has, it gives added credence that this code might still be a
17 super secret code that would have tremendous destruction for
18 the company.

19 The Court doesn't believe at this present date,
20 2007, that the code has the same import it did back in 2002,
21 2003, and therefore, I think that a reference to a special
22 master handling the code in this way gives a prejudicial
23 effect to valuation if liability is reached, both for
24 liability purposes and, of course, then the expansion into
25 punitives if we get that far.

1 Second, I've imparted to the jury with counsel's
2 consent this morning, at about 7:45, the wish to change out
3 Tuesday to Monday and to be out of session on Tuesday so
4 that that one juror, Mr. Bender, can keep his appointment
5 with the county. They are considering that.

6 Lastly, Counsel, is there anything further before
7 we resume?

8 (No audible response.)

9 THE COURT: All right. Thank you.
10 Kristee?

11 (The following proceedings is taken in the
12 presence of the jury.)

13 THE COURT: All right. Good morning.

14 The jury is present. All counsel are present.

15 Counsel, thank you for your courtesy. If you'd
16 please be seated.

17 The parties are present, and on behalf of
18 EchoStar, Mr. Hagan, would you call your next witness,
19 please.

20 MR. HAGAN: Certainly, your Honor. Plaintiffs
21 call Christophe Nicolas.

22 THE COURT: Thank you.

23 Mr. Nicolas?

24 Thank you, sir.

25 And I assume that the gentleman with him is an

1 interpreter?

2 MR. HAGAN: That's correct, your Honor.

3 THE INTERPRETER: Yes.

4 THE COURT: Thank you.

5 And first, good morning.

6 THE WITNESS: Good morning.

7 THE COURT: And sir, would you be kind enough to
8 raise your right hand, please.

9 CHRISTOPHE NICOLAS, PLAINTIFFS' WITNESS, SWORN

10 THE WITNESS: Yeah, I swear.

11 THE COURT: Thank you, sir. If you'd please be
12 seated in the witness box to my left, and if the interpreter
13 would like to come with him.

14 There should be a chair, or if you'd like to stand
15 next to the gentleman.

16 Mr. Nicolas, would you state your full name for
17 the jury, please.

18 THE WITNESS: Sure. So my name is Christophe
19 Nicolas.

20 THE COURT: And Kristee, would you be kind enough
21 to move that microphone a little bit closer to the
22 gentleman.

23 And sir, would you spell your first name for the
24 jury.

25 THE WITNESS: Yeah, C-h-r-i-s-t-o-p-h-e.

1 THE COURT: And would you spell your last name for
2 the jury.

3 THE WITNESS: N-i-c-o-l-a-s.

4 THE COURT: And, sir, are you an interpreter?

5 THE INTERPRETER: Yes, I am.

6 THE COURT: Would you state your name for the
7 jury, please.

8 THE INTERPRETER: My name is Jean-Marie Fey.

9 THE COURT: And would you spell your first and
10 last name.

11 THE INTERPRETER: My first name is Jean-Marie,
12 J-e-a-n-M-a-r-i-e, last name is Fey, F-e-y.

13 THE COURT: And what language are you
14 interpreting?

15 THE INTERPRETER: I'm interpreting English into
16 French and French into English.

17 THE COURT: All right.

18 Now, Mr. Nicolas, do you understand English well
19 enough to testify in English, and then if you don't
20 understand, use the interpreter, or would you prefer to have
21 the entire examination conducted through the interpreter?

22 THE WITNESS: I'm ready to -- to try in English
23 and use Jean-Marie in case we have a --

24 THE COURT: If you are willing to make that
25 attempt, if you don't understand a question, there is no

1 inconvenience to the Court and the jury, just turn to the
2 interpreter and ask for his help.

3 THE WITNESS: Okay.

4 THE COURT: But if we can have you attempt to
5 testify in English, it removes, you know, a potential
6 impediment, and hopefully those answers are clearly stated
7 to you.

8 THE WITNESS: Sure.

9 THE COURT: So counsel will speak slowly to you.
10 Mr. Hagan, this is direct examination on behalf of
11 EchoStar.

12 MR. HAGAN: Thank you, your Honor. Chad Hagan on
13 behalf of EchoStar and NagraStar.

14 DIRECT EXAMINATION

15 BY MR. HAGAN:

16 Q Good morning, Mr. Nicolas. You've already introduced
17 yourself to the jury, but can you tell us a little bit about
18 yourself. Where do you live and work, sir?

19 A Yeah, so I'm a Swiss citizen, and I live, therefore, in
20 Switzerland, a small town called Sacvey (phonetic) next to
21 Lausanne where we have our headquarter based.

22 THE COURT: I am going to ask you to move that
23 microphone even closer to you.

24 THE WITNESS: Okay. Sure.

25 THE COURT: And would you tap that microphone?

1 THE WITNESS: (Complying.)

2 THE COURT: Okay. Thank you.

3 Counsel.

4 BY MR. HAGAN:

5 Q And Mr. Nicolas, do you have a family there with you in
6 Switzerland?

7 A Yeah, I'm married, my wife, Valerie. So we are married
8 since 10 years, now. My wife Valerie is from Acrozi
9 (phonetic), and we have two kids, Florian (phonetic), three
10 and a half, and Loik (phonetic), one and a half.

11 Q And how long have you lived there in Switzerland,
12 Mr. Nicolas?

13 A Since I was born, since '71.

14 Q Now, can you tell us a little bit about your
15 educational background. What types of degrees do you hold?

16 A Sure. So I've done my -- my study also in Lausanne,
17 and I have a bachelor and master degree in computer science.
18 And I've done my study in the -- in the school called EPFL
19 or Swiss Federal Institute of Technology in Lausanne.

20 Q Now, Mr. Nicolas, turning to your employment history,
21 how are you currently employed?

22 A So I'm working for a company called NagraCard, and I am
23 the senior vice president and CTO, or chief technology
24 officer for that company.

25 Q And how long have you been employed with NagraCard?

1 A So I started in April '96, first with a company called
2 NagraVision, also part of the Kudelski Group, and then moved
3 to NagraCard when the company was created, I think, in '97,
4 '98.

5 Q And prior to making your way up to senior vice
6 president and chief technology officer for NagraCard, did
7 you hold any other positions within the company?

8 A Yes, sure. I started as a software engineer developing
9 software for -- for Smart Card, and then I move up as a
10 project manager and then for R and D and vice president of R
11 and D, and then I end up to -- to that position, the current
12 position.

13 Q And when did you attain the title of senior vice
14 president and chief technology officer within the company?

15 A So I -- let me think. Yeah, I -- I am a senior vice
16 president since 2004 and CTO since last year.

17 Q Can you tell the ladies and gentlemen of the jury a
18 little bit about your role within NagraCard. In other
19 words, what are your daily job duties and responsibilities?

20 A Today?

21 Q Yes, sir.

22 A So today I'm managing a -- a small group of 50 people,
23 which are mainly focused on innovation, so I'm managing
24 innovation projects for the company, and the access is
25 taking care of security, anything related to security with

1 our product on the technical side, so defining the -- the
2 product design strategy for -- for our secure product.

3 Q And going back in time a little bit, you said that you
4 initially started with the company as a software engineer;
5 is that correct?

6 A Correct, yes.

7 Q Can you tell the ladies and gentlemen of the jury a
8 little bit about what your role was within the company when
9 you served as a software engineer?

10 A So I started to -- to work on the -- as I said, on
11 the -- on the Smart Card development. First, doing some
12 testing of the -- the software and developing some test
13 equipment, and then I -- I stopped writing software,
14 designing and writing software for -- for the Smart Card or
15 the -- or the access card.

16 Q What type of business does NagraCard engage in?

17 A So NagraCard is mainly a company that is -- has main
18 purpose to design, develop Smart Card software. And then we
19 are also the -- the capability to produce the Smart Card.
20 So we do the hardware production of the Smart Card or access
21 card that we deliver them to our customer.

22 Q And can you explain to the ladies and gentlemen of the
23 jury what you mean by Smart Card or access card?

24 A Sure. So a Smart Card stands for a plastic card, as
25 any credit card, but has in there a specific microchip or

1 microprocessor, and that microprocessor has the capability
2 to execute software as your computer. And within that
3 microchip, we have various set of memory, and you will --
4 maybe about ROM memory, RAM memory or EEPROM memory. And
5 those memory are use to store the software of the Smart Card
6 or store the sensitive data or information needed to execute
7 the -- the software.

8 MR. HAGAN: May I approach, your Honor?

9 THE COURT: You may.

10 BY MR. HAGAN:

11 Q Now, Mr. Nicolas, is that one of the Smart Cards that
12 you are referring to?

13 A Yes, exactly. So you -- you see it's a piece of
14 plastic, and you have -- that -- that piece is really the --
15 what we call the module, which is a golden plated module.
16 And in there, you have that specific microchip, which is
17 embedded or put in there, and that's really the part that
18 will -- will be in contact with the receiver of the set-top
19 box and to the communication with the receiver and the
20 set-top box.

21 Q And can you explain to the ladies and gentlemen of the
22 jury what you mean by receiver or set-top box?

23 A Yeah, to -- to have access to a digital TV or digital
24 broadcasting, you will -- you will have to -- to install and
25 hook your TV to a box, which I call set-top box or receiver.

1 And -- and the Smart Card will be inserted in the set-top
2 box and -- and remain in the set-top box during the entire
3 life of the -- of the box.

4 Q And the microprocessor, the small chip that you pointed
5 out on the back of the Smart Card, is that where the memory
6 is stored?

7 A Yeah, as I say, within that microchip, we have
8 different memory, and we have the memory for the -- the
9 software itself, but also for all the sensitive data, both
10 what we call the access right condition, so which
11 subscription you are entitled for and also all the -- the
12 key, the secret key needed to decipher the message that you
13 will receive in the box.

