

IN THE UNITED STATES DISTRICT COURT  
FOR THE NORTHERN DISTRICT OF ILLINOIS  
EASTERN DIVISION

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THE UNIVERSITY OF ILLINOIS FOUNDATION, :

Plaintiff and :  
Counterclaim Defendant, :

-against- :

BLONDER-TONGUE LABORATORIES, INC., :

Defendant and : Civil Action  
Counterclaimant, : No. 66 C 567

-against- :

JFD ELECTRONICS CORPORATION, :

Counterclaim Defendant. :

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DEPOSITION of ROBERT F. HESLIN, taken at the  
offices of Messrs. Ostrolenk, Faber, Gerb & Soffen,  
10 East 40th Street, New York, New York, on  
February 14, 1967, at 1:30 o'clock P.M., pursuant  
to Notice, before Isaac H. Shapiro, a Notary  
Public of the State of New York.

STONE REPORTING, INC.  
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A P P E A R A N C E S :

MESSRS. HOFGRN, WEGNER, ALLEN, STELLMAN & McCORD,  
Attorneys for Defendant and Counterclaimant.

BY: MESSRS. RINES & RINES,  
10 Post Office Square,  
Boston, Massachusetts,  
ROBERT H. RINES, ESQ., of Counsel

-and-

JULIUS E. FOSTER, ESQ., of Counsel and Local  
Solicitor,  
420 Lexington Avenue,  
New York, New York.

MESSRS. SILVERMAN & CASS,

Attorneys for Counterclaim Defendant.

BY: MESSRS. OSTROLENK, FABER, GERB & SOFFEN,  
10 East 40th Street,  
New York, New York,  
JEROME M. BERLINER, ESQ., of Counsel.

IT IS STIPULATED AND AGREED by and between  
counsel for the respective parties that the tran-  
script of the record of the within deposition may  
be subscribed and sworn to by the witness before  
any Notary Public of the State of New York with  
the same force and effect as if subscribed and  
sworn to before a Clerk or Justice of this Court.

2 R O B E R T F. H E S L I N, called as a witness,  
3 being first duly sworn by the Notary Public, testified  
4 as follows:

5 DIRECT EXAMINATION

6 BY MR. BERLINER:

7 Q Please state your name and address for the record.

8 A Robert F. Heslin, 281 Thornell Road, Pittsford,  
9 New York.

10 Q Where are you employed?

11 A General Dynamics Corporation, Rochester, New York.

12 Q What type of work do you do?

13 A I am a Senior Project Engineer on the F111 pro-  
14 gram.

15 Q What is the F111 program?

16 A The F111 program is a weapons system being built  
17 by General Dynamics for the United States Air Force and  
18 United States Navy.

19 Q Where did you work prior to your employment with  
20 General Dynamics?

R.H. 21 A Fairchild <sup>STRATOS</sup> ~~Stratos~~ Corporation in Wyandanch, New  
22 York.

23 Q What position did you hold at Fairchild?

24 A Starting with the last and working back?

25 Q Any order you care to.



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A When I left I was a senior electronics engineer. Prior to that I was an electronics engineer. Prior to that I was an associate engineer and prior to that I was a senior laboratory technician.

Q What were your duties while employed at Fairchild?

A When I first started with the company I was assigned as a technician in the Microwave and Antenna Development Department, after which I became an associate engineer. I was in charge of the laboratory facilities -  
~~supervision.~~

*RH*  
*RH*

In 1961 I was assigned to the <sup>Yuma</sup> Unit Test Station in Yuma, Arizona as a field service engineer, after which I came back to Wyandanch, New York. I was an electrical engineer and subsequently a senior electrical engineer.

Q During what period of time were you employed by Fairchild?

A From the summer of 1959 to the summer of 1963.

Q What is your educational background, at least past the high school level?

A I have an Associate's degree in Applied Science from the Long Island Agricultural & Technical Institution at Farmingdale, Long Island. I graduated in June of 1953.

