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Exhibits 1 - 2 Vol. 1, Pgs. 1 - 67

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss. Superior Court

Civil Action No. 00-5159J

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MICHAEL A. MINOVITCH

COPY

Plaintiff

vs.

RICHARD H. BATTIN, and DOES 1 through 20

Defendants

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30(b)(6) DEPOSITION of DRAPER LABORATORY by

LARRY DAVIS BROCK

Monday, May 7, 2001, 12:17 p.m.

Draper Laboratory

Technology Square

Cambridge, Massachusetts

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Reporter: David A. Arsenault, RPR

Farmer Arsenault Brock LLC, Boston, MA

(617) 728-4404

1 PRESENT:

2 Law Offices of Kirk Y. Griffin

3 Kirk Y. Griffin, Esq.

4 50 Staniford Street

5 Boston, Massachusetts 02114

6 617-367-0966

7 for Plaintiff

8

9 Palmer & Dodge, LLP

10 Jeffrey Swope, Esq.

11 Colleen B. Melia, Esq.

12 One Beacon Street

13 Boston, Massachusetts 02108

14 617-573-0100

15 for Defendants

16

17

18

19 ALSO PRESENT: Michael A. Minovitch

20

21

22

23

24

1 PROCEEDINGS - 12:17 p.m.

2 -----

3 LARRY DAVIS BROCK, sworn

4 -----

5 EXAMINATION

6 BY MR. SWOPE:

7 Q. Good afternoon, Dr. Brock.

8 A. Yes.

9 Q. Would you state your full name for the  
10 record.

11 A. Larry Davis Brock.

12 Q. I would like to show you a document  
13 that's a subpoena and ask if you recognize that  
14 document.

15 A. Yes.

16 Q. Was that served on you in connection with  
17 this action?

18 A. Right.

19 Q. And you're appearing here in this action  
20 pursuant to that subpoena?

21 A. Yes.

22 Q. That document asked you to bring with you  
23 lecture notes from a class in 1961; is that  
24 correct?

1 A. Right.

2 (Marked, Exhibit 1.)

3 Q. By whom are you currently employed?

4 A. Here at Draper Lab.

5 Q. Were you a student at Massachusetts  
6 Institute of Technology as an undergraduate?

7 A. Yes.

8 Q. Were you a student at the Massachusetts  
9 Institute of Technology for a graduate degree as  
10 well?

11 A. Yes.

12 Q. In 1961 what was your status at MIT?

13 A. I graduated as undergraduate in '60. So  
14 starting in the summer of '61 I was employed at  
15 Draper Lab. It was MIT Instrumentation Laboratory,  
16 was the name of this organization before it  
17 separated. So I took Dr. Battin's course. Do you  
18 want to know that kind of thing?

19 Q. Yes.

20 A. I took his course. It's been a long time  
21 ago; I can't remember if it was the fall or spring  
22 term, but whatever it was must be in the record. I  
23 took the course in the graduate year, I believe.  
24 That would be the '60-'61 year. In the 1961-1962

1 year I was the teaching assistant for that course,  
2 mostly grading papers. I took the course one year  
3 and sat in on all the lectures the other year. To  
4 some extent I can't distinguish one from the other.

5 Q. In the fall semester of 1961 you were a  
6 teaching assistant in Dr. Battin's class?

7 A. Yes.

8 Q. Aside from the grading did you have any  
9 other responsibility?

10 A. No.

11 Q. Did you have any responsibility for the  
12 making of the lecture notes?

13 A. No.

14 Q. Did you receive copies of lecture notes  
15 prepared by Dr. Battin in connection with your  
16 duties as a teaching assistant?

17 A. Right.

18 Q. How were they distributed to you as a  
19 teaching assistant?

20 A. As far as I know, this is the way they  
21 were distributed.

22 Q. And when you say "this," these are the  
23 materials that you've brought in response?

24 A. Right.

1 Q. Would you describe what document you are  
2 looking at now.

3 A. All I can remember is what it says. I  
4 didn't type this. Somebody else typed this and  
5 stuck it on here. This is the name of the course.  
6 It says: Lecture notes, Richard H. Battin.

7 Q. These are referred to as lecture notes.  
8 These were notes distributed by the course  
9 instructor as opposed to notes taken by a student?

10 A. That's correct. It says lecture notes,  
11 but it's like supplemental material.

12 Q. Do you recall when you received the  
13 document that you brought with you today?

14 A. Not exactly. But my remembrance was that  
15 it was the beginning of class.

16 Q. The beginning of the class being the fall  
17 of 1961 class?

18 A. Right.

19 Q. And Dr. Battin was the instructor in that  
20 class?

21 A. That's right.

22 Q. Where has this document been since you  
23 received it?

24 A. It's been in a box of -- well, once I

1 packed it up it was probably for a year or so in a  
2 bookcase at home. And then after I started moving  
3 it was put in a box and it's been in that box ever  
4 since, until Dr. Battin called about this thing  
5 about six months or so or something and I went in  
6 the attic and found it.

7 Q. Was this box in your possession in the  
8 sense that it was in your home or homes at all  
9 times?

10 A. Right.

11 Q. Did anyone have access to that box other  
12 than you or members of your family?

13 A. No. They would have been very lucky to  
14 find it.

15 Q. Let me ask you whether a document that I  
16 have a copy of called Lecture Notes on the  
17 Trajectory Problem as it Relates to the Mission for  
18 Interplantary Flight is in the binder that you  
19 brought with you today?

20 A. Yes, that's it, right.

21 (Marked, Exhibit 2.)

22 Q. You were about to say what this was, this  
23 document I've shown you?

24 A. This is copies of what was in here, it

1 looks like.

2 Q. And when you say that, you are referring  
3 to what we marked as Exhibit 2?

4 A. Yes.

5 Q. And copies of what's in here is the  
6 binder that you brought with you today in response  
7 to the subpoena?

8 A. That's right.

9 Q. Could you turn in that binder, please, to  
10 the lecture notes.

11 A. Yes.

12 Q. And would you compare the copy that I've  
13 provided with the original binder.

14 A. It's the same.

15 MR. SWOPE: Could we stipulate that  
16 rather than having him go through page by page now  
17 if he can notify us in doing that later if he  
18 discovers any page missing?

19 MR. GRIFFIN: Sure.

20 Q. I'll ask you to go through this page by  
21 page and make certain that the document marked as  
22 Exhibit 2 is a true and complete copy of the  
23 original. Would you do that for us?

24 A. Let me just go through it. It's not that



1 long. I guess they did it double-sided. They did  
2 it to save paper. You can tell it's the same  
3 because it's got missing --

4 Q. Missing what?

5 A. The 5 isn't complete.

6 Q. As a page number at the bottom of Page 5?

7 A. Yes. That's what you have is a copy of  
8 this. 14 and 15 are more drawings, 16 is more  
9 text, 17, 18, 19.

10 (Discussion off the record.)

11 Q. Why don't I ask you to continue.

12 (Discussion off the record.)

13 Q. Have you conducted now a page-by-page  
14 examination of Exhibit 2 and the document that you  
15 brought with you today?

16 A. Yes.

17 Q. Did you notice if any pages in Exhibit 2  
18 are missing from what's in the original document or  
19 in addition to what's in your original document?

20 A. No.

21 Q. Did you see any alterations or any  
22 changes to any of the material that's on those  
23 pages?

24 A. No.

1 Q. Has the document that's the portion of  
2 the document that you brought been removed at any  
3 time by you from the binder?