14 Q Are you familiar with the term "conditional access
15 system"?

16 A Yes, I do.

17 Q Can you explain to the ladies and gentlemen of the jury
18 what a conditional access system is and then what its role
19 or function is.

20 A Sure. So the conditional access system is the part of
21 the -- the software and system that we provide in -- in a
22 big satellite system or DBS system. It's mainly the part
23 that we'll manage, again, what I call the subscription. So
24 for a given consumer, you will call and ask for some
25 specific package, HBO package or basic package. And as soon

1 as you -- you ask for that, you will receive over the air a
2 message that will put the corresponding right into the card.

3 And -- and the job of the conditional access system is,
4 first, making sure that you have the right in the card, and
5 if this is the case, it will entitle the -- the user to
6 watch the corresponding TV channel. So that's mainly the --
7 the role of the conditional access system, manage your
8 subscription and descramble the -- the message to give
9 access to your TV programming.

10 Q Are you familiar with the process of pairing or
11 marrying a particular Smart Card with a receiver?

12 A Yes, I do.

13 Q Can you explain to the ladies and gentlemen of the jury
14 what that process involves?

15 A Yeah. So in our system, we deliver -- each Smart Card
16 have what we call a unique ID or -- or a -- yeah, a card ID,
17 so you see they're printed. You have a number, which will
18 be unique per Smart Card. It's the same at the receiver
19 level. On the back, you will have a label giving you a
20 unique ID for the set-top box.

21 In our system, we have the capability to marry or pair
22 both together, meaning that as soon as I insert my Smart
23 Card, I know the number of the Smart Card and the number of
24 the set-top box. I will ask the system to marry, to pair
25 both together.

1 Q Who are some of the clients or customers that NagraCard
2 develops these Smart Cards for?

3 A So in our conditional access system, we have for sure
4 EchoStar as a customer, but we have various customer
5 worldwide. I can mention in North America we have Bell
6 Express View in Canada.

7 THE COURT: I'm sorry, you have who?

8 THE WITNESS: Bell Express View.

9 THE COURT: Use that mike.

10 THE WITNESS: Bell Express View, B-e-l-l,
11 ExpressVu. And we have, then, various customer also in
12 Europe such as Canal+, Virgin Media in the UK. We have some
13 Polish customer, we have some Italian customer, such as
14 Mediaset, and some Asian customer, also, Hong Kong Cable in
15 Hong Kong, some in China. So it's really -- I think we have
16 something like 130, 140 customer worldwide.

17 THE COURT: Now, let's stop just a moment.

18 Jane, do you need some of those spellings and
19 maybe pronunciations to make sure you have that?

20 I might have you spell some of those companies.

21 In fact, why don't you start with Bell Express. Is it
22 B-e-l-l E-x-p-r-e-s-s?

23 THE WITNESS: Yeah, that -- that's the name I
24 know. I don't know if it's the brand that they are
25 using, but it's B-e-l-l, and Express View, E-x-p-r-e-s

1 V-e-i (sic) -- View, yeah.

2 THE COURT: And you mentioned Canal+. I know the
3 court reporters have that spelling. In the UK, you
4 mentioned a media company.

5 THE WITNESS: Yeah, it's -- it's called Virgin
6 Media.

7 THE COURT: Can you spell that.

8 THE WITNESS: V-i-r-g-i-n Media.

9 THE COURT: And you mentioned an Italian customer.

10 THE WITNESS: Yeah, this one is called Mediaset,
11 M-e-d-i-a-s-a-t (sic) -- media -- s-e-t, Mediaset -- e-t,
12 yeah.

13 THE COURT: And finally, you mentioned a customer
14 in Hong Kong, an Asian customer.

15 THE WITNESS: Yes. So the name of the customer is
16 Hong Kong, as Hong Kong, and Cable.

17 THE COURT: Hong Kong Cable?

18 THE WITNESS: Yes.

19 THE COURT: Thank you very much.

20 Counsel.

21 MR. HAGAN: Thank you, your Honor.

22 BY MR. HAGAN:

23 Q Mr. Nicolas, who is NagraCard's largest customer in the
24 United States?

25 A So the -- the largest customer that we have in -- in

1 United State is EchoStar on the DISH Network.

2 Q And as you understand it, EchoStar provides satellite
3 programming to customers here in the United States?

4 A Yes, correct.

5 Q And that's under the trade name or the marketing name
6 DISH Network?

7 A Yeah, that's my understanding, yeah.

8 Q Are you familiar with the company Nagra USA?

9 A Yes, I think Nagra USA is one of the Kudelski Group
10 company, Kudelski in the U.S.

11 Q And are you familiar with the company NagraStar, one of
12 the plaintiffs in this action?

13 A Yes, NagraStar is the joint venture between Nagra USA
14 and EchoStar.

15 Q Mr. Nicolas, are you familiar with the company called
16 NDS, the defendants in this case?

17 A Yes, I do.

18 Q And does NDS compete with NagraStar here in the United
19 States?

20 A Yes, NDS is one of the main other conditional access
21 system operator in the -- in the U.S.

22 Q Now, are you familiar with the Defendant NDS's largest
23 client here in the United States?

24 A Yeah, my understanding is that DirectTV is the -- is the
25 main customer of NDS in the U.S.

1 Q And based on your understanding, is it DirecTV is the
2 major competitor here in the United States of Plaintiff
3 EchoStar?

4 A On -- on the satellite side, that's my understanding,
5 yes.

6 Q And you mentioned the company Canal+ earlier in your
7 testimony. Can you identify that company for the ladies and
8 gentlemen of the jury.

9 A Yes. Canal+ is a company part of the Vivendi Group,
10 which is a big media company in Europe holding, I think, a
11 few assets such as Universal Music. And Canal+ is also
12 offering the same type of system, a satellite system in
13 France, providing also TV programming to -- to customer as a
14 customer in the U.S.

15 Q Are you familiar with the company called Sogecable,
16 S-o-g-e-c-a-b-l-e?

17 A Yes, I do.

18 Q And what -- as you understand it, what type of business
19 does Sogecable engage in?

20 A So Sogecable is also a media company, but this time in
21 Spain, in Europe. And they're also one offering of
22 satellite TV in Spain for Spanish customer.

23 Q Now, Mr. Nicolas, earlier you referenced a conditional
24 access system, and that NagraCard through NagraStar provides
25 part of EchoStar's conditional access system. I want to

1 focus our attention on the version of the conditional access
2 system used by EchoStar during the 1996 to 2005 time frame.

3 A Okay.

4 Q As you understand it, is that system or was that system
5 known as DNASP-II?

6 A Yes, we -- in -- in our jargon or slang, sorry for
7 that, we -- we use a code name to -- to name the various
8 family of conditional access system. And the -- the
9 Kudelski company started with a first generation called
10 DNASP, and then we developed the so-called DNASP-II family.
11 That is the -- that was the one used by a customer at that
12 time.

13 Q And are you familiar with what the acronym DNASP stands
14 for?

15 A Yes, I do. So it stands for, if I recall correctly,
16 "D" for digital, "N" stands for Nagra, advanced security
17 processor. And Nagra is the brand name of Kudelski, so we
18 have NagraVision, NagraCard. That's why we have Nagra in
19 there.

20 Q Do you know when NagraCard first started providing the
21 DNASP-II conditional access system to EchoStar?

22 A So we -- we started delivering DNASP-II Smart Card, and
23 I think it was mentioning that in a family, we have various
24 fashion of card. I think you -- you will hear about ROM 2,
25 ROM 3, ROM 10, ROM 11. So all of those version are part of

1 the same DNASP-II family, okay? So we started delivering
2 ROM 2 at the very beginning of EchoStar, so I think EchoStar
3 started to broadcast in March '96. So that's probably the
4 date we started delivering the card, maybe one or two months
5 earlier to provide the card to and start the system.

6 Q Now, during the 1996 time frame, if I understood you
7 correctly earlier, you were employed by Nagra as a software
8 engineer; is that correct?

9 A That's correct, yes.

10 Q Did you participate in any way in the design of the
11 DNASP-II system that's used by EchoStar?

12 A So when I -- I joined the company, the DNASP-II system
13 as a system was already designed. As -- as I mentioned, I
14 think I started in April '96, and EchoStar launch the system
15 in March '96, so --

16 THE COURT: Excuse me, Counsel. Something is not
17 clear, and it may be because DNAP can sound like DNASP.
18 When you started in 1996, was the DNAP, D-N-A-P, system --

19 THE WITNESS: S-P.

20 THE COURT: -- in effect, or DNASP?

21 THE WITNESS: DNASP.

22 THE COURT: DNASP-II --

23 THE WITNESS: DNASP-II, correct.

24 THE COURT: -- was in effect in 1996.

25 THE WITNESS: What do you mean by "in effect"?

1 THE COURT: Was it --

2 (Discussion between interpreter and witness.)

3 THE WITNESS: Oh, in effect. So my understanding
4 is that EchoStar started in March '96 using the DNASP-II
5 system.

6 THE COURT: All right. Thank you.

7 Thank you, Counsel.

8 BY MR. HAGAN:

9 Q And that DNASP-II system, although it's referred to as
10 one particular system, it had different generations or
11 families of Smart Cards; is that correct?

12 A Yeah, that's correct. That's what I was trying to
13 mention. In DNASP-II, we have various ROM version delivered
14 to the customer.

15 Q Did you participate in any way in the development of
16 any of those ROM versions or ROM family cards for the
17 DNASP-II system?

18 A Yes, I do, so --

19 Q Can you explain to the jury what your role was in that
20 development process?

21 A Sure. When I have join in April '96, the ROM 2 version
22 was already out in the field, and the company was working on
23 the so-called ROM 3. So I join and -- and started doing
24 testing and -- and validation of that ROM 3 system. Then
25 for the later one, ROM 10, ROM 11, I participate in the --

1 in the design and development of the card.