Q In the period from June of 1953 until your

1  
2 employment with Fairchild commenced, were you employed in  
3 any technical capacity?

4 A Yes. In the summer of 1953 to the summer of 1955  
5 I worked as a technician in the microwave measurements  
6 laboratories for Sperry Gyroscope Company, Lake Success,  
7 Long Island.

8 From 1955 to 1958 I was self-employed. I owned  
9 a service station in East Meadow, Long Island.

10 In 1958 I went to work for the Airborne Instru-  
11 ments Laboratories in <sup>MEVILLE</sup> ~~Melville~~, Long Island, for  
12 approximately six months.

13 *RA* After that I went to work for Fairchild <sup>STRATAS</sup> ~~Strates~~  
14 Corporation.

15 Q I hand you a copy of a publication called QST,  
16 the June 1963 issue, and I ask you whether you are the  
17 Robert E. Heslin designated as the author of an article on  
18 Pages 50, 51 and 52.

19 A Yes, I am.

20 MR. BERLINER: Off the record.

21 (Discussion off the record.)

22 MR. BERLINER: Please mark, as Exhibit J-10,  
23 the cover page of QST of June, 1963, and Pages 50,  
24 51 and 52.

25 (Cover page of QST of June, 1963, and

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Pages 50, 51 and 52, were marked Exhibit J-10 for identification.)

Q When did you submit this article to QST?

A In November of 1961, November 13, 1961.

MR. BERLINER: Please mark this as Exhibit J-11 for identification. It is the original manuscript.

(Original manuscript above referred to was marked Exhibit J-11 for identification.)

Q I hand you Exhibit J-11 and ask you if you recognize it.

A yes.

Q What is it?

A It is the original manuscript that was packaged for me by the Publications Department of Fairchild <sup>STRATOS</sup> ~~Stratos~~ Corporation. It was mailed to me in Yuma, Arizona. I in turn submitted it to QST Magazine.

Q Is it true to say that the manuscript, Exhibit J-11, subsequently became the article, Exhibit J-10 for identification?

A Yes.

Q I notice that Exhibit J-11 for identification has a number of pencil markings on it. Do you know who placed these markings there?

A I would assume that they were placed there by



2 people at QST.

3 Q But you did not place them there?

4 A No.

5 Q Exhibit J-11 for identification bears a date on  
6 the first page of November 13, 1961. Does that date have  
7 any significance in connection with the preparation of J-11?

8 A That was the date that it was -- it would be  
9 shortly thereafter, within a few days, that it was mailed  
10 to QST.

11 Actually, I think the November 13th is probably  
12 the date that it was mailed to me from Long Island and it  
13 was within several days after that that I submitted it to  
14 QST.

15 Q Why was Exhibit J-11 prepared in Long Island  
16 when you were apparently in Arizona in November of 1961?

17 A The original drafts of that article were prepared  
18 while I was still in Wyandanch, Long Island. I was trans-  
19 ferred to Arizona and Mr. <sup>R</sup>~~Ralph~~ Logan, who at that time  
20 was my section head in charge of the laboratory, followed  
21 it up with the Publications Department in putting the  
22 package into condition for a formal submittal to QST.

RH 23 Q Is the <sup>R</sup>~~Ralph~~ Logan you mentioned one and the same  
RH 24 person as <sup>R</sup>~~Ralph~~ Logan at the end of the QST article?

25 A Yes, it is.

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Q Do you have the original drafts or copies of original drafts of J-11?

A I do (handing folder to counsel).

MR. BERLINER: The witness has handed me a folder that I would like marked as Exhibit J-12 and as reference is made to particular pages, these pages will be given individual identifications.

(Folder above referred to was marked Exhibit J-12 for identification.)

Q Referring to Exhibit J-12, please indicate those papers that were created preliminarily to the preparation of Exhibit J-11.

A Do you want me to mark them?

MR. BERLINER: I would like the reporter to mark them with consecutive numbers, starting with J-13.

THE WITNESS: This is the plot of standing wave ratio versus frequency.