4 A. It's been removed from this binder to  
5 make this copy.

6 Q. Who did that removal?

7 A. I think it was tech pubs here.

8 Q. That being an internal copying service at  
9 Draper?

10 A. Right, I think so, yes.

11 Q. Now, is there any staple or other  
12 binder --

13 A. Right.

14 Q. -- let me finish the question. Is there  
15 any staple or other binder on the original copy of  
16 Exhibit 2 that you have in your binder?

17 A. Yes.

18 Q. What is that connecting mechanism?

19 A. It's stapled.

20 Q. As best you can recall, did you receive  
21 it stapled when you received it --

22 A. Yes.

23 Q. -- in 1961? When was the staple removed  
24 for the first time, to the best of your knowledge?

1 A. It was never removed.

2 Q. Was it removed when it was copied?

3 A. No.

4 Q. How do you know that by looking at  
5 Exhibit 2?

6 A. By looking at the folded corners.

7 Q. The photocopy that I showed you as  
8 Exhibit 2 did not have the staple removed but it  
9 was done by folding?

10 A. It was done by hand, page by page, so  
11 that the staple is still in there.

12 Q. So is it your testimony that the document  
13 that we marked as Exhibit 2 in its original form is  
14 in fact connected and complete just as it was when  
15 given to you in 1961?

16 A. That's right. I don't know if you're  
17 interested in extra data or not. It was in the  
18 attic. One piece of the staple, the rust stain is  
19 showing on the other side. In other words, this  
20 document is as put together.

21 Q. What is the other document in this Acco  
22 binder or other documents?

23 A. Other aspects of the same general topic.

24 Q. The particular document that we've been

1 looking at is the one called trajectory problems?

2 A. That's correct.

3 Q. You referred to the rust stains. What  
4 conclusion do you draw from the rust stains?

5 A. The whole package has been together  
6 basically for close to 30 years. Since I got it,  
7 it wasn't taken apart.

8 Q. Let's look at the dates. This is dated  
9 August '61?

10 A. Right.

11 Q. And you said you received it at the start  
12 of the fall 1961 semester?

13 A. Right.

14 Q. Would that have been around August of  
15 1961?

16 A. Well, MIT doesn't start in August. It  
17 starts in September.

18 Q. When is your best recollection that you  
19 would have received the document we marked as  
20 Exhibit 2?

21 A. Again, I can't swear now. I didn't look  
22 back at my schedule to see whether it was a fall or  
23 a spring term. If it was the fall term, I got it  
24 probably either in September or October, as far as

1 I can remember.

2 Q. Is there any way that you can tell  
3 whether it was a fall or spring term that you took  
4 that course by looking at other records?

5 A. Probably.

6 Q. How would you do that?

7 A. I don't know. Let's see. MIT probably  
8 has a record.

9 Q. Of whether you were a teaching assistant  
10 at that time?

11 A. Yes. Probably, I don't know. I might  
12 have something at home. He only taught it one  
13 term. I mean it wasn't taught spring and fall. It  
14 was only taught one time.

15 Q. Per academic year?

16 A. Per academic year.

17 Q. And you were a teaching assistant in his  
18 course only for one term; is that correct?

19 A. That's right.

20 Q. And I believe you testified that you  
21 were -- you took his course in the '60-'61 year?

22 A. Correct.

23 Q. You were a senior?

24 A. No. My first graduate year.

1 Q. And you became a teaching assistant in  
2 the '61-'62 year?

3 A. Right. I was a research assistant at the  
4 MIT Instrumentation Lab. Starting in the summer of  
5 1960 through the beginning of the 1961-1962 year.  
6 That year I was fortunate enough to get a full  
7 fellowship. I wasn't an employee of the lab but I  
8 still had a badge. And I had two extra jobs. One  
9 was to be a teaching assistant for one term. The  
10 other term was to be a research aide.

11 Q. And your testimony is you can't tell us  
12 whether your role as a teaching assistant with  
13 Dr. Battin was, in the 1961-1962 academic year was  
14 in the fall or the spring?

15 A. I can't remember. I'm not sure when it  
16 was.

17 Q. That's your best recollection as of now?

18 A. Right.

19 Q. And in preparation for that course you  
20 were provided the document that we've marked as  
21 Exhibit 2, right?

22 A. Well, I attended the course just like any  
23 other student.

24 Q. My question was in preparation for the

1 course you were provided this document, Exhibit 2.

2 A. Right.

3 Q. In preparation for that course, you were  
4 provided by MIT the entire Acco binder with lecture  
5 notes in it?

6 A. Yes. To the best of my remembrance, I  
7 was sitting in the class as if I was a student and  
8 all students were given this.

9 MR. GRIFFIN: When you said all  
10 students were given this just a moment ago, did you  
11 mean this document?

12 THE WITNESS: This whole binder. As  
13 far as I can remember, this was passed out to  
14 everybody in the class.

15 Q. The whole binder?

16 A. Yes.

17 Q. From which comes Exhibit 2?

18 A. Yes.

19 Q. Do you recall referring to the document  
20 that we marked as Exhibit 2 during that term that  
21 you were a teaching assistant?

22 A. Yeah. I mean I can't remember details of  
23 what was taught but that was lectures on describing  
24 reconnaissance trajectories. That was part of the

1 course.

2 Q. Did you have occasion at any time that  
3 you can recall to refer to those lecture notes  
4 after you had completed your teaching assistant  
5 assignment?

6 A. I can't remember. I think it's pretty  
7 well known that Dr. Battin had the intention of  
8 writing a book. Part of this was going to be part  
9 of the book also, and not too long after that the  
10 book was published. And I had a copy of the book.  
11 So in most cases I wouldn't have any reason to go  
12 back to the lecture notes. In preparation for this  
13 deposition I didn't look at the book to see if it  
14 was the same material that's in here (indicating).  
15 But in answer to your question did I refer back to  
16 these notes afterwards, I didn't really have any  
17 reason to. If I needed to I would have looked in  
18 the book first. And that wasn't exactly what I was  
19 doing. We were working -- the project that I was  
20 working on later after I had taken the course was  
21 the Apollo program. We were only going to the  
22 moon.

23 Q. Only! So at the conclusion of the course  
24 you took the binder that has Exhibit 2 in it and



1 you said you first put it on the bookshelf?

2 A. Probably.

3 Q. At home or in the office?

4 A. At home.

5 Q. And following its stay on the bookshelf  
6 it went into a box?

7 A. Right.

8 Q. Where in the box did it go?

9 A. For New Mexico for three years and then  
10 Burlington, Connecticut for eight and a half years  
11 and then back to Lexington in '77. It's been back  
12 there for about 23 years.

13 Q. You earlier said that you had had these,  
14 Exhibit 2, in your possession for approximately 30  
15 years. It's now 2001 and these were dated in 1961.

16 A. That would be 40 years. That's right.

17 Q. You didn't mean by the reference to 30  
18 years --

19 A. No. I just wasn't being precise.

20 (Pause.)

21 Q. During that entire 40 years and all the  
22 places that you lived, the box that contained, the  
23 binder that contained Exhibit 2 was always in your  
24 possession?

1 A. That's right.

2 Q. Am I correct that the first time that you  
3 had occasion to go and look at that box after all  
4 those years was when you heard about the dispute  
5 that Dr. Minovitch had with Dr. Battin?

6 A. Yes. He called me. I can't remember  
7 exactly what he was asking. I said I think I have  
8 some notes.

9 Q. When you say he called you, Dr. Battin  
10 called you?

11 A. Right.

12 Q. And he asked -- and you said you thought  
13 you had some notes from the 1961 course?

14 A. Right.

15 Q. And did you at that time go and search  
16 out this box?

17 A. Right. I pulled out the box and started  
18 looking through it.

19 Q. And you found Exhibit 2 --

20 A. That's right.

21 Q. -- in the condition it's been presented  
22 here today?

23 A. Right.

24 Q. At some time in the year 2000 did you

1 make the document, the binder that you have,  
2 available to a document expert for Dr. Minovitch?