2 Q When you say you participated in the validation of the
3 ROM 3 family of Smart Cards, can you explain to us what you
4 mean by that.

5 A Yeah, mainly most of the source code of the software
6 was already developed, and when I joined, I joined the team
7 in doing what we call unitary testing of the code, so
8 validating that the behavior of the code of the various
9 feature working properly according to what we call the
10 specification of the system.

11 Q And what do you mean by unitary testing?

12 A In -- in engineering, we call unitary testing, testing
13 one feature at the time. So it's a unique test of that
14 feature, and then we move to another feature, and so on.

15 Q Can you give us an example of one of those particular
16 units that was tested during that process?

17 A Yeah, let me -- so we -- we, for example -- the card
18 when inserted needs to -- to start communicating with the
19 set-top box in a proper way and in -- and the communication
20 follow a specific, what we call protocol way of talking to
21 the -- to the set-top box, so there is various unitary
22 testing to test that variable to make sure that the card
23 follow properly the so-called protocol to talk with the
24 set-top box.

25 Q Thank you, Mr. Nicolas.

1 Now, I want to turn your focus to the problem of
2 satellite piracy. Are you familiar with that term?

3 A Yes, I am.

4 Q And can you give the jury a definition of satellite
5 piracy in your words.

6 A Yeah. So I think we use the term "satellite piracy"
7 as, I think, the main industry term to define any attempts
8 to steal the -- the satellite TV programming.

9 Q And as -- as part of that process, is it your
10 understanding that individuals have to circumvent or somehow
11 find a way around the security features that are developed
12 by conditional access providers?

13 A Yeah, that -- that's mainly the goal, to -- to have
14 access, as I think we -- we mentioned that conditional
15 access was there to make sure that the legit subscriber have
16 access and the illegit (sic) one don't have. So to -- to
17 steal programming, you need to find a way to circumvent or
18 go around the conditional access system.

19 Q Is one way to look at the conditional access system
20 somewhat of a lock that protects the programming that is
21 being broadcast through that system?

22 A Yeah. We can say that, yeah.

23 Q And by the same token, is one way to look at satellite
24 piracy attempts to break that lock or somehow pick that lock
25 to steal the program?

1 A Yeah. Exactly, yeah.

2 Q How does satellite piracy affect NagraCard's business?

3 A So as a security provider, as soon as we have a
4 security -- for sure, it will affect badly the reputation
5 and the business of the -- the company.

6 Q When you started with NagraVision and then in NagraCard
7 in the 1996 time frame, during 1996, to your knowledge, was
8 that conditional access system which was used by EchoStar
9 compromised?

10 A No, the -- the -- the system was not compromised at all
11 in '96.

12 Q And is another way of -- of saying that, that the
13 system was secure during that time frame?

14 A Definitely the system was secured and doing its job of
15 securing the -- the satellite programming.

16 Q Now, how about the year 1997, was the system secure for
17 EchoStar here in the United States?

18 A Yes, it was.

19 Q Now, moving to the year 1998, was EchoStar's
20 conditional access system, that DNASP-II version, was that
21 secure in the United States?

22 THE COURT: And that's DNAP?

23 THE WITNESS: DNASP.

24 MR. HAGAN: DNASP.

25 THE COURT: Once again, the initials.

1 MR. HAGAN: DNASP.

2 THE COURT: ASP, thank you.

3 MR. HAGAN: That's correct, your Honor.

4 THE WITNESS: Yes, I think for most of the year of
5 '98, it was secure.

6 BY MR. HAGAN:

7 Q Now, based on your understanding, do you know whether
8 or not the defendants in the year 1998 engaged in any
9 efforts to reverse engineer or hack that security system?

10 A Yeah, that's definitely my understanding.

11 Q And what is that understanding based upon? Are there
12 any documents that you're thinking of?

13 A Yeah, I think we have -- during that case, we've
14 reviewed several document from NDS that clearly show that
15 they were working on our system, on our Smart Card and
16 defining how to first understand and then hack into our
17 Smart Card.

18 Q Now, Mr. Nicolas, did there ever come a point in time
19 where it came to your knowledge that DirecTV was approaching
20 NagraCard or NagraStar in an effort to maybe try to replace
21 the compromised technology of NDS?

22 A Yes, I do. We -- we were approach, I think it was, in
23 '97 by DirecTV to -- to make a proposal to replace NDS
24 conditional access system.

25 Q And based on your previous testimony, the year 1997,

1 that DNASP-II system used here in the United States was not
2 compromised?

3 A Oh, yes, it was secure, fully secure.

4 Q Are you aware of any of the facts or circumstances
5 surrounding DirecTV approaching NagraCard or NagraStar?

6 A What do you mean by --

7 (Discussion between interpreter and witness.)

8 THE WITNESS: Yeah, so my understanding was that
9 DirecTV contacted NagraStar and Kudelski to replace NDS
10 conditional access system due to the piracy ongoing on
11 DirecTV.

12 BY MR. HAGAN:

13 Q Now, did you participate in any of those discussions
14 with representatives for DirecTV?

15 A Yes, I was in several meetings both in the U.S. in
16 Los Angeles in DirecTV premises and in Switzerland in our
17 premises with DirecTV people.

18 Q Do you recall approximately when those meetings took
19 place, the general time period?

20 A As I said, I think it started in end of '97 up to then
21 at least December '98 or end of '98.

22 Q Now, did there come a point in time where the
23 discussions went beyond just talking between the companies?
24 In other words, did there come a point in time where DirecTV
25 actually requested NagraStar or NagraCard to provide them

1 with a formal written proposal?

2 A Yes, we -- we clearly had been given access to all
3 non-secret document that will allow us to analyze if we can
4 design a system that will be compatible with the existing
5 DirecTV system. And we were working tightly with their
6 engineer to write what we call a white report, so it's
7 really a full technical explanation on how we can provide a
8 system -- replace their existing system without compromising
9 the -- the normal behavior of the system without cutting the
10 programming for the existing subscriber.

11 Q Did you participate in any way in developing that
12 proposal or that plan?

13 A Oh, yes, I was involved in those discussion and also
14 in -- in the work that we have done internally to prepare
15 that report.

16 Q And can you give us just a summary of what your
17 involvement was, not on the discussion side, but on the
18 technical side?

19 A So as part of the Smart Card team, I was focusing on
20 the -- on the Smart Card on security side making sure that
21 we can understand existing box or receiver, and to make sure
22 that we can design compatible Smart Card that will work into
23 those existing receiver, DirecTV receiver.

24 Q Did DirecTV ever accept Nagra's proposal to swap out
25 the NDS system with the Nagra system?

1 A So my understanding is that they were pretty happy with
2 the report. We did, I think, one or two executive
3 presentation to DirectTV management, top management there.
4 And then we were almost ready to go, but finally were told
5 that they -- they stopped the project, because they just
6 sign a new extension of the existing NDS contract.

7 Q Do you recall which year that happened in?

8 A Yeah, it should be clearly after the report, so after
9 the Summer of '98, so that year probably.

10 Q Turning back now to the DNASP-II system, did there come
11 a point in time where you became aware that that conditional
12 access system used by EchoStar in the United States became
13 compromised?

14 A Yeah, I think the first rumor and then evidence that
15 there was -- there has been a first successful attempt to
16 attack our Smart Card was in October '98 when we have seen a
17 publication of sensitive data coming out of our card, and
18 that publication appeared, if I recall correctly, on dr7,
19 which was one of the -- the internet website talking about
20 DirectTV and -- at that time, DirectTV and then EchoStar
21 pirating, piracy.

22 Q Do you recall the internet alias or screen name that
23 was used to make that October 1998 publication?

24 A Yes, clearly, because that -- that nickname was not --
25 was something clearly to show us that they -- they were

1 aware of what was in the card, because the nickname was
2 Nipper, and we had that name in our card. So it was a clear
3 demonstration from the hacker that they have find a way to
4 read information out of our card. It was a bit provocative,
5 for sure.

6 Q Let me stop for a second. If I understand your
7 testimony correctly, the DNASP-II system in the United
8 States was not compromised in 1997, correct?

9 A That's correct, yes.

10 Q And during that time frame, you became aware that
11 DirecTV began negotiations or discussions with NagraStar or
12 NagraCard to replace NDS's technology?

13 A That's exactly the effect, yes.

14 Q And in then in 1998, DirecTV decided not to switch to
15 Nagra; is that correct?

16 A That's correct, yes.

17 Q And at or about October of 1998, there was a
18 publication on the internet under the alias "Nipper" that
19 led you to believe the Nagra system had been compromised or
20 someone had seen the secret codes, correct?

21 A Yes, that's correct.

22 Q Where in the code for the DNASP-II system did that
23 secret phrase "Nipper" come from?

24 A Can you -- can you repeat the question.

25 Q Sure. You said that the word -- the secret phrase

1 "Nipper" was inside the card. Can you explain to the ladies
2 and gentlemen of the jury where that was in the card?

3 A Yes, I -- I mentioned to you that we have that
4 microprocessor or processor in the card and also various
5 memory in the card, so the -- the "Nipper" word was stored
6 in the memory that we call EEPROM or EEPROM, and -- and it
7 was store in the chip.

8 Q Now, based on your understanding, what would an
9 individual have to do in order to extract that secret code
10 from the card?

11 A So to extract that, you need definitely to have access
12 to that memory, so you need to -- to do what we call -- I'm
13 sorry for the technical term -- an evasive attack. So you
14 need to really dig into the chip to access that memory and
15 that content.

16 Q Now, you said invasive attack; is that correct?

17 A Yeah. That's correct, yeah.

18 Q Did you ever become aware that the defendants performed
19 any type of invasive attack on NagraStar's technology, the
20 Smart Card?