MR. BERLINER: Mr. Reporter, will you mark that paper Exhibit J-13 and the rest of the papers indicated by the witness with consecutive numbers.

(Papers contained in Exhibit J-12, as indicated by the witness, were marked respectively Exhibits J-13 through J-50 for identification.)

Q Among the Exhibits J-13 through J-50 there are a



2 number of curves. Did you draw these curves?

3 A Yes, I did. The curves on this first sheet I  
4 drew. These other sheets are antenna patterns which are  
5 recorded automatically.

6 Q Certain of the Exhibits J-13 through J-50 are  
7 handwritten or contain hand sketches. Did you prepare  
8 each of those?

9 A Yes, I did.

10 Q Exhibits J-22, J-23 and J-24 each have hand-  
11 written corrections. Did you make some or all of these  
12 corrections?

13 A I put in the reference to Isbell's article.  
14 The rest of the corrections were made by Mr.  
15 Ralph Logan.

16 Q Do you know when these corrections were made and  
17 the reference to Isbell's article added?

18 A They were added between October 18, 1961 and  
19 November 13, 1961; some time before this first draft and  
20 the final draft.

21 Q Exhibits J-20 and J-21 each contain stamp  
22 notations on the backs. Will you explain what those  
23 notations are?

24 A That is a document control number used by Fair-  
25 child <sup>STRATOS</sup> ~~Stratos~~ Corporation Publications Department.

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Q Did you prepare the article of J-10 under the direction of your employer, Fairchild?

A You mean was I directed to do this by him?

Q Were you directed?

A No, I wasn't directed.

Q Is the antenna which appears in the photographs, J-20 and J-21, the same antenna that appears in the article J-10?

A Yes, it is.

Q Is that antenna in existence?

A Yes, it is.

Q Where is that antenna?

A In this room.

MR. BERLINER: Please mark the antenna as Exhibit J-51 for identification.

(Antenna above referred to was marked Exhibit J-51 for identification.)

Q At the central region of J-51 there appears to be a mast mounting means that is not shown in the photographs J-20 and J-21. Did you add the mounting means to the antenna?

A No, I did not.

Q Do you know who did?

A It is my belief that Mr. Van Field added this.

2 Q Since the time of the construction of J-51, in  
3 whose custody has this antenna been?

4 A Within the custody of Mr. Van Field.

5 Q Do you know where Mr. Field lives?

6 A Mr. Field's address at the time that I presented  
7 to him was in Center Moriches, Long Island. I do not know  
8 his present address.

9 Q Do you know where Mr. Field can be contacted now?

RH 10 A I <sup>HAVE</sup> had a telephone number in my office. I don't  
11 have it with me. He is a school teacher, I believe, in  
12 Blue Point, Long Island, but I am not certain of that.

13 Q Is that Bellport?

14 A Bellport, that's right.

RH 15 Q How did you determine the <sup>SPACING</sup> ~~space~~-in between the  
16 booms of J-51?

RH 17 A The original idea came from an article by Isbell  
18 in May, 1960, proceeding <sup>OF</sup> to the IRE on antennas and pro-  
19 pagation.

20 The actual calculation of the spacing and element  
21 lengths were performed by myself.

22 Q Does the Isbell article you refer to indicate  
23 how to calculate boom spacing?

24 A No, it does not.

25 Q How are you able to calculate boom spacing?



2 A From reading the article it was brought to my  
3 attention that Mr. Isbell was using parallel balanced con-  
4 ductors and parallel balanced conductors, the impedance of  
5 which is spelled out in the various literature in the  
6 field, namely the I.T.T. handbook.

7 Q Do you have a more complete title for the I.T.T.  
8 handbook?

9 A No, I don't. It is a publication that is put  
10 out every few years by I.T.T. over at <sup>NUTLEY</sup> Rutland, New Jersey.  
11 It is a standard engineering handbook.

12 Q The article, J-10, contains a statement that the  
13 antenna can also be fed with open wire line. Did you ever  
14 feed the antenna, J-51, with an open wire line?

