height from 300 meters up to significantly increased effective antenna height and not cause or receive any prohibited contour overlap to WCDZ. This poses no realistic limitation on WGGC at Glasgow, Kentucky.

Respectfully submitted,
LOHNES AND CULVER

by _____
Robert D. Culver, P.E.
Maryland RPE 19672

November 12, 1997

FIGURE 1

DDS ENGINEERING
SURVEYING • PLANNING • DESIGNING • INSPECTION
2965 NORTH MILL AVENUE
BOWLING GREEN, KENTUCKY 42104
(502) 843-2247

Dennis D. Smith, P.E., P.L.S.
Sharon H. Smith, Office Manager

24 October 1997

Mr.Paul F. Tinkle, President
Thunderbolt Communications
P. O. Box 318
733 North Lindell
Martin, Tennessee 38237

901-587-9526
FAX 901-587-5079

Re: Re-Measurement of Radio Transmission Tower Height
Warren County, Kentucky

Dear Mr. Tinkle;

As per your request on Wednesday, 22 October 1997, we performed a more detailed field survey of the radio transmission tower located near Meador, Kentucky. As we informed you during our field survey work yesterday, we were denied access to the site by the Owner, at the direction of Reggie Saddler, and, we were not allowed to even occupy our original survey control points. This necessitated that we completely re-run our survey traverse in order to obtain the data listed below, dated 23 October 1997.

All field measurements, both 08 May and 23 October 1997, were made using a Sokkia SET 2BII, serial number D20836. This instrument is a one (1) second, electronic Total Station used in our daily surveying operations utilizing a 30 power telescope.

Using this instrument from our farthest baseline point, 2,000 feet from the base of the tower and over 2,200 feet slope distance from the top of the tower, would yield an accuracy of plus or minus 0.01 foot. However, when sighting the antenna rings with no clearly defined aiming point, etc., it would still be expected to yield plus or minus 0.10 foot accuracy.

Also, as you are already aware, the survey of 08 May 1997 was extremely difficult to perform given the limited time frame which you imposed upon us as well as the extremely poor weather conditions we encountered during the survey, i.e., raining, heavy at times, low ceiling, sometimes as low as 500 feet above tower base grade, and the visibility of the upper 1/3 of the tower was limited and poor at all times during the survey. Because of the

poor previous observation conditions and the forced relocation of the control points, it was desirable to remeasure the clearly visible reference point at the top of the lightning rod. The weather conditions during this survey were considered excellent, with clear, to only slightly cloudy sky, temperatures low to mid 60 degrees.

Below is a summary of the data you requested to be verified as well as some additional data we acquired while at the site. Please note that the top of the steel tower structure and the top of the lightning rod were distinctly visible from our second traverse baseline point.

	08 May 1997	23 October 1997
1. Elevation at base of tower:	676.9	679.6 *
2. Elevation at top of tower lightning rod:	1,642.5	1,642.9 #
3. Height of tower lightning rod above grade:	965.6 feet	963.3 *
4. Elevation at top of antenna, feed stub:	1,633.3	1636.0
5. Height of antenna above grade:	956.4 feet	956.4 *
6. Elevation at top of tower steel:		1639.2

Note that this survey indicated the top of the lightning rod to be 0.4 foot higher than the previous survey. This very closely matches the difference in elevation that was shot to our original control point noted later in this report.

* Calculated; could not see base of tower from any vantage point other than original control points, to which we were denied access.

In addition to the original data we supplied, we also took readings to each of the ten (10) rings on the antenna. From our second traverse baseline point, the rings were distinctly visible with the reference point of view of each ring being the junction of the vertical feed line and the horizontal "T" to each ring. Below is a listing of these readings.

	23 October 1997 Elevation of ring	Distance between rings
Ring #1 (Top ring)	1,633.4	
		10.4
Ring #2	1,623.0	
		10.3
Ring #3	1,612.7	
		10.4
Ring #4	1,602.3	
		10.3
Ring #5	1,592.0	
		10.3
Ring #6	1,581.7	
		10.4
Ring #7	1,571.3	
		10.3
Ring #8	1,561.0	
		10.4
Ring #9	1,550.6	
		10.3
Ring #10 (Bottom ring)	1,540.3	

Please note that all elevations given are "above mean sea level" and were determined from the southern bridge seat elevation of the Kentucky Highway 101 bridge over Barren River, approximately 1.70 miles north of the tower site. These elevations were originally tied to USGS datum. Further note that the reason the bridge seat was used as an elevation source, no USGS benchmarks were found within 4 to 5 miles south of the site and the bridge was the next closest point to the north. Our extensive reference library of all USGS and C&GS Bench Marks covering Kentucky and Tennessee enabled us to search for and attempt to locate any bench mark in the area, however, without success.

Also, please note that the plans for the referenced bridge over Barren River as prepared by the Commonwealth of Kentucky, Department of Highways in 1949, indicate that the southern abutment (used in survey) is setting on solid rock. It would be highly unlikely that this point has settled or moved from the original datum.

We were able to see our original control traverse point used in the survey of 08 May, even though we were not allowed to occupy it. We checked our new elevation traverse into this point with the following results:

Elevation as per survey of 08 May:	681.53
Elevation as per survey of 23 October:	681.98
Net difference	0.45' higher

(Note that this survey indicates our original control point to be 0.4 foot higher than indicated in our previous survey. This very closely matches the difference in elevation of the top of the lightning rod as noted earlier in this report.)

An additional point (end of culvert pipe) was also checked with similar results, even though it had had concrete placed over it.