21 A Yes, I do.

22 Q Do you recall approximately when that was?

23 A I think we -- when -- when we first see that
24 publication on internet and also linked with some
25 information that we gather at that time is coming from the

1 field, what we call the field to internet or -- or -- or a
2 pirate, but also coming directly from a company such as
3 DirecTV, that started to tell us that that was what NDS was
4 doing on our system.

5 We were -- and I think by also the -- the various
6 document that were seen in the -- in the discovery of that
7 case, it's -- it was obvious, and it's obvious for us now,
8 that they have the full equipment to do that kind of attack.

9 THE COURT: Counsel, I want to make certain that
10 the jury knows what time frame we are still talking about.
11 Is this still October of 1998, or is he discussing a later
12 date?

13 MR. HAGAN: The -- the draft report is October of
14 1998, your Honor.

15 THE COURT: Let's confirm that.

16 BY MR. HAGAN:

17 Q Mr. Nicolas, as part of your work in -- in this case
18 and preparing for your testimony, did you have an
19 opportunity to review certain documents?

20 A Yes.

21 Q And was one of those defendants what -- what the
22 defendants have called a Headend Report or Project Headend
23 Report?

24 A Oh, yes, I've seen that great document, yeah.

25 Q And did you see a draft of that report that was dated

1 in or around October of 1998?

2 A That's correct, yes.

3 Q And did that Headend Report include the secret phrase
4 "Nipper"?

5 A Yes, the secret phrase is -- is the -- is in the report
6 with the exact location, also, of that secret -- secret
7 phrase.

8 Q And if I understood your earlier testimony, that is the
9 same month, October of '98, when the first Nipper
10 publication was made?

11 A That's correct, yes.

12 Q Now, Mr. Nicolas, what is your understanding of the
13 basis of the plaintiffs' claims against the defendants in
14 this case?

15 MR. STONE: Objection, your Honor. That calls for
16 speculation. Hearsay.

17 THE COURT: This isn't for the truth of the matter
18 asserted. This is simply a summary of why he believes he's
19 here testifying, what -- what this claim is. I'm not going
20 to allow in the Complaint or the Cross-complaint or the
21 Answer, et cetera, in this matter, it's hearsay. But you
22 can give us a general understanding of what you believe the
23 lawsuit is about.

24 The objection is overruled, Counsel.

25 BY MR. HAGAN:

1 Q Let me reask the question, Mr. Nicolas. What is your
2 general understanding of the basis of EchoStar and
3 NagraStar's claims against the defendants in this case?

4 A So my understanding is that we -- in the claim, we --
5 we say that NDS did a full attack and a reverse engineering
6 of our Smart Card, and then used the -- the -- the secret
7 information extracted during that process to feed or to
8 provide information to hacker in the field, and therefore,
9 help them to develop pirate Smart Card against EchoStar, our
10 customer, EchoStar.

11 Q Now, Mr. Nicolas, based on your experience working with
12 the DNASP-II system --

13 A Uh-huh.

14 Q -- was NagraStar and EchoStar, and with the help of
15 NagraCard, able to combat the level of piracy of its system
16 during the late '98, '99 to early 2000 time frame?

17 A So during that period, there was several attempt to use
18 the -- the information that have been published to develop
19 pirate devices, and versus those various pirate devices we
20 started to do what we call -- and sorry for the technical
21 term again -- countermeasure. So we -- we are developing
22 solution and code that tried to circumvent the usage of
23 pirate devices on EchoStar set-top-box system. And during
24 that period, we did several attempt to -- to combat the
25 various pirate devices, and sometimes we were successful,

1 sometimes not.

2 Q What types of efforts did NagraCard and NagraStar
3 engage in, in order to try to combat that piracy? I think
4 you referenced countermeasures. Can you explain for the
5 ladies and gentlemen of the jury what those are.

6 A So what I'm calling a countermeasure is a specific
7 designed code or message that we -- we develop, and then
8 that we insert in the system, and that message will be
9 broadcasted from the -- the broadcast center through the
10 satellite and will reach all the set-top box and all the
11 Smart Card. And at the reception of that message, the Smart
12 Card will execute the code in there the exact same way as
13 when you -- you access an internet website; sometimes you
14 just execute a code to -- to have a feature.

15 So as soon as the message reached the card, we will
16 execute the code, and that code can be a way, for example,
17 to check that the Smart Card was not tampered with, or that
18 code might be a way to have the set-top box checking that
19 it's a legit Smart Card inserted on the set-top box and not
20 a pirate devices.

21 Q Did you participate in any way for NagraCard in the
22 development of any of these electronic countermeasures or
23 ECMs?

24 A Yeah, I was on the team that was both in charge of
25 developing and designing the Smart Card, but also developing

1 and designing the so-called technical countermeasure, and --
2 and then I was heading that team, also.

3 Q Now, did there ever come a point in time where
4 NagraStar and NagraCard were unable to effectively combat
5 the level of piracy for the DNASP-II system used by EchoStar
6 in the United States?

7 A Yeah, I think we need to mention, I think, two key date
8 there. The first time was when we saw the first attempt to
9 modify the legit Smart Card, and -- and we've seen that
10 appearing in 2000, but there was at that time only one
11 commercial source of -- of the attack, so it means that
12 there was only one source that have that capability. So at
13 that time, you have to send -- take out your Smart Card and
14 send that to a specific address, and you will receive it, I
15 think, a few days or weeks later.

16 And the circum date, which is very important, is the
17 publication at the end of this -- of 2000, so the -- the --
18 one or two publication that happened at that time. And that
19 is key, because as soon as that was out, it was not only one
20 single source that have that capability, but almost every --
21 every -- every person with some technical skill that can
22 apply that technique against a card and create a pirate
23 card.

24 Q Now, Mr. Nicolas, you referenced two events in that
25 answer, and I want to break it apart and focus on each one

1 of them individually.

2 A Sure.

3 Q First, you said that in 2000, you became aware that
4 there was one single source of reprogrammed EchoStar Smart
5 Cards; is that correct?

6 A Yeah, I think it's late '99 or early 2000, yes.

7 Q Now, what do you mean by the term "reprogrammed
8 EchoStar Smart Cards"?

9 A So when you want to have access to -- to the EchoStar
10 programming, you -- you will try to find a way to have
11 access to more than what you have paid for or even to -- not
12 to pay to anything. And by reprogramming the card, there is
13 a method that we -- we call or that the hackers start to
14 call the "3M" to reprogram the card and extend the right
15 that you have. So, typically, you just subscribe for one
16 channel, which is a local channel. You send your card, and
17 you receive your card back with the full entitlement, so all
18 channel. And that's -- that's the type of hack or
19 reprogramming that -- that was happening at that time.

20 Q And when you use the term "3M card," can you explain to
21 us what you mean by that term?

22 A Yeah, I think that's -- that was a term developed by
23 DirecTV at that time, and it stands for, I think, the
24 Three-Musketeer, one for all, all for one. So the idea was,
25 yes, you have right for one channel. You send it to receive

1 back for all channel. And when they started to apply
2 that -- that type of attack on EchoStar, they just added the
3 "E" in front of "3M," so it stands for E3M now, so just the
4 same type of attack on EchoStar that used to exist on
5 DirecTV.

6 Q Now, what is your understanding or -- what is your
7 understanding of that one commercial source that was able to
8 produce these 3M cards in the year 2000?

9 A So my understanding, there was only one technical
10 source able to do that, and they started using one address
11 or website to sell that, and slowly but surely expanded the
12 sales networks using various internet website, but it was
13 always the same technical source behind.

14 Q And what is -- was the name of that pirate website?

15 A So I think if I recall correctly, the way they organize
16 their sales channel was that they used dr7 as the,
17 quote-unquote, "independent website that will tell you where
18 to go to get a good pirate card."

19 And then other website mention there will sell the
20 Smart Card, and I think I recall one called Koinvision, I
21 think, and -- yeah, there was two or three other that sell
22 the same product at the end, but --

23 THE COURT: Could you spell Koinvision?

24 THE WITNESS: Yeah, if I recall correctly, it's
25 K-o-i-n-v-i-s-i-o-n, Koinvision.

1 THE COURT: Okay.

2 BY MR. HAGAN:

3 Q Now, Mr. Nicolas, do you have any understanding of who
4 the individual was who operated that dr7 website?

5 A Yeah, I think I was told that the guy managing that
6 is -- is a person called Allen Menard.

7 Q Al Menard --

8 A Menard.

9 Q M-e-n-a-r-d?

10 A (No audible response.)

11 Q Now, the second thing that you reference or the second
12 significant event was a posting at the end of December in
13 2000; is that correct?

14 A Yeah, that's correct.

15 Q Okay.

16 Steve, can we please give Mr. Nicolas a copy of what
17 has been previously introduced in the trial as Exhibit 998.

18 And if we can pull that up on the screen for the jury.

19 Mr. Nicolas, if you could, take a moment to look at
20 Exhibit 998, and let us know if you can identify it for the
21 record.

22 A So is that the same that I'm seeing on the screen?

23 Q Yes, sir.

24 THE COURT: And remember, ladies and gentlemen,
25 the jury box belongs to you. If you want to move down so

1 you have a closer view of the other monitor, you are more
2 than welcome to.

3 Counsel, this exhibit has already been received,
4 so if you want to blow up portions --

5 MR. HAGAN: Thank you, your Honor.

6 THE WITNESS: Okay. Yes, I recognize the -- the
7 file.

8 BY MR. HAGAN:

9 Q And can you describe for the ladies and gentlemen of
10 the jury what is depicted in Exhibit 998.

11 A So that's -- that file that I think I call
12 "nipperclauz" is an explanation of what are the steps needed
13 and what are the message needed to send to one of our card
14 to take over control of the card and inject or inoculate a
15 pirate software that we want to execute on -- on the card.