15 A No, I did not.

16 Q Is there any particular reason why you didn't?

17 A When I determined the size of booms that I was  
18 going to use and I calculated what the boom spacing would  
19 be for a characteristic impedance of 300 ohms, I found  
20 that the spacing was in the order of several inches; this  
21 in addition to the fact that the type of measuring equip-  
22 ment that I had available at the time required 50 ohms  
23 unbalanced transmission line.

24 Q Do you have copies of any correspondence with  
25 QST in connection with the article, J-10?

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A Yes, I do.

Q May I have it?

A Yes (handing folder to counsel).

MR. BERLINER: Please mark the pages within this folder with individual identification numbers.

(Pages in folder above referred to were marked respectively Exhibits J-52, J-53, J-54A, J-54B and J-55 for identification.)

Q What is Exhibit J-54A and Exhibit J-54B?

A J-54A and B is a two-page letter in answer to an inquiry dated February 13, 1963 to me from Laird Campbell.

Q Is the inquiry J-55?

A It is the inquiry, J-55.

Q When did you write J-54A, J-54B?

A February 20, 1963.

Q Approximately when did you come into possession of Exhibit J-52 and J-53?

A Approximately February 4, 1967.

MR. BERLINER: Please mark this Exhibit J-56.

(Document was marked Exhibit J-56 for identification.)

Q Does your signature appear on Exhibit J-56?

A Yes, it does.

Q Did you write the letter of J-56?

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A Yes, I did.

Q Was the letter of J-56 written on 1 April, 1963?

A Yes, it was.

Q Referring to the photographs, J-20 and J-21, do you know why the antenna in those photographs appears to extend vertically?

A This is because the antenna was mounted on a small stand, mounted vertically for the ease of photography.

Q Was the antenna operated in that position when you were taking measurements?

A No, it wasn't.

Q What position was it operating in?

A It operated horizontally with respect to the earth.

Q Prior to submission of J-11 to QST, did you discuss the contents of J-11 with anyone?

A Yes, I did. The contents were discussed with Mr. Ralph Logan and Mr. Van Field, both of the Fairchild Stretos Corporation at the time.

Q Were there any other persons with whom you discussed the contents of J-11?

A Yes, they were discussed with various technicians and associates within the laboratory on an informal basis.

Q Do you recall the names of any of these persons?



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A Mr. Charles Pecorara, Mr. Eugene Katz, Mr. Jesse Trachtenberg, Mr. Henry Jones. That is all I can remember at the moment. All these people were with Fairchild <sup>Stratos</sup> Corporation at the time.

Q When you operated the antenna, Exhibit J-51, did you obtain expected results?

A Yes, I did.

MR. BERLINER: Your witness.

CROSS EXAMINATION  
BY MR. RINES:

Q In connection with your discussion with the people you listed in the laboratory, was this an in-house discussion of proprietary information of the Fairchild <sup>Stratos</sup> Company?

A No, it was not developed in connection with the Fairchild <sup>Stratos</sup> Corporation. This was developed in my own time, using Fairchild's facilities and equipment with the permission of Fairchild supervision.

Q Was the Fairchild Company interested, perhaps, in marketing this product?

A They showed no interest in this particular antenna at the time.

Q Can you tell us briefly why it is they were willing to allow you to use the company's facilities and so

2 forth for this development?

3 A Well, I had previously been assigned to the task  
4 of designing and developing a similar type of antenna for  
5 a classified military program with the company, which I  
6 did successfully, and being interested in amateur radio I  
7 looked upon it as possibly an extension that would be of  
8 general interest to radio amateurs throughout the world.

9 Q Did you try to elicit interest from the Fairchild  
10 Company in possibly building this antenna?

11 A No, I did not.

12 Q Did they have a license for this design of yours  
13 or shop rights, do you know?

14 A Not to my knowledge.

15 Q You indicated that you added to your draft, J-22,  
16 a reference to the D. E. Isbell article of May, 1960, IRE  
17 transaction. Do you consider that in designing the antenna  
18 described in the article, J-10, you have followed the  
19 teachings of Mr. Isbell?