3 A. Yes.

4 Q. Would you describe for me how that event  
5 came about.

6 A. I can't remember. Somebody said they  
7 were going to -- I think it was maybe Dr. Battin or  
8 someone, said they were going to do forensic tests.  
9 So I brought it in to do the tests on it.

10 Q. Did you bring it into the laboratory?

11 A. Right.

12 Q. Did you meet with Dr. Lyter?

13 A. Yes. Is that his name, the forensic  
14 person? I mean I was in the room with him.

15 Q. You were introduced to him?

16 A. Yes.

17 Q. Who else was in the room, as best you can  
18 recall?

19 A. I think Dr. Minovitch was in the room and  
20 Mr. Hollister, professor.

21 Q. Mr. Hollister?

22 A. The MIT professor.

23 Q. Was Mr. Elias in the room?

24 A. Yes, right, Mr. Elias.

1 Q. Dr. Battin was not in the room?

2 A. No.

3 Q. Is that correct?

4 A. It's correct that he was not in the room.

5 Q. And please describe your interactions  
6 with Dr. Lyter regarding the materials that you  
7 brought.

8 A. I can't remember all the questions. He  
9 just inspected it. He took some samples.

10 Q. How did he take the samples?

11 A. He had a thing that looked like a  
12 hypodermic needle and punched a little hole, if I  
13 remember right, to take a sample of the paper.

14 Q. And did he take samples of the particular  
15 notes that are marked as Exhibit 2?

16 A. Yes, the original of those, right.

17 Q. Did he do any other examination of that  
18 that you observed?

19 A. I think he was looking at the rust marks  
20 that just shows that the whole binder had been  
21 together for a long time.

22 Q. The same staple rust marks that you  
23 referred to earlier?

24 A. Right.

1 Q. Do you recall anything else that  
2 Dr. Lyter did?

3 A. Are you talking about other things he was  
4 working on at the same time he was working on this?

5 Q. I'm only asking about your own set of  
6 notes that you brought.

7 A. I can't remember.

8 Q. Did you have any discussion with him  
9 about how you had kept those notes?

10 A. I can't remember for sure. It's more or  
11 less the same discussion that we are having now.

12 Q. That is, that they had been in a box in  
13 your attic?

14 A. Right.

15 Q. Did Dr. Lyter tell you that he was going  
16 to provide you any information as a result of his  
17 analysis or testing?

18 A. To provide to me?

19 Q. To you.

20 A. No. He didn't provide anything to me.

21 Q. Did you understand that he was going to  
22 provide any information to Draper Laboratory?

23 A. I didn't know.

24 Q. Did Dr. Lyter ask to perform any test on

1 the materials that you brought that you told him he  
2 could not do?

3 A. No.

4 Q. Did Dr. Lyter ask you for any additional  
5 documents or other materials beside what you  
6 brought?

7 A. No.

8 Q. Did you just meet with Dr. Lyter that one  
9 time?

10 A. Yes.

11 Q. Following that meeting, did you have any  
12 telephone conversations or correspondence with  
13 Dr. Lyter?

14 A. No.

15 Q. You never received a call from him asking  
16 for any information.

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

18 Q. Did you at any time yourself, Dr. Brock,  
19 alter any of the materials in the notes that we've  
20 marked as Exhibit 2 from the time that you were  
21 originally provided them?

22 A. No.

23 Q. Did anyone else, to your knowledge, ever  
24 alter any of those materials?

1 A. No.

2 MR. SWOPE: I have no further  
3 questions of Dr. Brock.

4 EXAMINATION

5 BY MR. GRIFFIN:

6 Q. I represent Dr. Minovitch. I'm changing  
7 positions because it's easier to the stenographer  
8 if we are positioned in this fashion. You  
9 indicated that you were the recipient of an  
10 undergraduate degree from MIT?

11 A. Yes.

12 Q. And a graduate degree?

13 A. Yes.

14 Q. Dr. Battin was one of your undergraduate  
15 professors?

16 A. No.

17 Q. Just a graduate professor?

18 A. Right. Well, I was in what they call an  
19 honors course that -- about somewhere in the middle  
20 of your senior year if it looks like you're going  
21 to go to graduate school they will delay your  
22 undergraduate degree until your fifth year and you  
23 get both. My fifth year my status was a graduate  
24 student but I had not yet received a bachelor of

1 science degree. At that time you had to have a  
2 thesis for an undergraduate degree. So they  
3 combined it so you just wrote one thesis at the end  
4 of the fifth year for bachelor's and master's. So  
5 I was a graduate student.

6 Q. And you did your thesis in 1965, as I  
7 recall?

8 A. I did a bachelor's and master's thesis in  
9 1961.

10 Q. And in 1965 you did what?

11 A. The Ph.D. thesis was in '65.

12 Q. I think my question was did you have  
13 Dr. Battin as an instructor at one point in time?

14 A. Oh, yes, sure.

15 Q. And then you became a teaching assistant  
16 for him for one term?

17 A. That's right.

18 Q. How many courses did you have with  
19 Dr. Battin that you recall?

20 A. Just one, the same course.

21 Q. The same course that you became a  
22 teaching assistant in?

23 A. That's right. To my understanding,  
24 that's the only course he taught. He was not an



1 MIT professor, per se. I don't know exactly what  
2 his status was at that time. But he was from MIT  
3 Instrumentation Lab and teaching that one course.

4 Q. Did you know that he was the deputy  
5 associate director of the MIT Instrumentation Lab?

6 A. Yes.

7 Q. At that point in time?

8 A. I knew that, probably, right.

9 Q. After being a student in Dr. Battin's  
10 course and having been a teaching assistant in  
11 Dr. Battin's course, after those periods of time,  
12 what further connection did you have with  
13 Dr. Battin, if any?

14 A. I worked in the group that he was the  
15 head of starting after that school year, I believe,  
16 the '61-'62 school year. So starting, I believe,  
17 the summer of that, '62, I was in the group that he  
18 was head of.

19 Q. For what period of time?

20 A. Until October of '65.

21 Q. What connection did you have with  
22 Dr. Battin after October of 1965?

23 A. Almost none, except exchanging Christmas  
24 letters. Oh, in all the time since then?

1 Q. After. You described a certain  
2 relationship up to October of '65. How did that  
3 relationship change at all?

4 A. I had no direct relationship at all from  
5 '65, except for exchanging Christmas cards, until I  
6 came back to what was then Draper Laboratory in  
7 June of '77. At that time I worked in a group that  
8 was basically the same group that Dr. Battin was  
9 in. He was I think at that time a deputy division  
10 director. And I was in -- I'm sorry. He was a  
11 deputy department director. And I was in one of  
12 the divisions under that director.

13 Q. Beginning in 1977?

14 A. Right.

15 Q. And for what period of time?

16 A. That I was in that division?

17 MR. SWOPE: Did you say '77 or '87?

18 THE WITNESS: '77.

19 Q. My question was, from '77 onward what was  
20 your position in relationship to Dr. Battin?

21 A. All this time there wasn't much direct  
22 relationship with him. My direct contact is with  
23 the division chiefs. He wasn't involved in my  
24 work. I wasn't involved in the things that he was

1 doing. I can't remember the exact dates in which  
2 the organization was changed. My position didn't  
3 change significantly. I stayed in, pretty much in  
4 the same position although the organization of the  
5 lab above that changed the way any organization  
6 changes.