16 Q What's one example of this pirate software that you are
17 referring to?

18 A Again, can you -- can you repeat.

19 Q Can you give us one example of this -- what you've
20 called pirate software that you were referring to.

21 A Sure. So that -- that's the message that you need to
22 send to the card, and in that message, you will embed the --
23 the pirate code that you -- you want to -- to -- to execute
24 in the card. And one good example and first example, which
25 is, I think, what we -- we see there, is a code that will

1 extract the -- the entire EEPROM, so it -- that code will
2 read every byte, so every piece of information out of the
3 EEPROM memory and send that back out of the card, so it's
4 really a way to extract sensitive information in the card.
5 But you can replace that pirate code by another one that
6 can, for example, write into that EEPROM, so it's really a
7 tool kit, to some extent, to do whatever you want with the
8 card.

9 Q And what is the function of the EEPROM, E-E-P-R-O-M
10 code in the DNASP-II card?

11 A Yeah, so the EEPROM memory is, let's say, I think the
12 equivalent of your hard drive on your PC. It's the piece of
13 memory that will keep your -- recall your data even if the
14 card is removed from the set-top box. So the -- the other
15 part of the memory ever not -- yeah, you cannot keep that --
16 that information in the memory, so we are -- we were using
17 the EEPROM to store both the sensitive secret keys needed to
18 decipher and descramble the programming, but also to store
19 what I call the subscription and the corresponding right
20 that you have paid for. So if we ever -- if you have paid
21 for HBO, you will have that information in the EEPROM
22 telling, yes, you have -- you grant -- you have been granted
23 access to HBO, you can access the -- the TV programming.

24 Q And if you'll look down about the seventh or eighth
25 line on Exhibit 998, there is an instruction that says "RX

1 4+4096 bytes," and you have "entire EEPROM"; is that what
2 you are referring to?

3 A Yeah, exactly. That -- that will be the -- normally
4 "RX" stands for "receiving," so that will be the result of
5 the application of that message or what I call also that
6 recipe on -- on the Smart Card.

7 So you will send -- you will -- you will resend the
8 content inside the card and then send the specific message
9 that you will see below, so it's really -- that part of --
10 of the byte, you will send that to the card, and what you
11 will receive in return is 4,096 bytes, which correspond to
12 the entire EEPROM memory content.

13 Q Now, if you'll look immediately above that line, there
14 is a reference to ROM 3 Nagra Cam. Can you explain to the
15 ladies and gentlemen of the jury what you understand that to
16 mean?

17 A Yes, that refers to what I've mention, that the ROM 3
18 version of that DNASP-II family, and that was in '98, the
19 card used to -- for all new -- new subscriber.

20 Q And when you use the term "recipe," can you describe
21 for us what you mean by that term?

22 A For -- for me, I'm calling that the recipe, because
23 it's not only the result of final attack on the card, but
24 every step needed and -- and all the -- the ingredient, if
25 you want, that you need to put to achieve that attack. So

1 you have -- you have mainly the steps. So you need to reset
2 the card, wait for half a second, and then send that byte,
3 and then you will receive that. And it explain you that you
4 could replace the pirate code, give an ingredient to do
5 another flavor of the attack, so that's why I call that the
6 recipe.

7 Q And -- and we'll come back to the different flavors a
8 little bit later on, but if I understand your testimony at
9 this point, Exhibit 998, in your eyes, is what you consider
10 a hacking recipe for the EchoStar Smart Card, correct?

11 A Yes, correct. That -- that was really the piece of
12 information that give to the world the how to hack a Nagra
13 Smart Card.

14 Q So it was basically instructions on how to hack that
15 ROM 3 Smart Card?

16 A Yeah, definitely.

17 Q When did you first become aware of this Nipper posting,
18 Exhibit 998?

19 A I think I received that posting from NagraStar during
20 the Christmas break of December 2000, so if I recall
21 correctly, that -- that file was posted in December 21st,
22 something like that, and I should have received that through
23 e-mail from NagraStar probably one or two days later, or
24 maybe three days later.

25 Q And were you working during that time period, December,

1 late December of 2000?

2 A Definitely not in -- in Europe, the way we -- we
3 organize, we usually close the company for one week. We are
4 lucky, I know, for the Christmas break, so between usually
5 December 22nd up to January 1st, 2nd, we are closed, but
6 still working.

7 Q At -- at some time after you received this hacking
8 recipe for EchoStar's Smart Card, did you engage in any
9 efforts to try to analyze it to determine what it was?

10 A Yes. Yes, we do for sure.

11 Q And can you describe for the ladies and gentlemen of
12 the jury what that analysis involved?

13 A So that analysis involved, really, understanding that
14 file and understanding some of the other file that were
15 published at the same times to -- to end up to the
16 conclusion that it was first a working recipe on -- on our
17 card, and it achieve what it needs to achieve, meaning to do
18 whatever we want with our card.

19 Q In general terms -- and we'll come back a little bit
20 later so that you can explain it in more detail, but -- but
21 for this purpose, in general terms, can you describe how
22 this hack recipe worked that's reflected in Exhibit 998.

23 A Yeah, in -- in very eye level, I think the -- the
24 recipe that I use, several key information or behavior of
25 the card that you need to first know and understand before

1 using or creating that recipe. So, you know, by sending
2 that card, you will use a specific capability of our card to
3 execute software in memory. That's the very first one that
4 you need to understand and master before creating that
5 recipe. Then, you need to understand the specific way we
6 are managing the communication and specifically what we call
7 the -- the buffer -- the communication buffer, and a
8 specific way, which was called also the buffer overflow
9 there.

10 You need to understand, also, a very, very undocumented
11 and unknown feature of the hardware of the card, which we
12 call the -- the partial decoding of the address of the RAM,
13 or also, what we call the RAM Ghost Effect. And you need to
14 understand, also, the way we manage the -- the internal copy
15 of -- of those byte using what we call the index variable,
16 or it's one variable that we use to -- to move data within
17 the card.

18 Q And if I understand your testimony correctly, the way
19 that this hack recipe works in Exhibit 998, utilizes four
20 components, executing code and RAM, utilizing or overflowing
21 the I/O communications buffer, utilizing what you coined
22 the -- or you called the RAM Ghost effect, and then
23 utilizing sophisticated knowledge of the index variable; is
24 that correct?

25 A Yes, that's correct.

1 Q Now, Mr. Nicolas, did you ever become aware that the
2 defendants engaged in efforts to create a hack recipe or
3 methodology for EchoStar's conditional access system?

4 A Yes.

5 MR. HAGAN: Steve, can we -- can we give
6 Mr. Nicolas a copy of what's been previously admitted --
7 forgive me -- previously admitted as Exhibit 98.

8 And can we get the defendants' Headend Report.

9 BY MR. HAGAN:

10 Q Mr. Nicolas, you've been handed a copy of what has been
11 admitted in this trial as Exhibit 98, the defendants'
12 Headend Report. If you could take a moment to just look at
13 this and identify it for the record?

14 A Yes, that's -- that's what I've been shown and told
15 that's the Headend Report, yes.

16 Q And have you had an opportunity to review the contents
17 of Exhibit 98, the defendants' Headend Report?

18 A Yes, I do.

19 Q And based on your review and analysis of this document,
20 what type of information does it contain; what does it
21 describe?

22 A So I think it's -- the very first, let's say, 8 to 10
23 pages describe in great detail the way the software of our
24 card was running and the way the hardware was also used.
25 And on top of that, it's describing great detail, also, some

1 of the specific way our software was implemented and some of
2 the weaknesses of the hardware in the card and the software
3 in the card.

4 Q So this report describes, or at least the first 10
5 pages, components and functionality of the EchoStar and
6 NagraStar conditional access system; is that correct?

7 A Yeah, correct, focusing on, let's say, trying to
8 assess, really, the -- the security of the -- of the card
9 and of the software implementation.

10 Q Now, when you reviewed this document, Exhibit 98, did
11 you find any portion of it that described or talked about in
12 any way the defendants' security system or conditional
13 access system?

14 A Could you repeat that?

15 Q Sure. When you reviewed Exhibit 98, the Headend
16 Report, did you find any portions of it that talked about
17 the defendants' conditional access technology or
18 improvements to their technology?

19 A No. I think that the report is fully focusing on our
20 conditional access system, and more specifically, on
21 EchoStar Smart Card that's used, for sure, our conditional
22 access system.

23 Q And if I understood your earlier testimony, Exhibit 98
24 also describes the hack methodology that the defendants
25 developed for EchoStar security system; is that correct?

1 A Yes, that's correct. The last 30 page out of 40
2 describe, really, the -- how to hack an EchoStar Smart Card.

3 Q And can you describe for us in general terms, again,
4 the basic components or how the defendant hack methodology
5 worked for EchoStar security system?

6 A Yeah, I can -- I can do that, but it might be useful
7 maybe to -- I don't know if -- if I can use a flip chart or
8 something to help the jury to -- to understand.

9 MR. HAGAN: May I approach, your Honor?

10 THE COURT: You may.

11 MR. HAGAN: Is this going to block your view,
12 Judge?

13 THE COURT: Counsel, put it in the well.

14 MR. HAGAN: Okay.

15 THE WITNESS: May I go over there?

16 THE COURT: I am not sure that we can hear you.

17 I am not sure if this is necessary, Counsel. If
18 he drops his voice, I -- I don't want to be in a position of
19 having to stop the testimony.

20 THE WITNESS: The -- the point is that I can go
21 without that, but it will be very technical, and I am not so
22 sure it will be very useful.

23 THE COURT: Maybe we should use that, then.

24 (Laughter.)

25 MR. HAGAN: We can get him the microphone.

1 THE COURT: Will you speak in a loud voice --

2 THE WITNESS: I will try.

3 THE COURT: -- so we can hear?

4 THE WITNESS: I will try.

5 THE COURT: Thank you very much.

6 THE WITNESS: So let me maybe just draw, first, an
7 example of how we can see the -- the RAM memory there, so it
8 just will take me two second for that.