20 A Yes, from an electrical standpoint only. The  
21 electrical design was based on Mr. Isbell's article. The  
22 mechanical packaging was my own conception.

23 Q What do you mean by "mechanical packaging"?

24 A The means of mounting the elements to the boom.

25 Q The brackets that hold dipoles on to the boom?

RH 2 A Yes, <sup>and</sup> the wooden block spaces to separate the two  
3 booms of the antenna.

4 Q You were aware then of Mr. Isbell's teaching that  
5 it was desirable to try to get the dipole elements of each  
6 pair of dipoles as close to coplanar as possible?

7 A It is my recollection from the article that Mr.  
8 Isbell stated that the space between the booms was not  
9 found to be critical.

10 Q Could they be separated in accordance with Mr.  
11 Isbell's teaching as much as a half wave length?

12 A I do not recall this in the article, this par-  
13 ticular statement.

14 Q Do you recall that in the article they are  
15 described as very close together?

16 Before you look at the article, I would like  
17 your recollection.

18 A I do not recall any specific requirement as to  
19 what the spacing should be between the booms.

20 The spacing that I provided was strictly on my  
21 own intuition, my own feeling on the matter.

22 Q I note in your various drafts, and I am reading  
23 now from J-28, you say that "The spacing was not found to  
24 be critical but it is suggested that the spacing shown be  
25 adhered to as close as possible." Is that the spacing



2 between the booms?

3 A Well, this sentence here seems to conflict really  
4 within itself. I found, as I recall in making my measure-  
5 ments, that the spacing over the order of an inch or two,  
6 the separation between the booms, did not grossly affect  
7 the performance of the antenna; but in writing the article  
8 and knowing the type of individuals that would be con-  
9 structing this in home workshops, as I recall, I tried to  
10 put this in so that the individuals constructing it would  
11 not go overboard in their boom spacing.

12 Q What do you mean by "overboard"?

13 A Well, when I made the measurements of the antenna,  
14 I moved the boom separation in the order of an inch or two  
15 in either direction and found it not to be critical. I  
16 did not go several inches apart. Therefore, I felt if I  
17 tied it down to a fairly close tolerance, then the indi-  
18 viduals constructing an antenna would not tend to make the  
19 spaces excessive. By "excessive" I mean in the order of  
20 several inches.

21 Q In order to translate for the benefit of the  
22 Court, an inch into a fraction of a wave length, will you  
23 tell us over what frequency range the antenna described  
24 in your article, J-10, was operating?

25 A It was designed to operate from 140 megacycles

2 to 450 megacycles.

3 Q Now, starting at the lower end, will you tell us  
4 what fraction of a wave length the one and a quarter inch  
5 spacing referred to in Figure 4 of your article, J-10,  
6 would be?

7 A May I take time out to make some calculations?

8 Q Please.

9 A At the low end, that is 140?

10 Q Yes.

11 A You want to know what fraction of a wave length  
12 at 140 megacycles is one and a quarter inches. One and a  
13 half per cent of a wave length at 140 megacycles.

14 Q That would be .015 of a wave length?

15 A Yes.

16 Q That is a very small part of a wave length, is  
17 it not?

18 A Yes, it is.

19 Q And if I understand your discussion about going  
20 overboard correctly, what you wanted to insure was that  
21 people who built this antenna, amateurs, for example, were  
22 sure to keep that spacing of that order of .015 of a wave  
23 length and not make it several times or many times that  
24 which would be an appreciable portion of a wave length.  
25 Is that a fair statement?

2 A I think that by talking in terms of a wave  
3 length, that in my original conception of this antenna,  
4 I did not take into consideration what portion of the  
5 wave length one and a quarter inches represented.