7 Q. From '77 to today?

8 A. Yes. Until some years ago. Up until  
9 that point I had several different division heads,  
10 basically the organization was the change.

11 Q. And you are friendly with Dr. Battin  
12 presently?

13 A. Yes.

14 Q. And I take it from the early '60s?

15 A. Right.

16 Q. And he's a mentor of yours in some  
17 respects?

18 A. In some respects. But during the -- when  
19 I was a graduate student, he wasn't directly  
20 involved in my thesis work. But graduate students  
21 here at the laboratory, besides the work doing the  
22 thesis you had other assignments. I can't remember  
23 what we called them, but I had a supervisor between  
24 me and Dr. Battin. So there were about five groups

1 that worked for him. And I was in one of those  
2 groups.

3 Q. What about Dr. Hollister, do you know  
4 him?

5 A. Yes.

6 Q. How long have you known him?

7 A. He was here then also. I didn't know him  
8 that well. I can't remember when. I think he was  
9 a student here.

10 Q. He was a student here about the time you  
11 were a student here?

12 A. Yes.

13 Q. Did you know him back then as a student?

14 A. I knew of him. I can't remember. As far  
15 as I remember, he went from being a student to  
16 being on the staff at MIT. I don't know when that  
17 transition took place. I don't think I ever had a  
18 course that he taught. I just knew of him.

19 Q. Were you friendly with him?

20 A. Friendly. Not any direct relationship.

21 Q. Since this time frame in the early '60s?

22 A. Right.

23 Q. To the present?

24 A. Almost no contact, no relationship.

1 Q. I'm not trying to be cute. You know him.  
2 You're friends with him. It's not a hostile  
3 relationship?

4 A. No, it's not hostile.

5 Q. A colleague?

6 A. Right.

7 Q. Also a student of Dr. Battin?

8 A. Yes.

9 Q. Why was Mr. Hollister, as far as you  
10 understand it, to jump ahead a little bit, why was  
11 Mr. Hollister present at the session with  
12 Dr. Lyter?

13 A. He was presenting class notes that he had  
14 taken. I think he took the course the year before  
15 I did. I think Dr. Battin had mentioned the issue  
16 that I understand to be the concept that I  
17 understand to be an issue, which is the  
18 reconnaissance to multiple planets on one trip, I  
19 think he had written down notes when Dr. Battin had  
20 talked about that.

21 Q. Can I see the binder that you referred to  
22 from which Exhibit 2 was taken.

23 A. Right, here.

24 Q. We are not going to have this marked,

1 Dr. Brock, but we can refer to it as the volume  
2 from which Exhibit 2 was taken.

3 A. Right, correct.

4 Q. Or a copy of Exhibit 2 was taken. The  
5 contents of this appear to include in addition --  
6 looking, for example, at the document that  
7 immediately follows what is the original of Exhibit  
8 2 --

9 A. Right.

10 Q. -- that's another publication of notes, I  
11 take it?

12 A. Right, that's correct.

13 Q. Is this of the nature of a class note as  
14 you look at this page of it?

15 A. This was actually -- it would have been  
16 material covered in the class. I think this  
17 particular one was published as a Draper Lab  
18 report. Let me clarify. Since this is an Acco  
19 press binder that was handed out in the class with  
20 this label on it, which I'm sure I didn't type, I'm  
21 not sure if things were handed out later in the  
22 term. I might have put them in the same binder. I  
23 can't remember that.

24 Q. So in the condition that this volume is

1 today --

2 A. Right.

3 Q. -- your testimony is that you don't  
4 recall whether you got it in this format in the  
5 beginning of that term.

6 A. I can't swear that I did not get some  
7 notes that were the same basic format in the term  
8 and included in the Acco.

9 Q. Is this the format it was in and the  
10 condition it was in and the assemblage it was in  
11 when you first received this notebook?

12 A. As far as I remember it, yes.

13 Q. And the documentation immediately  
14 preceding it is lecture notes. That says Lecture  
15 Notes on Aeronautical Guidance by Richard  
16 H. Battin, September 1961?

17 A. Yes.

18 Q. For class 16.46?

19 A. Right.

20 Q. Is that a similar set of lecture notes to  
21 Exhibit 2?

22 A. Right. I haven't looked at them since.  
23 I think this would be the starting, basic material  
24 on which it is based.

1 Q. When you say this one, you mean the first  
2 enclosure, which is lecture notes on aeronautical  
3 guidance bearing the date of 1961 by Richard  
4 H. Battin?

5 A. That's right.

6 Q. Does the fact that it says 1961 on it,  
7 that being the first enclosure, does that in any  
8 way refresh your recollection as to when you  
9 received this collection?

10 A. I would not have received that collection  
11 until the class started.

12 Q. These say lecture notes on the first two  
13 enclosures. I notice that none of the pages are  
14 marked up in any way, at least as my notes in  
15 college on occasion would be highlighted or marked  
16 in some way.

17 A. Right.

18 Q. Was that your practice in those days,  
19 just to read whatever was submitted and not make  
20 any notations on it even though they were your  
21 personal set of notes?

22 A. I might take notes on it if there was a  
23 lecture on that particular subject at the time. As  
24 I recall, when I got these notes I was the teaching



1 assistant. I was just assisting, auditing the  
2 course. I wasn't taking it. I had another --  
3 whether or not I used it, I can't remember. I  
4 would have another spiral thing, notebook that I  
5 would take notes in.

6 Q. It was not your practice to make notes on  
7 the actual handouts?

8 A. Right.

9 Q. Did you ever read that article that's now  
10 Exhibit 2?

11 A. I'm sure I did.

12 Q. Have you read it since you were contacted  
13 by Dr. Battin?

14 A. I read the parts in question just out of  
15 curiosity, the last few pages.

16 Q. When did you do that?

17 A. I read it when I was looking for the  
18 notes because that was the issue, where was this  
19 principle discussed. It's only two or three pages.

20 Q. And it's the last two or three pages?

21 A. Right.

22 Q. Did you read the -- do you have a memory  
23 of reading the handout? Having in mind you were a  
24 teaching assistant at the time, do you have any

1 recollection to any extent of reading the handout  
2 at the time that you got it?

3 A. Yeah, I believe so. And I certainly  
4 remember him talking about it. I remember him  
5 talking about it in the lecture, talking about this  
6 neat --

7 Q. I'm sorry?

8 A. I said neat. This is a nice, interesting  
9 phenomenon. From the lecture notes you can see  
10 that he had trajectories to Mars. I think the MIT  
11 Instrumentation Lab had a contract with what was to  
12 become NASA -- it may not have been NASA then --  
13 for doing the Mars program. Dr. Battin was  
14 involved in that. The first contact that I had  
15 with that effort was when I was an undergraduate,  
16 not with Dr. Battin himself but with the people  
17 that were doing that. They were doing trajectories  
18 to Mars. And this is related to that work. And I  
19 remember Dr. Battin saying that the trajectory --  
20 when they worked on a trajectory to Venus, which  
21 was of less interest than Mars, when they did a  
22 trajectory to Venus that he could see one that went  
23 all the way to Mars. And they said great, what if  
24 Mars happened to be there at the time. So let's

1 look for a chance to do that.

2 I remember because that was kind of a  
3 unique thing. I remember that in the lecture. I  
4 can't remember if it was when I took the course or  
5 when I was the teaching assistant. I remember him  
6 describing that.