9 So you can represent a memory with a set of memory
10 location that will be addressed by the -- the processor.
11 And each time we address a memory location, we use an
12 address. So let's say that that location is 0, 1, 2, 3, up
13 to 9. And then let's say we -- we have the RAM. Let's stop
14 there. So I think we mentioned four key things that needs
15 to be known to create that recipe.

16 The -- one -- one of the first one is where we
17 have put the communication buffer, and in our Smart Card, it
18 was the very last part of the memory that was used to store
19 that communication buffer.

20 So let's imagine that the buffer can store 3-byte
21 data or 3 data, just to simplify. So each time we -- we
22 send a message to the card, the card will store the message,
23 and that's mainly what you have seen in the -- in the
24 NipperClause in that buffer. So the very first information
25 is that the way we are managing, the way the buffer -- if we

1 sell more than 3 bytes or more than the -- the size that the
2 buffer can afford, we will write the data after that
3 location. And in our Smart Card, we are told that that
4 location doesn't exist. It means that if you address 10 or
5 11, there is no physical memory behind. So you are not
6 harming the Smart Card, because there is no memory. There
7 is nothing to address. So that was the -- the very first
8 piece of information that you need to know, the way we
9 manage the buffer.

10 Then I've mentioned, also, the RAM Ghost effect,
11 and that's really the -- the key information that we were
12 not aware before the attack and that we found out during our
13 investigation. So as I told you, normally you should free
14 address that position without harming anyone, because there
15 is no memory there. But due to the RAM Ghost effect, the
16 card, instead of writing at position 10 was indeed writing
17 at position 0, there.

18 And as soon as you have overflowed the buffer, you
19 are indeed writing not anymore at position 10, at location
20 10, but at location 0 in the RAM. And for sure, those are
21 very sensitive location where you are just now impacting the
22 normal behavior of the software. So that -- that's the
23 second point, the RAM Ghost effect.

24 The third one is that we were using a specific
25 index variable somewhere located in the memory. As

1 mentioned, it's in location 3. So that memory position
2 needs to be modified to take over control of the card. So
3 you need to keep going in term of buffer overflow.

4 So, first, you need to understand the buffer
5 overflow, you need to understand the RAM Ghost effect, and
6 you need to keep going writing bytes, position 10, 11, 12,
7 13, which is indeed 0, 1, 2 and 3, until you reach that
8 specific index variable. And as soon as you reach that one,
9 you will modify that value, and then allow you to take over
10 of the stack. Sorry, that -- that's technical. So that's
11 really a memory location there that will give you the -- the
12 address where to jump in term of -- to execute the pirate
13 software.

14 So as soon as you have modify that one, you are
15 taking control of the stack, and then jumping into the --
16 the pirate code that you just inserted and execute that in
17 RAM. So it was really the buffer overflow that you need to
18 master, the fact that the card was narrowing or ghosting
19 those location, 10, 11 and 12 where normally you having
20 nothing into position 0, 1 and 3; 1, 2, 3, and that you
21 cannot discover without doing a hardware attack of the card
22 because we were not aware. It was not in the spec. It was
23 not told by anyone.

24 Then, third one, you need to know exactly where
25 that index variable is and reach that -- that byte.

1 And fourth, you need to have the capability to
2 execute the pirate code that you have just injected there.

3 So -- and that's a very simplified view of what
4 you need to understand, and without the -- the full reverse
5 and the full attack and the full report, you cannot imagine
6 or randomly find that attack.

7 I hope it was helpful.

8 BY MR. HAGAN:

9 Q Thank you, Mr. Nicolas.

10 So if I understood your demonstration, the Haifa hack,
11 the one that the defendants developed, used the same four
12 components, the I/O buffer overflow, the RAM Ghosting effect
13 or address aliasing, the index variable and the ability to
14 execute code in the RAM portion of the Smart Card that the
15 Nipper posting, the hack recipe that we looked at as
16 Exhibit 998; is that correct?

17 A Yeah, that's correct. Those four weaknesses are key
18 characteristic of our card we mention, specifically in the
19 Headend Report.

20 Q Mr. Nicolas, to your knowledge, as the senior vice
21 president and chief technology officer of NagraCard, did the
22 NDS defendants ever notify your company, NagraCard, that
23 they were engaging in efforts to hack EchoStar's security
24 system?

25 A Not at all.

1 Q To your knowledge, did NagraCard ever consent to the
2 defendants engaging in efforts to hack NagraStar's
3 conditional access system?

4 A Can you repeat that?

5 Q Sure. To your knowledge, did NagraCard ever provide
6 any form of consent for the defendants' efforts to hack the
7 technology used by EchoStar and NagraStar?

8 A No, definitely not that I'm aware of.

9 Q Would NagraStar -- I'm sorry, would NagraCard ever
10 provide that type of consent to one of its competitors?

11 A I don't see the reason why to do that kind of things,
12 but --

13 Q And the answer may be obvious, but can you explain to
14 the ladies and gentlemen why that is.

15 A Yeah, I think NDS is using any information that can
16 harm our business in -- in their marketing. So giving them
17 access to our latest technology to do any kind of analysis
18 will just, I think, give our competition key sensitivity
19 information that they -- they will use against us in their
20 marketing and sales pitch.

21 Q Now, in the wrong hands, would Exhibit 98, the
22 defendants' Headend Report describing how to hack
23 NagraStar --

24 A In the wrong hands?

25 (Discussion between interpreter and witness.)

1 THE WITNESS: In the wrong --

2 BY MR. HAGAN:

3 Q In the wrong hands, in other words, in the hands of
4 satellite pirates --

5 A Uh-huh.

6 Q Could that information be used to damage or harm
7 NagraCard and -- and the customers that use its security
8 system?

9 A Oh, yes, definitely. That -- that's really a teaching
10 book, so you have the first 10 pages that explain you in
11 great detail what are the -- all the weaknesses of our card.
12 And then you have the last 30 pages describing the fourth
13 one that you need to use, and in exhibit, you have the exact
14 same recipe that you need to -- to send to the card. And
15 when I said "recipe," that it's -- it's how to use those
16 four things, and then for sure we can use various flavor of
17 the recipe, but it's exactly the same idea that is described
18 there.

19 Q In the wrong hands, could that information, that hack
20 recipe, if posted on the internet, be damaging or harmful to
21 NagraCard and the -- and the clients that use NagraCard's
22 security system?

23 A Yes, definitely.

24 Q And is that -- the hack methodology that you just
25 described from Exhibit 98, in your opinion, is that in all

1 material respects identical to the hack methodology that was
2 posted on the internet by Nipper in December of 2000?

3 MR. STONE: Objection. Lacks foundation, calls
4 for an expert opinion.

5 THE COURT: Overruled.

6 You can answer that question.

7 THE WITNESS: Okay. Yes, definitely it's the
8 exact same recipe using the exact same four key point.

9 BY MR. HAGAN:

10 Q To your knowledge, did NagraCard ever provide any type
11 of consent to the defendants to distribute the information
12 in Exhibit 98 to employees that were previously engaged in
13 satellite piracy?

14 A For sure not.

15 MR. STONE: Objection. Assumes facts not in
16 evidence.

17 (Interruption in the proceedings.)

18 MR. STONE: Objection. Assumes facts not in
19 evidence.

20 THE COURT: I couldn't hear, Counsel.

21 Once again, question, please.

22 BY MR. HAGAN:

23 Q To his knowledge -- to your knowledge, Mr. Nicolas, did
24 NagraCard ever provide the defendants with any consent to
25 provide the information in Exhibit 98, the hack methodology?

1 THE COURT: The objection is overruled.

2 To your knowledge, sir.

3 THE WITNESS: No, for sure not.

4 BY MR. HAGAN:

5 Q If you look back at page 1 of the defendants' Headend
6 Report, Section 2 is entitled "Hardware," and there is a
7 reference to an SGS Thompson 16CF54 CPU. Can you describe
8 for the ladies and gentlemen of the jury what that reference
9 is?

10 A Yes, that's the -- we were using ST -- SGS Thompson at
11 that time as a chief provider, and that's the -- the
12 reference number of the hardware platform that we were using
13 for ROM 2 and ROM 3.

14 Q Now, at the bottom right-hand corner of each page,
15 there's a page number. It says "Page 1 of 40, 2 of 40." If
16 you could, please turn to page 11 of the defendants' Headend
17 Report.

18 There is a section entitled "Attack Tactics" or attack
19 on the chip's hardware. Have you reviewed that portion of
20 the defendants' Headend Report?

21 A Yes, I do.

22 Q And can you describe for the ladies and gentlemen of
23 the jury what that section of the report describes?

24 A So those are really the -- the -- what I have call the
25 key characteristic that you need to understand to then

1 develop the -- the recipe posted on the internet. So you --
2 you first explain the first attack on the chip that they
3 have done to extract the very first time the code. Then you
4 have the so-called RAM Ghost effect explained in great
5 detail. Then you have the buffer overflow, or what they
6 call there, the stack override, so really, the steps that
7 they have tried to describe to reach the index variable and
8 take control of the stack and --

9 THE COURT: Is that what you've previously
10 referred to as the buffer overflow?

11 THE WITNESS: That's correct, yes.

12 THE COURT: Okay. Thank you.

13 THE WITNESS: And -- and then all the -- all those
14 steps and exact location in the memory where to -- not to
15 harm sensitive data that needs to remain in place to -- to
16 still have the communication ongoing between the card and
17 the set-top box or the reader.

18 BY MR. HAGAN:

19 Q Now, if you'll turn to page 14 of the defendants'
20 Headend Report, at the bottom there is a notation that says
21 "An example of such a message can be found in appendix F.
22 Note that instead of the code used in this example to
23 download the card's EEPROM contents, any code can be
24 designed and written into"; do you see that part, sir?