6 Q You stated that you had made calculations from  
7 impedance charts or impedance formulas given in a handbook?

8 A Yes, I did.

9 Q Doesn't that impedance formula relate spacing to  
10 wave length?

11 A The formula that I used does not. The equation  
12 that I used was  $Z_0 = 276 \log 10 \frac{D}{d}$ .

13 This equation is correct, to the best of my  
14 knowledge, as I recall it.

15 Q Might I ask you, on a clean sheet of paper, to  
16 write that equation?

17 (Witness writes equation as requested.)

18 MR. RINES: Mark that Exhibit J-57, please, Mr.  
19 Reporter.

20 (Equation above referred to was marked  
21 Exhibit J-57 for identification.)

22 Q Would you, for the benefit of the Court, identify  
23 what the letters in that equation represent?

24 A (Witness marks exhibit as requested.)

25 Q Now, you have indicated that the small letter "d"



2 represents the cross section or diameter of one boom for  
3 our present purposes and the "D," the capital "D" is the  
4 actual distance between the pair of booms?

5 A That is correct.

6 Q What is the actual space of capital "D" in con-  
7 nection with the antenna described in your article, J-10,  
8 for the Exhibit J-51?

9 A Well, it would indicate to me between centers  
10 here that I have called that one and a quarter inches.

11 Assuming that these booms are one inch outside  
12 diameter, the spacing would indicate one-quarter inch.

13 Q So actually, the spacing, capital "D" between  
14 the booms is one-quarter inch in the antenna of your  
15 article, J-10, and the Exhibit J-56?

16 A That is correct.

17 Q If an inch and three-quarters represented .015  
18 of a wave length, one-quarter of an inch is one-fifth of  
19 that, or .003 of a wave length. Is that fair?

20 A Yes.

21 Q Now, do you know how the formula of Exhibit J-57  
22 was derived; under what assumptions that holds true and  
23 under what assumptions it does not hold true in terms of  
24 the near end radiation fields of energy that may be propo-  
25 gated along the line?

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2 A Well, this equation applies to basically two  
3 parallel conductors.

4 Since it was my intent to use coaxial line in  
5 feeding this with the possibilities of alternately feeding  
6 it with 300 ohm twin lead, I used this equation just to  
7 arrive at a basic approximation of what the element spac-  
8 ing might be, knowing that that equation does not apply  
9 strictly in this particular case.

10 Q Then certainly if the spacing becomes a sub-  
11 stantial portion of the wave length, of the energy being  
12 propogated, as distinguished from being very small com-  
13 pared to the wave length, you know that this formula for  
14 impedance does not hold.

15 A If you are applying this equation to a log  
16 periodic structure such as that, I can't answer your  
17 question because I don't know.

18 Q Did you, in your determination of lack of  
19 criticality, as you report in your article on the spac-  
20 ing between the one-quarter inch space booms, find any  
21 necessary relationship between the value of that spacing,  
22 the average spacing between successive pairs of dipoles  
23 along the log periodic array and the wave length of the  
24 energy with which the antenna is to operate?

25 A No, I did not.

2 Q Now, we notice in the article, J-10, that your  
3 sentence from Page 1 of the draft, Exhibit J-11, which  
4 merely said, "Provisions are also included to feed it with  
5 open wire line" -- we notice an additional phrase, and I  
6 will read the total thing on Page 50 of Exhibit J-10:

7 "The antenna can also be fed with open wire line  
8 but with a high SWR which would make it essential to use  
9 an antenna coupler at the in-put end of the line."

10 Where did that essential use of the antenna  
11 coupler come from, if you know?

12 A Since the antenna has a basic characteristic of  
13 most antennas of reciprocity -- by that I mean it can be  
14 used both as a receiving and a transmission antenna -- the  
15 high-standing wave ratio present at the feed point would  
16 be detrimental to a transmitter unless one were to employ  
17 an antenna coupling device to match out this standing wave  
18 ratio.

19 Q First of all, is this your language in the  
20 article about the essential requirement of an antenna  
21 coupler at the in-put end?