7 Q. It was in that period of time?

8 A. That's right.

9 Q. Let me be clear. I want to get back to  
10 what you said, but my question had been whether you  
11 recall reading those lecture notes that are now  
12 Exhibit 2.

13 A. Right.

14 Q. Do you have a memory of reading them at  
15 or around the time you got them?

16 A. Yes.

17 Q. Whether you were a student or teaching  
18 assistant?

19 A. Yes, I can say I probably did.

20 Q. I'm not going to change your grade.

21 A. Okay.

22 Q. After reading them at that time in whole  
23 or in part or casually or analytically, did you  
24 ever read them again before you got this call from

1 Dr. Battin that you told us about?

2 A. This particular copy?

3 Q. Yes.

4 A. This particular copy, as I say, I  
5 probably wouldn't have looked at again, because I  
6 think it's in the book.

7 Q. Did you ever look at this in the book?

8 A. I can't remember that for sure.

9 Q. But you do have a memory, I take it, of  
10 reading it again to some extent when Dr. Battin was  
11 in touch with you last year?

12 A. Right.

13 Q. What did you read of the article at that  
14 time at some point in the year 2000?

15 A. The year 2000? I think I read those two  
16 or three pages that say what I just said.

17 Q. And you have a specific memory of reading  
18 the last part of the article?

19 A. That is right.

20 Q. And is it your testimony that maybe you  
21 read the preceding 48 pages or you don't recall?

22 A. The preceding 48 pages in 2000? No, I  
23 didn't read it in 2000. That's a lot of technical  
24 material that would probably be hard to understand

1 now.

2 Q. And you went looking for that because you  
3 got a call from Dr. Battin?

4 A. That's right.

5 Q. We are going to return to that point in  
6 time. I hate to jump around in time. For somebody  
7 in your field of work, I'm sure that's not as  
8 difficult as it is for me. Back to the class.

9 A. Right.

10 Q. You have a recollection of Dr. Battin  
11 talking about this concept as being some unique,  
12 special situation?

13 A. Right.

14 Q. Could you tell us what you recall about  
15 that?

16 A. That's about it, just what I said. If  
17 you look at what happens when you go by Venus, I  
18 think it's called the gravity boost, the fact that  
19 if you go by the backside it will add energy  
20 relative to the sun, the space probe, whatever it  
21 is, that the trajectory gave it enough boost to get  
22 all the way out to Mars. I think -- as I said --  
23 now, this is just conjecture, if that's helpful, as  
24 far as my understanding. But --

1 Q. Excuse me, Doctor. We can get to that.  
2 I'm not trying to cut you off. Can we stick to the  
3 question and your answer about what you recall  
4 Dr. Battin lecturing about at time that you were  
5 either a student or teaching assistant.

6 A. All I remember him saying is that they  
7 were unique opportunities to do a multiple  
8 reconnaissance, in other words, more than one  
9 planet on one trip. It was a bargain in that -- I  
10 can't remember now whether it was my recent reading  
11 or from then -- but that you could get to Mars and  
12 back faster if you went to Venus first rather than  
13 just to Mars itself. I remember him talking about  
14 that concept.

15 Q. The concept could be characterized as  
16 having unique opportunities?

17 A. Yeah, I think so.

18 Q. I'm not trying to put words in your  
19 mouth. You used that phrase.

20 A. Yeah. I mean, it was -- I can't think of  
21 a synonym for that.

22 Q. And it was going to be an economy of  
23 effort in terms of time?

24 A. Right.

1 Q. Economy of effort in terms of energy?

2 A. I believe so, yes.

3 Q. Economy of effort in terms of expense?

4 A. Sure. I'm not sure how much of that was  
5 part of the conversation. It was close to 41 years  
6 ago now.

7 Q. I don't mean to put words in your mouth.

8 A. Right. All I remember is that -- and I  
9 think he was very good at drawing orbits on the  
10 board. He could draw a circle freehand almost  
11 perfectly. He said if we do it from here to here  
12 we can go from Earth to Venus to Mars and back to  
13 Earth in one trip.

14 Q. Do you recall that as being a subject  
15 that was being taught to students or was that  
16 brought up in the sense of breakthroughs and new  
17 things and new discoveries, if you understand the  
18 question.

19 A. The thing that was being taught was  
20 astronomical guidance, a version of astrodynamics,  
21 is the best word, of how you design trajectories.  
22 That's what was being taught. The trajectories was  
23 what was being taught. Basic to that is how do you  
24 get to the moon and to the planets. The fact that

1 you could do two at once was kind of a bonus.

2 Q. And new?

3 A. It fell out of that work. I mean that  
4 was all new at that time, pretty much new.

5 Q. Did Dr. Battin ever use the phrase  
6 celestial billiards?

7 A. I've heard that term, but I can't  
8 remember when I first heard that.

9 Q. You have no memory of it being associated  
10 with that period of the early '60s?

11 A. I can't remember for sure. I mean it's  
12 kind of an obvious analogy.

13 Q. As a shorthand description you don't  
14 remember Dr. Battin using that phrase?

15 A. I can't remember for sure. I have heard  
16 the term.

17 Q. Did you ever tell anyone that you heard  
18 Dr. Battin in class use the phrase celestial  
19 billiards to describe this?

20 A. No, I wouldn't have.

21 Q. You never attributed that phrase to  
22 Dr. Battin?

23 A. Not that I can remember.

24 Q. Excuse me for one second. Mr. Swope had



1 the same observation. For the convenience of the  
2 stenographer, you have to --

3 A. I'm sorry.

4 Q. I'm just as guilty as you are. You have  
5 to let me finish asking the question, inartful as  
6 it may be.

7 A. I understand. I'm sorry. I keep  
8 forgetting.

9 Q. And I'll do the same.

10 A. Okay.

11 Q. Did you ever say to anyone that you  
12 recall Dr. Battin referring to this concept in the  
13 classroom of the early '60s as celestial billiards?

14 A. No.

15 Q. Have you written anything that's been  
16 published, sir?

17 A. Yes.

18 Q. In the course of writing for publication  
19 have you come across the term "revisions"?

20 A. Revisions?

21 Q. Yes.

22 A. I'm not sure what you mean by revisions.

23 Q. The post-submission editing or updating  
24 of an article?

1 A. No.

2 Q. Have you had experience with submitting  
3 articles for publication that in the period from  
4 submission to editing to proofs to galleys to  
5 publication needed to be updated or revised?

6 A. I don't think I've had any personal  
7 experience.

8 Q. I don't mean editing in the sense of  
9 grammar, punctuation. I mean things that need to  
10 be revised to include updates of new discoveries or  
11 new information.

12 A. You're talking about the stuff that I've  
13 written, personal experience?

14 Q. Personal experience.

15 A. Things that I've written. Most of what  
16 I've written has been technical papers for  
17 presentation for at least one journal article. In  
18 none of those was there any editing other than  
19 editorial comments in my experience, my personal  
20 experience.

21 Q. You indicated that you were present at a  
22 time last year with Dr. Lyter?

23 A. Right.

24 Q. A forensic analyst?

1 A. Yes.

2 Q. And he took a look at that volume that  
3 contains Exhibit 2?

4 A. Right.

5 Q. And you were present?

6 A. Right.

7 Q. And Dr. Hollister was there and he  
8 submitted something?

9 A. As I remember. If my memory is correct,  
10 we just happened to be there both at the same time  
11 because it was more efficient. I had my thing to  
12 do, and he had his thing to do. I didn't pay  
13 attention to what he was there for. I think he  
14 took a class with me.