25 A Yeah, I see that, yeah.

1 Q Based on your review of -- of the defendants' Headend
2 Report and your analysis of the Nipper posting in December
3 of 2000, do you have an understanding of what that language
4 is referring to?

5 A Yeah, I think it's just mentioned the -- the appendix
6 as one of the example that they were using to teach the
7 attack method to the one reading the report. So you first
8 have the technical explanation, then you have the -- the
9 protocol, which is mainly the -- the table there, and then
10 one or two example in appendix on how to use that protocol
11 or recipe to attack the card.

12 Q Now, turning to the page 16 of the defendants' Headend
13 Report, there are two sections that describe cloned cards.
14 Can you identify for the jury what a cloned access card is
15 or a cloned EchoStar Smart Card is?

16 A Yeah, I think that that -- those two paragraph describe
17 how to create that so-called 3M card, which is mentioned.
18 This is the classic 3M hack, so the very first one, the 352,
19 explain how to -- to create all for one subscription, so a
20 universal description or entitlement that will give you
21 access to all the -- the channel.

22 And the second one, 353, describe you a way to -- to
23 create a universal subscription for what is called
24 pay-per-view events, so purchase on demand that you are
25 doing on -- on the system.

1 So the very first one gives you full access to your --
2 your monthly description, and the second one give you full
3 access to the pay-per-view event on the EchoStar system.

4 Q And Mr. Nicolas, further down on page 16 of Exhibit 98,
5 there are two sections talking about a 3M hack in practice
6 and DISH Network USA. Can you describe for the ladies and
7 gentlemen of the jury what those paragraphs are discussing?

8 A I think it report the -- the step that they've taken to
9 apply the recipe on an existing EchoStar set-top box and
10 existing Smart Card, and they are describing what type of --
11 of set-top box and Smart Card were used to test that recipe,
12 what was the result on the -- on the card EEPROM content,
13 what was the initial subscription in the card prior applying
14 the recipe.

15 There is various approach or method to -- to create 3M
16 hack possibilities, and -- and -- and how to create those, a
17 universal subscription and universal pay-per-view on the
18 card.

19 Q If I understand your testimony correctly, this portion
20 of the Headend Report is describing how to do a commercial
21 hack of EchoStar's Smart Cards for the system, the DISH
22 Network system here in the United States?

23 A Definitely, yes, it seems that they have apply the
24 recipe, and they are just reporting that the recipe was
25 working and what was the effect of the recipe on -- on the

1 Smart Card.

2 Q Now, turning to page 18 of the defendants' Headend
3 report, appendix A, can you describe in general terms what
4 this information is?

5 A So in the -- in the first column, you have what we call
6 the address in the EEPROM where the -- the values that there
7 are store or located.

8 And then the second column, the type, explain you what
9 type of data you will find at each of those location and --
10 and also an ID to recognize the data. And then for each
11 line, you have an explanation of what the data are used for
12 in our Smart Card.

13 Q Now, Mr. Nicolas, if you could, turn to page 35 of the
14 defendants' Headend Report, appendix F, and it is entitled
15 "Stack override example, EEPROM contents download. Have you
16 had an opportunity to review this section of the defendants'
17 report?

18 A Yes, I did, yeah.

19 Q And can you describe for the -- the ladies and
20 gentlemen of the jury just in general terms what this
21 information is.

22 A So this information is the -- the same type of recipe
23 that you need to send the same type of messages that you
24 need to send to the card to apply the recipe and use those
25 four key characteristic. It's -- it's just breaking into

1 one or two byte per line, because they -- they just added
2 the -- the meaning of each byte and the explanation of which
3 byte, why those byte are there and what they are entitled
4 for. So the -- the NipperClause were giving the role data,
5 that one, giving the same data, but with the clear
6 explanation why those byte are there and what they are
7 entitled for.

8 Q Now, Mr. Nicolas, I want to focus your attention back,
9 now, on the Nipper post in December of 2000. Did that
10 publication have harmful or negative effects on NagraCard
11 and the conditional access system used in the United States
12 by EchoStar?

13 THE COURT: Counsel, are you referring to both or
14 one of those posts, which one?

15 BY MR. HAGAN:

16 Q Exhibit 998, Mr. Nicolas, the nipperclauz.txt file.

17 A So definitely had a big -- huge impact on us, because
18 that recipe was given out to the world the first -- it was
19 finger pointing on those four key characteristic and giving
20 you directly the recipe to the world and how to apply that
21 on -- on a Smart Card. And since then, instead of having
22 one source of hack, technical hack, I think in a -- in a
23 week or so, we have tens of people that have understood that
24 recipe and how to apply that recipe on that card. And in
25 two weeks, it was hundreds, and we -- we were starting to

1 see that recipe applied not only on EchoStar, but on other
2 customers, such as the Soge Card one mentioned there.

3 So in a year, there was only one source that had the
4 full exclusivity of that recipe. It took us almost two year
5 to start to understand what was happening, and then yet you
6 see that when that is published, in two days, you have tens
7 of peoples that have that knowledge, so it was definitely
8 awful for us.

9 BY MR. HAGAN:

10 Q Did NagraCard undertake any efforts to try to mitigate
11 or to try to lessen the harm caused by Exhibit 998, the
12 Nipper post?

13 A Yes. So at that time, we were starting also to
14 understand what was happening in the card and what type of
15 attack might be impacting the card. In -- earlier in 2000
16 we start understanding that RAM Ghost effect. Finally, we
17 found out that -- that things, but still not understanding
18 the full recipe and how to use that. And we have had access
19 to other things, other information such as the -- the black
20 box in October, November, so we are really starting to
21 prepare ourself to do something. And the December 2000
22 caught us a bit by surprise, and we're to react quickly
23 after that.

24 Q And in your answer, I think you identified two -- two
25 additional events. One, that you began to understand the

1 RAM Ghost effect for the first time a little bit earlier in
2 2000. And then second, you acquired what you called the
3 black box and analyzed it. Now, I want to break those --

4 A Sure.

5 Q -- apart and talk about each one.

6 What are you referring to when you say, "Earlier in
7 2000, we started to get some information about the RAM Ghost
8 effect"?

9 A Yes, as I say, since 2000, there was one group that had
10 the capability to ride into our card and create those E3M
11 Smart Cards --

12 THE COURT: Just a little slower.

13 THE WITNESS: Sure.

14 THE COURT: A little slower.

15 THE WITNESS: Yeah.

16 So in 2000, there was one group that have that
17 capability, and we were trying to understand how the hell
18 they were able to write into our Smart Card. As with the
19 full knowledge of the software, we were not able to find out
20 how they -- they were using that. And we were pressuring
21 our chipset provider, STMicro Electronic, to give us more
22 information on the hardware itself to understand if we were
23 missing something in our -- in our understanding of -- of
24 the attack. And I think in a -- in a given meeting, I think
25 it was something like, yeah, end of 2000, we were down in

1 South of France in -- in STMicro Electronic Premises
2 starting to re-brainstorm with them and understand what --
3 what the piece of information was missing for us, and
4 that's -- that's when we had access to one of their key
5 design engineer, a nice -- a woman that -- that had designed
6 the chip at that time, that between -- between their
7 explanation tell us, "Oh, yes, we have that special RAM
8 management. We have that special RAM decoding, partial
9 decoding." And then we say, "What? Yeah."

10 And then we found out that there was one
11 undocumented feature of the card that create that RAM Ghost
12 effect. Instead of having the full decoding of the RAM,
13 there was that partial decoding that created that when we
14 were writing 10, we were writing in 0. And that was not
15 communicated before, so it was a key piece of information
16 that we as the developer of the card were only informed
17 in -- in later 2000. So it started to open new track to
18 investigate to -- to find out what was the -- the hack and
19 what was the recipe that you can design having that new
20 piece of information.

21 THE COURT: Now, just a moment, Counsel. Let Jane
22 rest her hands for a moment.

23 When we get on the record, you referred to, "We
24 were down in the South of," and then you named a location.

25 THE WITNESS: France.

1 THE COURT: "In an electronic premises starting to
2 brainstorm with them." What was that location?

3 THE WITNESS: Yeah, we were in South of France in
4 the location called the Rousset.

5 THE COURT: Spell that, please.

6 THE WITNESS: R-o-u-s-s-e-t, and it's an STMicro
7 Electronic premises.

8 THE COURT: Thank you very much. Now we have that
9 for our record.

10 And Counsel, please continue.

11 BY MR. HAGAN:

12 Q Do you recall approximately when it was that you
13 attended this meeting in the South of France with STMicro
14 representatives?

15 A I was not able to -- to find out the exact date, but
16 I -- it was something -- let's say, if I have to guess,
17 April, May time frame, May, June time frame of 2000,
18 something like that.

19 Q And was this the first instance where NagraCard became
20 aware of this property in the card called a RAM Ghost effect
21 or address aliasing?

22 A Yes.

23 Q And who brought that information to your attention
24 during that meeting?

25 A As I mentioned it was that -- that woman or girl which

1 was the head of the design -- the hardware design of the
2 ST16 chip that was on the white board trying to explain us
3 how the -- the hardware is behaving and give us that
4 information.

5 Q Now, Mr. Nicolas, a moment ago, in addition to
6 identifying this meeting, you also referenced a black box
7 and reviewing a black box. Can you -- can you explain to us
8 what you meant by that.

9 A Sure. So having that piece of information, we -- we
10 started to define some hypothesis of how to use that
11 weaknesses. So were just identifying one of -- out of the
12 three other or four other key characteristic that you need
13 to combine to -- to do that -- that recipe.