22 A Yes, it is.

23 Q Why did you add it?

24 Mr. Heslin, I have no desire to trap you. Per-  
25 haps you might look at all the drafts you have shown us



2 and see if when and if you ever added such language.

3 A Well, let me say this: Obviously it is not in any  
4 of my original drafts. I recall discussions about this  
5 feeder and it could very well be that this was added by Mr.  
6 Campbell at QST.

7 Q By "QST" you mean the magazine in which J-10  
8 appeared?

9 A Yes.

10 Q Who is Mr. Campbell?

11 A Mr. Campbell is a member of the technical staff  
12 of the American Radio Relay League, publishers of QST.

13 Q Do you characterize him as an antenna expert?

14 A I do not know Mr. Campbell personally and going  
15 back over the years and the various articles that he has  
16 been involved with, I would say that he is not particularly  
17 an antenna specialist. I would say he is a jack-of-all-  
18 trades.

19 Q Would you say he is as competent as you in the  
20 field of antenna, or more competent?

21 A I can't answer that.

22 Q Do you agree with his statement that an essential  
23 element would be an antenna coupler at the in-put end of  
24 the line if one were to feed the antenna with an open wire  
25 line?

2 A If this particular antenna in its present form  
3 were to be used as a transmitting antenna and fed with open  
4 wire line, let me say of 300 ohms characteristic impedance,  
5 then the answer is yes.

6 Q By <sup>RECIPROCALITY</sup> ~~reciprocity~~, what is the difference if the  
7 antenna is used as a section?

8 A Once again, are you talking about feeding with  
9 open wire line?

10 Q Yes. Is this also a true statement?

11 A That is true, yes.

12 Q Would you be surprised to know that this problem  
13 of feeding the type of antenna under discussion with a 300  
14 ohm parallel line has been successfully effected without  
15 the use of such antenna coupler?

16 A Well, I realize that this is true, that there  
17 are antennas in existence that are doing this. I have  
18 never looked into the method of the feed. I have not been  
19 aware of it. I have not been in the antenna field for  
20 several years. I would be interested in knowing the  
21 details behind it.

22 Q Would it be fair then to say that it certainly  
23 was not obvious to you or to Mr. Campbell, apparently,  
24 that such an antenna could be fed with a parallel wire  
25 line without an antenna coupler at the time you wrote the

2 article?

3 A This antenna?

4 Q Yes, sir.

5 A Yes, some means for matching purposes.

6 Q And if it could be done without an antenna  
7 coupler, this would be a surprise to you at that time?

8 A At that time, yes.

9 Q I note at the bottom of Figure 5 of your article,  
10 J-10, you say, under the picture, that you have exaggerated  
11 the view of the extension of the inner or center coaxial  
12 line conductor.

13 A Yes.

14 Q You then go on to say that the center conductor  
15 should be made as short as possible.

16 A That is correct.

17 Q Wouldn't the length of that inner conductor or  
18 center conductor depend upon how closely you spaced the  
19 booms from each other?

20 A That is correct.

21 Q It is the fact, so the record is clear, that you  
22 never did operate the antenna, J-51, described in your  
23 article, J-10, with a parallel wire in-put feed.

24 A That is correct.

25 Q Would you tell us how you happened to appear



2 here today?

3 A Approximately two weeks ago I went into work and  
4 there was a message on my desk to call Mr. Berliner in New  
5 York. I was busy at the time and didn't get to make the  
6 call and later on that afternoon Mr. Berliner called again  
7 at which time I spoke to him about this.

8 He asked me if I was the author of this article.  
9 He asked me if I had any of the original data to which I  
10 said I had some, I would have to get it together.

11 He asked me who I worked with at QST and I told  
12 him Mr. Campbell.

13 I believe I volunteered the information that I  
14 thought the antenna was still in existence. I don't think  
15 Mr. Berliner asked me, and I told Mr. Berliner who I  
16 thought had it.