15 Q. How long were you there in terms of  
16 elapsed time?

17 A. I think it was an hour or two.

18 Q. Do you recall being there from the  
19 beginning of that session to the end of it?

20 A. Pretty close, as far as I can remember.

21 Q. What else do you recall Dr. Lyter  
22 examining other than your class notes and whatever  
23 Dr. Hollister brought with him?

24 A. The Draper Lab, the MIT Instrument Lab

1 technical publication logbook. My understanding,  
2 to volunteer, these -- the graphics in here  
3 (indicating) were not trivially put together. They  
4 were almost professionally done graphics. My  
5 understanding was that that was when those graphics  
6 were made that were later put into the notes that  
7 were going to be handed out in the class.

8 Q. Anything else?

9 A. Now that you mention that, I'm not sure  
10 that I was there during all of that. I think I may  
11 have come in at the tail end of when they were  
12 doing the logbooks.

13 Q. Anything else?

14 A. I can't remember.

15 Q. Some earlier testimony made reference to  
16 some computer printouts.

17 A. Computer printouts, yeah, yeah, yeah.

18 Q. Tractor-fed, fanfold paper of some kind?

19 A. Right.

20 Q. Do you recall that?

21 A. Now that you mention it, I recall it.

22 Q. What do you recall, if anything, about  
23 the examination?

24 A. Yeah. If I remember right, that was the

1 computer runs that generated the data from which  
2 the notes were taken, if I remember right. I can't  
3 remember the details. All I remember is that it  
4 was whether it was a legitimate fanfold. I think  
5 it had serial numbers on it, page numbers.

6 Q. Were you asked or did you offer any  
7 opinion about that computer paper?

8 A. I may have.

9 Q. You don't have a recollection of it?

10 A. I think I may have. I was just sitting  
11 there watching the proceedings. I think I may have  
12 said something about the serial numbers on the  
13 paper, the fanfolds were still in order, I believe.

14 Q. You don't recall?

15 A. I remember something about looking at the  
16 computer printout. I think I remember seeing that  
17 the paper had page numbers on it, sequence  
18 numbering.

19 Q. Do you recall anything else about that  
20 computer paper?

21 A. It was old. I can't remember right now.

22 Q. Do you recall whether or not you  
23 expressed any opinion about the authenticity of  
24 that computer printout?

1           A.    I can't remember for sure.

2           Q.    Do you recall while you were present and  
3 they were within your hearing whether there was any  
4 discussion about the authenticity of that fanfold,  
5 tractor-fed computer paper?

6           A.    I can't remember.  The whole purpose was  
7 forensic examination of the information, the  
8 original data.  So that was kind of the general  
9 subject of everything.  I think I remember  
10 everything being examined and questioned.

11          Q.    But the reason you were there, as far as  
12 you understand it, was to bring and attest to the  
13 pedigree of your classroom notes?

14          A.    That's right.

15          Q.    And nothing else?

16          A.    As far as I know, right.

17          Q.    You mentioned something that I want to  
18 ask you about and I believe it's the last of the  
19 questions I have for you.  You made some reference  
20 to the graphics.  I should look at Exhibit 2 so  
21 that if I refer to any page numbers.  Have you done  
22 publications, sir, with the graphics that were  
23 included in them?

24          A.    Excuse me?

1 Q. Have you done publications of your own  
2 with graphics that were part of the publication?

3 A. I'm not sure I understand your question.  
4 I have publications that have graphics in it, yes.  
5 Are you talking about a recent time?

6 Q. At any time.

7 A. In a recent time, with the advent of  
8 personal computers everybody can do a pretty good  
9 job of doing it on their own. At this time  
10 graphics like this were done by more professional  
11 graphic artists.

12 Q. I'm referring specifically to Page 44 of  
13 Exhibit 2 to Dr. Brock's deposition.

14 A. Right.

15 Q. Do you see on that graphic the MIT  
16 Instrumentation Laboratory marking?

17 A. Right.

18 Q. Do you know what that is, sir? I know  
19 you know what the MIT Instrumentation Laboratory  
20 is, but do you know what the significance of that  
21 identification on that graphic is?

22 A. That's what was commonly included. I'm  
23 not sure. I think these may also be used for  
24 slides. I'm not sure. But I think that he may

1 have used some of the slides in the class. In  
2 other words, if he had this slide prepared -- not  
3 necessarily for the class itself, but if he had it  
4 available, he may have used it as a slide. In its  
5 original form it was in color. I remember that.

6 Q. And what, if any, significance, to your  
7 knowledge, is the identification?

8 A. Well, I think if this slide had been used  
9 sometime in the past in some kind of presentation  
10 outside the lab, then it would have been  
11 identified.

12 Q. And in your experience, does that label  
13 appearing on the chart on Page 44 relate in any way  
14 to the MIT Instrument Laboratory preparing that  
15 graphic?

16 A. Probably, because they are the ones that  
17 did this. But it would not necessarily have been.

18 Q. Have you in your own publications used  
19 graphics with similar identification tags on it?

20 A. On the graphic itself? In my experience  
21 the graphic is on the page itself. I mean it's on  
22 the -- the graphic, if we are talking about a  
23 Vu-Graph, the graphic is really part of the  
24 Vu-Graph, I mean the background. It's on every



1 page so the graphic is put on it.

2 Q. And that's consistent with your  
3 experience?

4 A. Right. In this case, this thing is the  
5 whole Vu-Graph, the whole slide.

6 Q. And again, we are still referring to what  
7 appears on Page 44?

8 A. Right.

9 Q. And it appears on Page 46 as well?

10 A. Yes.

11 Q. It appears to be on Page 46?

12 A. Could be.

13 Q. Page 47?

14 A. Yes.

15 Q. The same appears?

16 A. Yes.

17 Q. Page 48?

18 A. Yes.

19 Q. Page 51?

20 A. No.

21 Q. Page 52?

22 A. No.

23 Q. On 51 and 52, those are graphics, are  
24 they not, that relate to the controversy, that

1 begins on Page 49?

2 A. Right. I think the date on all of these  
3 is July of '59. The ones that have the graphic  
4 that say the Instrumentation Lab have the date of  
5 July of '59.

6 Q. Again, for the record, you were drawing  
7 my attention to Page 47 of Exhibit 2.

8 A. That's right.

9 Q. And I believe if we review the charts,  
10 the graphs that we went over, they also bear the  
11 same July '59 date?

12 A. Right.

13 Q. And I'm looking at Page 44, Page 45, Page  
14 46, and Page 47, and Page 48.

15 A. Right. You asked when in my experience  
16 this is put on. I believe these were slides if it  
17 were part of a presentation.

18 Q. Understood. Lastly -- I misspoke before,  
19 Dr. Brock. Lastly, you indicated you received a  
20 call at some point in the year 2000 from  
21 Dr. Battin. And he was calling you for what  
22 reason?

23 A. To see if I had any old class material.  
24 To tell you the truth, I can't remember exactly

1 what the first question was. Whatever his question  
2 was led me to look into my old things that I had  
3 saved since that time to see if I could find any  
4 class notes from that time.

5 Q. And did he tell you what to look for?  
6 Did he say: I think I put that in some class  
7 notes, or do you remember me talking about it in  
8 class?

9 A. He didn't remember that he had handed  
10 these things out (indicating).

11 Q. So what were you to look for?

12 A. Well, just for my class notes, in other  
13 words, my handwritten class notes. I looked  
14 through them, this material.

15 Q. Let me see if we can't agree on what your  
16 testimony is about the contact from Dr. Battin to  
17 you. He calls you on the phone?

18 A. That's right.

19 Q. That's the means of contact?

20 A. That's right. He said that there was a  
21 lawsuit. I'm sorry.

22 Q. Go ahead.

23 A. What did he say?

24 Q. What's the best that you can recall about

1 what he said and what you said?