14 And in -- I think starting in September 2000 time
15 frame, we started to also do more countermeasure, and we
16 started to see movement on that E3M source of hack. The
17 guys was starting to -- to be overwhelmed by the number of
18 card he had to fix when we -- we were doing countermeasure,
19 and he started to develop and sell box that will help him
20 to -- to do more card at the time. So instead of going to
21 any one location, he started to sell a black box, which is
22 really a card reader that you can insert the card in, and
23 that will apply the recipe in the card. So instead of
24 having only one location, he was trying to set up multiple
25 location to do that, and we were providing one of those box

1 through NagraStar that we had to analyze.

2 Q And did you participate in the analysis of that pirate
3 device, the black box?

4 A Yes, that -- that was my team that did that. I just
5 supervised the things. I didn't do it myself, but I -- I
6 get the -- the result of that, yes.

7 Q Do you supervise the team of Nagra engineers in that
8 project?

9 A Correct.

10 Q Now, can you -- just in general terms, can you describe
11 for the ladies and gentlemen of the jury what that analysis
12 was. In other words, how did you go about with a team of
13 engineers analyzing this pirate device?

14 A So you receive a -- a black box or so-called Smart Card
15 reader that is told to be able to apply that recipe to the
16 hack. We were not aware that it was the recipe there at
17 that time. And so what you do for testing, first, you --
18 you set or select a set of Smart Card that are in use in
19 North America, definitely taking some of the EchoStar Smart
20 Card, but also taking some other operator or customer that
21 were in -- in North America. So we took a Bell ExpressVu
22 Smart Card, we took a -- a GT Smart Card, so various one
23 there. And then you insert each of those card in the -- in
24 the black box and apply, quote-unquote, "the hack," and you
25 just check the result. If the card get E3M'ed, so if the

1 card get the -- the full subscription right, you know that
2 the black box is working. If there is nothing change in the
3 card, you know that it's not working for that given
4 operator.

5 Q Thank you, Mr. Nicolas.

6 Your Honor, I have about 30 to 40 minutes left in my
7 examination. Would now be a good time to take a break?

8 THE COURT: This is a good time.

9 You're admonished not to discuss this matter
10 amongst yourselves, nor form or express any opinion
11 concerning the case. Why don't you take 20 minutes. We'll
12 come and get you right around five minutes to the hour.
13 Have a nice recess.

14 Sir, you may step down, and we'll see you at five
15 minutes to 10:00.

16 THE WITNESS: Okay. Thank you.

17 And counsel, then, 20 minutes; 5 minutes to 10:00.
18 Thank you.

19 MR. SNYDER: Your Honor, when we return, can we
20 collect the exhibits that were given to the jury last
21 week --

22 THE COURT: Yes, please.

23 MR. SNYDER: -- and then move two exhibits into
24 evidence, 1000, and 1510?

25 THE COURT: Can we move those into evidence after

1 his testimony?

2 MR. SNYDER: That would be fine, your Honor.

3 THE COURT: All right. But we will collect those
4 exhibits. Those were the 360 exhibits, weren't they?

5 MR. SNYDER: I believe that's right.

6 THE COURT: If you'd just make a notation and give
7 it to Kristee, she'll give it to me, and we'll collect
8 those.

9 MR. SNYDER: Thank you.

10 THE COURT: Thank you very much.

11 (Recess.)

12 (The following proceedings is taken in the
13 presence of the jury.)

14 THE COURT: This would be the continuing direct
15 examination by Mr. Hagan on behalf of EchoStar and
16 NagraStar.

17 MR. HAGAN: Thank you, your Honor.

18 CHRISTOPHE NICOLAS, PLAINTIFFS' WITNESS, RESUMED

19 DIRECT EXAMINATION (Continued.)

20 BY MR. HAGAN:

21 Q Now, Mr. Nicolas, a little bit earlier this morning,
22 you testified about some of the harmful effects that
23 resulted from this December 2000 Nipper posting. We looked
24 at it, and it's Exhibit 998. I want to go back to that for
25 just a moment. You testified that as a result of that post,

1 NagraCard began to develop certain ECMs and software patches
2 to try to correct that problem. Can you explain to the
3 ladies and gentlemen of the jury what you are referring to
4 with that -- the term "software patch"?

5 A I think -- as I told before, we have the capability to
6 write a specific software that will insert in the system,
7 and that code will be sent as a message through the
8 satellite and reach the Smart Card there. So by doing that,
9 we have the capability to load an extra piece of software in
10 the card that would be installed in the EEPROM or to
11 execute -- execute that piece of software in the ROM to do
12 some check of the video of the card.

13 Q And did you participate in the development of that
14 software patch?

15 A Again, it's -- I was leading at that time the team in
16 charge of developing, designing the -- those type of
17 patches, so I -- I did, to some extent, participate in the
18 design and development of that software.

19 Q And do you recall approximately when it was that
20 NagraCard finished that software patch to try to correct the
21 problem exposed in the NiPpEr2000 -- or the December 2000
22 NipperClause post?

23 A So it probably took us one or two months to finish
24 the -- the -- the first attempt to fix that -- that issue,
25 so it took us probably until, let's say, mid-February 2001

1 to do that.

2 Q And once that software patch was developed, did Nagra
3 launch that ECM, or I'm sorry, that software patch?

4 A So the way that we do that is NagraCard develop that,
5 put that in the file that is delivered to NagraStar, and
6 NagraStar is in charge of launching that software.

7 Q And can you explain to the ladies and gentlemen of the
8 jury how that software patch or any software patch is
9 deployed for EchoStar's system?

10 A So the file containing that software is delivered to
11 NagraStar, then inserted in the Headend of EchoStar, so the
12 broadcast center of EchoStar, and broadcasted through the --
13 to all of the Smart Card and set-top box.

14 Q Was that software patch in February of 2001, was it
15 effective to try to combat the piracy that resulted from the
16 December 2000 Nipper posting?

17 A Yeah, to somewhat -- yes.

18 Q And what do you mean "somewhat"?

19 A So first, you need to understand that we need to
20 develop a software patch for each ROM or revision, so you
21 will need -- you will need a dedicated software patch for
22 ROM 3, but you will need also, to be successful, a dedicated
23 one for ROM 2, and so on. So at that time we didn't find
24 any means to fix the ROM 2 because we were not able to find
25 enough room or memory space in ROM 2. I think there was

1 something like 20 bytes left on that card, and you cannot do
2 a patch or fix with that memory. And we did one for ROM 3,
3 and that patch was successful for some times to prevent
4 the -- the usage of the recipe as it was published in
5 December 2000. But since then, multiple flavor of the
6 recipe started to appear, and multiple targets started to
7 appear, and to do a successful patch, you need to understand
8 which target you are -- you are targeting. And before it
9 was easy, quote-unquote, easy; you have one target, one
10 source.

11 Since January 2000, you have multiple source, and you
12 don't know if that source is just one card for the own usage
13 of the user or 1,000 card or 100 card, so selecting the
14 right one is almost impossible, and fighting all of them is
15 impossible.

16 Q So if I understand your testimony correctly, as a
17 result of the December 2000 publication of that hack recipe,
18 different pirates were able to develop different versions or
19 what you call different flavors of that hack recipe; is that
20 correct?

21 A That's correct, yes.

22 Q And the specific software patch developed and launched
23 in February of 2001 was not effective to attack all of those
24 different flavors of the hack recipe; is that correct?

25 A Yes, that's correct. It limited the usage of the

1 recipe, but as you clearly understand, I've explained the
2 RAM Ghost effect, which is a hardware within the card, and
3 by no means we can find a software that will fix a hardware
4 weakness in the field. You cannot change the hardware no
5 matter what. There is no magic there.

6 Q Was NagraStar or EchoStar eventually able to fix that
7 hardware?

8 A No.

9 Q What did they have to do?

10 A So to fix a hardware, the only option that you have is
11 to swap, to change -- exchange that hardware.

12 Q And when you refer it to "swap" or "change," what are
13 you -- what is being swapped?

14 A So the Smart Card itself is being removed from the --
15 the existing Smart Card is being removed from the set-top
16 box, and the subscriber will receive through the mail a new
17 Smart Card that he will have to swap or insert back in the
18 set-top box.

19 Q So as a result of the different flavors that derived
20 from the December 2000 Nipper posting, EchoStar and
21 NagraStar were forced to swap out the DNASP-II system; is
22 that correct?

23 A That's correct.

24 Q Excuse me.

25 What was the name of the new system that NagraCard

1 developed to replace the DNASP-II system?

2 A So the DNASP-II system was replaced by a system called
3 DNASP-III, which is not surprising, but then we used the
4 code name "Aladin" for that system.

5 Q Aladin, A-l-a-d-i-n; is that correct?

6 A Yes.

7 Q Now, Mr. Nicolas, when you first saw or became aware of
8 the December 2000 Nipper posting, the hack recipe, that we
9 looked at as Exhibit 998, at that point in time, did you
10 know who the individual was posting under the alias "Nipper"
11 responsible for that hack?

12 A Could you repeat the question?

13 Q Sure.

14 A Which one are you --

15 Q Exhibit 998, the Nipper hack recipe, which you referred
16 to as the hack recipe, when you saw that, when it was
17 brought to your attention in December of 2000, did you know
18 at that time who Nipper was?

19 A On the investigation side, it was NagraStar that was in
20 charge of that, and my understanding is at that time, I
21 think -- NagraStar already felt that it was clearly
22 Christophe --

23 MR. STONE: Objection. It's hearsay. We have a
24 witness from NagraStar coming.

25 THE COURT: Counsel, more foundation. Just how he

1 knew is hearsay.

2 MR. HAGAN: Okay.

3 BY MR. HAGAN:

4 Q And I understand from your testimony that that's
5 NagraStar --

6 THE COURT: That's not the answer concerning
7 Christopher Tarnovsky at this time. Let's find out what the
8 foundation for that opinion is, Counsel.

9 (Live reporter switch with Debbie Gale.)

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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

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14 _____
15 JANE C.S. RULE, U.S. COURT REPORTER

16 CSR NO. 9316
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