17 Q Did Mr. Berliner ask you to appear to give the  
18 facts you have given today?

19 A Yes, he did.

20 Q Did he tell you on behalf of what client?

21 A Yes.

22 Q Did he tell you it was JFD?

23 A Yes, he told me he represented the JFD Corpor-  
24 ation.

25 Q Did he give you the Blonder patent in suit?

2 A He gave me a copy of the original Blonder patent  
3 itself.

4 Q Did you have a chance to study that before you  
5 testified?

6 A Not in detail. I made reference to Section 5  
7 only that was in contention. I glanced very rapidly at  
8 Section 5. I did not study the entire patent in structure  
9 and detail.

10 MR. RINES: I have no further questions.

11 REDIRECT EXAMINATION

12 BY MR. BERLINER:

13 Q Mr. Heslin, when was the last time you had  
14 occasion to use the equation, J-577

15 A Fairly recently there were a number of associ-  
16 ates that I worked with that were interested in home con-  
17 struction of a similar antenna for television use and  
18 asked me if I would design one for them, and I went  
19 rapidly through some of these facts and I did go into  
20 this equation, but the intent was that we would not feed  
21 these antennas with open wire line; that we would feed  
22 them coaxially and use Balun transformers for impedance  
23 matching purposes.

24 I might add that this took place before I was  
25 involved in this. This came out of the blue to me. It

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was not brought back to life by this situation.

Q Referring again to the passage in J-10, "The antenna can also be fed with open wire line but with a high SWR which would make it essential to use an antenna coupler at the in-put end of the line," do you know whether an antenna coupler would be necessary with the antenna, J-51, if the boom spacing approximated that required for a 300 ohm impedance?

A No, it would not be required.

MR. BERLINER: I am finished.

MR. RINIS: I have no further questions.

(Signed) Robert H. Heslin

Subscribed and sworn to before me this 6th day of March 1967.

David L. Reclman  
Notary Public State of New York  
etc.

RAISED  
FEE



CERTIFICATE

1  
2  
3 State of New York )  
                                      )ss  
4 County of New York)

5                 I, Isaac H. Shapiro, a Notary Public duly  
6 commissioned and qualified in and of the County of  
7 Kings, State of New York, do hereby certify that pur-  
8 suant to stipulation there came before me the follow-  
9 ing person, to wit, ROBERT F. HESLIN, who was by me  
10 duly sworn to testify to the truth and nothing but  
11 the truth of his knowledge touching and concerning  
12 the matters in controversy in this cause; that he  
13 was thereupon carefully examined upon the interroga-  
14 tories submitted and his examination reduced to  
15 writing under my supervision; that the deposition  
16 is a true transcript of the record of the testimony  
17 given by the witness and that there were marked upon  
18 this deposition Exhibits J-10 through and including  
19 J-57.

20                 I further certify that I am neither attorney  
21 nor counsel for, nor related to or employed by any of  
22 the parties to the actions on which this deposition  
23 has been taken, and further that I am not a relative  
24 or employee of any attorney or counsel employed by the  
25 parties hereto, nor financially interested in the

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action .

IN WITNESS WHEREOF, I have hereunto set my hand and  
affixed my Notarial Seal this 23<sup>rd</sup> day of February,  
1967.

*Isaac H. Shapiro*

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Notary Public  
State of New York  
No. 24-3613000  
Commission expires  
March 30, 1967

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I N D E X

<u>Witness</u>	<u>Direct</u>	<u>Cross</u>	<u>Redirect</u>
ROBERT F. HESLIN	3	15	28

E X H I B I T S

<u>For Identification</u>		<u>Page</u>
J-10	Cover page of QST of June, 1963, and Pages 50, 51 and 52	5
J-11	Original manuscript	6
J-12	Folder	8
J-13 to J-50	Papers contained in Exhibit J-12, as indicated by the witness, marked respectively	8
J-51	Antenna	10
J-52 to J-55	Pages in folder marked respectively Exhibits J-52, J-53, J-54A, J-54B and J-55	13
J-56	Document	13
J-57	Equation	20

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