2 A. That there was a lawsuit and there was  
3 this material that was in contention. And he was  
4 trying to find a needle in the haystack, looking  
5 for material that's that old. I said that I don't  
6 throw much away, as my wife complains. I said that  
7 I would go look and see what I have.

8 Q. You found that in the fashion that you  
9 described?

10 A. That's right.

11 Q. Did you find any of your own classroom  
12 notes?

13 A. Yes.

14 Q. Where are those now?

15 A. Probably still in the same box.

16 Q. Relating to this subject matter?

17 A. The classes, the scribbles that I took.

18 Q. Relating to this subject matter?

19 A. Relating to the subject, right. I think  
20 the ones that I took, I think my class notes were  
21 primarily when I took the course as opposed to when  
22 I was a teaching assistant for it.

23 Q. So you retrieved this volume?

24 A. Right.

1 Q. And did you retrieve your own --

2 A. I looked through it and I didn't see  
3 anything in reference to what we are talking about  
4 in my class notes.

5 Q. So you -- let's be clear as to what you  
6 did. In response to his telephone call you went  
7 searching the Dr. Brock archives?

8 A. Right.

9 Q. And in the Dr. Brock archives you found  
10 the volume from which Exhibit 2 now exists?

11 A. Right.

12 Q. And you found your own personal notes?

13 A. Yes.

14 Q. Handwritten notes?

15 A. A spiral ring.

16 Q. Where is that particular document today,  
17 sir?

18 A. I think it's in the same box that this  
19 came out of.

20 Q. And, I take it, that's been in your  
21 possession since the day last year when you  
22 uncovered it?

23 A. Yes.

24 Q. As is the spiral notebook?

1 A. Yes.

2 Q. And you examined the spiral notebook and  
3 you did not find anything relative to this subject?

4 A. In my cursory look-through I didn't see  
5 it.

6 Q. And as a result of that or those  
7 discoveries, were you back in communication with  
8 Dr. Brock?

9 A. Yes. And I --

10 Q. Excuse me, Dr. Battin.

11 A. No problem.

12 Q. You were back in touch with Dr. Battin?

13 A. Yeah, I called him back.

14 Q. And what did you indicate to Dr. Battin  
15 in that phone call?

16 A. I said I found these notes that were  
17 handed out, that you handed out in the class, that  
18 covered that material.

19 Q. And what did Dr. Battin say?

20 A. He said, "Good." I think I made him a  
21 copy of it myself, without taking the staple out,  
22 so that it would have integrity that no pages were  
23 added or anything.

24 Q. What did you do with the copy? Did you

1 give it to him?

2 A. I think so.

3 Q. How about with your own spiral notes?

4 A. I didn't do anything with them. I can't  
5 remember now.

6 Q. Did you make a copy of those, if you can  
7 recall?

8 A. I can't remember.

9 Q. You are sure that they still exist if  
10 anybody would want to examine them?

11 A. Yes.

12 Q. With or without your interpretation?

13 A. Right. I think I can find them again. I  
14 haven't thrown out anything since.

15 Q. Lastly, Dr. Brock, this set of notes  
16 that's now Exhibit 2 is contained in the volume we  
17 discussed with, at least it's bracketed by two  
18 other sets of notes authored by Dr. Battin. The  
19 notes that comprise Exhibit 2 are co-authored by  
20 J. Halcomb Laning?

21 A. Right.

22 Q. What was the position of this Laning in  
23 the '61-'62 period?

24 A. He was in the MIT Instrumentation Lab

1 also.

2 Q. Was he one of your professors?

3 A. No. I don't know that he ever taught a  
4 course. He was in the laboratory, not in the  
5 academic department. I know that the two of them  
6 had collaborated on a book earlier that was one of  
7 my textbooks in another course.

8 Q. Did you ever meet Dr. Laning?

9 A. Oh, yes.

10 Q. As a student or a colleague?

11 A. As a -- when I was working here he was  
12 around, just like anyone else. He's still around.

13 Q. At MIT or Draper?

14 A. At Draper. I don't know how old he is  
15 now, but he still comes in fairly regularly.

16 MR. GRIFFIN: That's all that I have.

17 EXAMINATION

18 BY MR. SWOPE:

19 Q. A couple of follow-up questions. Could  
20 you turn to those pages in your Acco binder, Page  
21 46, the figures on Page 46.

22 A. Okay.

23 Q. As Mr. Griffin was going through those  
24 pages with you, did you notice there were two Page



1 46s in the original version?

2 A. No, I didn't.

3 Q. As Mr. Griffin went through with you just  
4 now, did you come upon two Page 46 duplicates?

5 A. Yes.

6 Q. If you look at the document that we've  
7 marked as Exhibit 2, there's only one Page 46; is  
8 that correct?

9 A. Yes.

10 Q. It's only been photocopied once?

11 A. It looks like it.

12 Q. Would you look at the Page 46 in Exhibit  
13 2. Is it any different from either of the Page 46s  
14 in your original?

15 A. Any different. I hadn't noticed that  
16 before. I'm just assuming that when they put this  
17 together that they wound up getting two pages.

18 Q. When you say "this," you're referring to  
19 the original version?

20 A. The original version.

21 Q. The document in the Acco binder?

22 A. Right.

23 Q. So the two versions --

24 A. Whoever was copying was sharp enough to

1 notice that and not copy it.

2 Q. The two pages of Page 46 in the original  
3 are identical; is that correct?

4 A. As far as I can see.

5 Q. You told Mr. Griffin that you had looked  
6 at the notes that you had taken in Dr. Battin's  
7 class which I believe you referred to as a spiral  
8 binder.

9 A. Right.

10 Q. You looked at those cursorily?

11 A. I kind of looked through. I remember him  
12 talking in class and I said: Did I take notes? I  
13 don't write down everything in a class, only things  
14 that I needed to remember like equations and things  
15 like that. This was more presented as a concept.  
16 It wasn't the kind of thing that I would expect to  
17 be quizzed on. So I didn't see anything.

18 Q. When you referred to "it" and "this"  
19 you're referring to this trajectory?

20 A. A multireconnaissance trajectory.

21 Q. Am I correct that the notes you took in  
22 the spiral notebook were from the time you were a  
23 student in Dr. Battin's class?

24 A. I believe so.

1 Q. As opposed to being a teaching assistant?

2 A. I believe so. For economy reasons I  
3 probably kept the same. My practice with marking,  
4 I handwrite the course number in the corner and  
5 that became the spiral notebook for a particular  
6 course. When I sat in the course again I probably  
7 had that same notebook with me.

8 Q. But you wouldn't have taken notes in the  
9 same amount of detail?

10 A. I probably wouldn't.

11 Q. You do have a clear recollection of  
12 Dr. Battin talking about --

13 A. Yes.

14 Q. -- this trajectory in a class either when  
15 you were a TA or a student?

16 A. That's right.

17 Q. No doubt in your mind about that?

18 A. No.

19 Q. Finally, Mr. Griffin asked you when  
20 Dr. Battin described that whether he described it  
21 as a new thing. You said it fell out of the other  
22 work. Could you describe what you mean by that.

23 A. It would be hard for me to reconstruct  
24 what I knew then. As I testified, I read through

1 this out of curiosity, these last three pages. And  
2 it was just showing that when a trajectory went to  
3 one planet that trajectory intersected the orbit of  
4 another planet, and that was the hint that maybe  
5 you could do both of them at once. That would be a  
6 pretty neat thing to do.

7 Q. Dr. Battin described that as something  
8 that he had discovered or thought of?

9 A. I don't -- he was giving the lecture. So  
10 he didn't qualify what he was saying as: This is  
11 something I discovered. He just -- it would be  
12 really hard for me to remember any details like  
13 that. I don't think it would have been usual if he  
14 had said: I made this discovery. Just you can do  
15 this.

16 Q. Do you recall him saying whether this was  
17 discovered by anyone else?

18 A. I don't remember him saying anything.

19 Q. Do you recall him saying whether it had  
20 been thought of by Dr. Minovitch?

21 A. No. You mean at that time?

22 Q. Yes.

23 A. No.

24 EXAMINATION

1 BY MR. GRIFFIN:

2 Q. The same question with respect to  
3 Dr. Laning, did he say anything about Dr. Laning  
4 being involved in the analysis of this concept?

5 A. I don't think he would have said one way  
6 or the other. Laning and Battin were colleagues.  
7 They worked together a lot. Dr. Laning's  
8 particular work and a lot of that at that time was  
9 classified but it had to do with ballistic missile  
10 guidance. The whole thing of guiding a trajectory  
11 he was an expert on.

12 Q. I promise this is my last question. You  
13 were indicating that Dr. Battin said that if you  
14 draw these trajectories then you can see where the  
15 planets intersect and maybe multiple planets are  
16 the way to go. What diagrams or charts were you  
17 referring to as an example of that?

18 A. This one. This is the one -- that  
19 refreshed my memory from reading the text.

20 Q. I didn't know if you were --

21 A. Right.

22 Q. Listen to my question, please.

23 MR. SWOPE: For the sake of the  
24 record, he was referring to Page 55.

1 MR. GRIFFIN: You anticipated my next  
2 question.

3 Q. When you were referring to that in your  
4 answer to Mr. Swope, you said that the graphics  
5 depict -- paraphrasing what you said -- but  
6 multiple planet intersections maybe could be done  
7 this way. You were gesturing toward what is now,  
8 or parts of what is now Exhibit 2 from your bound  
9 volume.

10 A. That's right.

11 Q. What particular charts within that, sir,  
12 are examples --

13 A. One that --

14 Q. Let me finish.

15 -- are examples of that to your mind?

16 A. That was Page 44, Figure 21, which is a  
17 Venusian reconnaissance trajectory. In the  
18 Venusian reconnaissance trajectory, if you are  
19 looking to go to Venus you see a trajectory almost  
20 going to Mars. If you look at that trajectory that  
21 was made in '59, you're going to say what if Mars  
22 were there when your spacecraft went by. You could  
23 go to Mars too. Of course, that's a lot harder  
24 because everything has to be in sync.

1 Q. So that's Page 44, Figure 21?

2 A. That's correct.

3 Q. Is that concept also depicted on Page 48,  
4 Figure 25, to take one randomly?

5 A. That's a trajectory to Mars. That  
6 particular one doesn't go inside Earth. If I look  
7 through them, I might find one -- I haven't looked  
8 at these. None of the Martian -- none of the  
9 trajectories that were shown here that go only to  
10 Mars show going inside an Earth orbit.

11 Q. How about as an aid to reaching -- what  
12 about with regard to Figure 26 that appears on Page  
13 51?

14 A. The figure that appears as 26 is the  
15 result of looking at the one that -- the thing that  
16 would come naturally to mind when you are looking  
17 at the figure on Page 55, that worked out to see  
18 what date would actually work when you could launch  
19 from Earth to Venus.

20 Q. You're referring to, referring to Figure  
21 26 on Page 51?

22 A. Right.

23 Q. With Figure 21 appearing on Page 44?

24 A. That's right.

1 Q. The same question with regard to -- I'm  
2 sorry -- Figure 27 appearing on Page 52?

3 A. That's right.

4 Q. The same depiction of the concept?

5 A. Yes, basically, as far as I can see now.

6 MR. GRIFFIN: I have no further  
7 questions.

8 MR. SWOPE: Thank you.

9 (1:45 p.m.)

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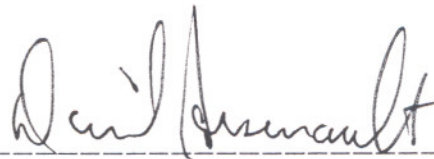
23

24



## 1 CERTIFICATE OF NOTARY PUBLIC

2  
3 I, David A. Arsenault, the officer  
4 before whom the foregoing deposition was taken, do  
5 certify that LARRY DAVIS BROCK, whose testimony  
6 appears herein, was duly sworn by me; that the  
7 testimony of said witness was taken by me in  
8 machine shorthand and thereafter reduced to writing  
9 by means of computer-aided transcription; that said  
10 deposition is a true record of the testimony given  
11 by said witness; that I am neither counsel for,  
12 related to, nor employed by any of the parties to  
13 the action in which this deposition was taken, and  
14 further that I am not a relative or employee of any  
15 attorney or counsel employed by the parties  
16 thereto, nor financially or otherwise interested in  
17 the outcome of the action.

18  
19   
20 \_\_\_\_\_

21 David A. Arsenault

22 Notary Public in and for

23 The Commonwealth of Massachusetts

24 My commission expires: May 12, 2006

## I N D E X

-----  
LARRY DAVIS BROCK

## EXAMINATION BY

MR. SWOPE	3
MR. GRIFFIN	23
MR. SWOPE	56
MR. GRIFFIN	61

## EXHIBITS MARKED

1	4
2	7

Exhibits copied by reporter. Originals returned to Jeffrey Swope, Esq.; cc's sent to Kirk Griffin, Esq.

COMMONWEALTH OF MASSACHUSETTS

EXHIBIT  
Brock 1  
5-7-01 OA

Middlesex, ss.

Superior Court  
Civil Action No. 00-5159(J)

MICHAEL A. MINOVITCH,  
Plaintiff,

v.

RICHARD H. BATTIN, and DOES 1  
THROUGH 20,  
Defendants.

M. R. Civ. P. 30(a) and 45

SUBPOENA DUCES TECUM

To: **Larry D. Brock**  
**10 Woodpark Circle**  
**Lexington, MA 02421**

**Greetings:**

YOU ARE HEREBY COMMANDED in the name of the Commonwealth of Massachusetts in accordance with the provisions of Rules 30(a) and 45 of the Massachusetts Rules of Civil Procedure to appear and testify on behalf of Richard H. Battin before a Notary Public of the Commonwealth or other person authorized to administer oaths, at the office of Draper Laboratory, 555 Technology Square, in the City of Cambridge, on the 7th of May, 2001, at 12:00 noon, and to testify as to your knowledge, at the taking of the deposition in the above-entitled action.

And you are further required to bring with you all documents and tangible things identified in the attached Schedule A.

Hereof fail not as you will answer your default under the pains and penalties in the law in that behalf made and provided.

Dated: April 10, 2001

Colleen B. Melia  
Colleen B. Melia  
Attorney for Richard H. Battin  
Palmer & Dodge LLP  
One Beacon Street  
Boston, MA 02108

Christine M. Benson  
Notary Public  
My commission expires: 4/8/2005

Schedule A

1. Your binder containing Lecture Notes for Class 16.46, "Astronautical Guidance," from 1961.

EXHIBIT

Book 2  
5-7-01 DA

Lecture Notes  
on

The Trajectory Problem As It Relates To The Mission  
For Interplanetary Flight

by

Richard H. Battin

J. Halcombe Laning, Jr.

August, 1961

for class 16.46

Massachusetts Institute of Technology  
Cambridge 39, Massachusetts

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