If you have any questions, please give us a call.

Very Truly Yours,

DDS ENGINEERING

Dennis D. Smith PE, PLS

DDS/com

Attachments: 35mm Photos of tower, antenna section

pc: by FAX to Mr. Bob Culver at 301-776-4499

CERTIFICATE OF SERVICE

I, Tracey S. Westbrook, a secretary in the law firm of Pepper & Corazzini, L.L.P., do hereby certify that true copies of the foregoing "Reply to Section 1.41 Request for Commission Action to Downgrade the Facilities of WGGC(FM), Glasgow, Kentucky to Reflect Its Actual Height" were sent this 13th day of November 1997 by U.S. first class mail, postage prepaid, to the following:

Mark N. Lipp, Esquire
Ginsburg, Feldman & Bress
1250 Connecticut Avenue, N.W.
8th Floor
Washington, D.C. 20036-2603
(Counsel to Skytower Communications, Inc.)

Frank R. Jazzo, Esquire
Fletcher, Heald & Hildreth, P.L.C.
1300 North Seventeenth Street
11th Floor
Rosslyn, Virginia 22209
(Counsel to Zimco, Inc.)

Tracey S. Westbrook

JFG/tsw
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VINCENT A PEPPER
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ELLEN S. MANDELL
HOWARD J. BARR
MICHAEL J. LEHMKUHL *
SUZANNE C. SPINK *
MICHAEL H. SHACTER
KEVIN L. SIEBERT *
PATRICIA M. CHUH

* NOT ADMITTED IN D.C.

PEPPER & CORAZZINI
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E. THEODORE MALLYCK
OF COUNSEL

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December 15, 1997

Ms. Magalie Roman Salas
Secretary
Federal Communications Commission
Washington, D.C. 20554

Re: Erratum to Reply to Opposition to Application for Review, One-Step Application of Thunderbolt Broadcasting Company to Upgrade WCDZ(FM), Dresden Tennessee (FCC File No. BPH-951120IE)

Dear Ms. Salas:

Transmitted herewith on behalf of Thunderbolt Broadcasting Company, is an original and four copies of its Erratum to Reply to Opposition to Application for Review. This erratum is respectfully directed to the full Commission.

Should any questions arise concerning this matter, please contact this office directly.

Sincerely,

John F. Garziglia

Enclosure

JFG/tsw
c:\wp\2329b\xerratum.jfg

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
One-Step Application of	)	FCC File No. BPH-951120IE
Thunderbolt Broadcasting Company	)	
to Upgrade FM Station WCDZ(FM),	)	
Dresden, Tennessee, from	)	
Class A to Class C3	)	

TO: The Commission

ERRATUM TO REPLY TO OPPOSITION TO APPLICATION FOR REVIEW

Thunderbolt Broadcasting Company, by its attorneys, hereby submits this Erratum to its November 5, 1997 Reply to Opposition to Application for Review. This Erratum is being submitted pursuant to the request of Skytower Communications, Inc.

At footnote 2 to the Thunderbolt Broadcasting Company November 5, 1997 Reply to Opposition to Application for Review, it was stated that the Thunderbolt Broadcasting Company surveyor "observed that the location of the antenna bays on the WGGC(FM) tower had been changed since his previous visit". That statement is incorrect. Attached is a letter from Dennis D. Smith, PE, PLS, DDS Engineering of Bowling Green, Kentucky pointing out the

error. Apparently, a two-way communication from the survey field crew's truck two-way radio may have been miscommunicated.

Respectfully submitted,

THUNDERBOLT BROADCASTING COMPANY

By: _____
John F. Garziglia
Its Attorney

Pepper & Corazzini, L.L.P.
1776 K Street, N.W.
Suite 200
Washington, D.C. 20006
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December 15, 1997

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Dennis D. Smith, P.E., P.L.S.
Sharon H. Smith, Office Manager

03 December 1997

Mr.Paul F. Tinkle, President
Thunderbolt Communications
P. O. Box 318
733 North Lindell
Martin, Tennessee 38237

901-587-9526
FAX 901-587-5079

Re: Re-Measurement of Radio Transmission Tower Height
Warren County, Kentucky

Dear Mr. Tinkle;

In regards to my second visit to the WGGC tower site on October 23, 1997, I did not state that the antenna bays have been moved. A two-way communication from our survey field crew's truck two-way radio to my office and relayed to you by telephone may have been miscommunicated regarding this point.

If you have any further questions, please give us a call.

Very Truly Yours,

DDS ENGINEERING

Dennis D. Smith PE, PLS

DDS/com

CERTIFICATE OF SERVICE

I, Tracey S. Westbrook, a secretary in the law firm of Pepper & Corazzini, L.L.P., do hereby certify that true copies of the foregoing "Erratum to Reply to Opposition to Application for Review" were sent this 15th day of December, 1997 by U.S. first class mail, postage prepaid, to the following:

Mark N. Lipp, Esquire
Ginsburg, Feldman & Bress
1250 Connecticut Avenue, N.W.
8th Floor
Washington, D.C. 20036-2603
(Counsel to Skytower Communications, Inc.)

Frank R. Jazzo, Esquire
Fletcher, Heald & Hildreth, P.L.C.
1300 North Seventeenth Street
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Rosslyn, Virginia 22209
(Counsel to Zimco, Inc.)

Tracey S. Westbrook

JFG/tsw
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MARK N. LIPP
(202) 637-9086
mlipp@gfblaw.com

October 16, 1997

HAND DELIVERED

Mr. William F. Caton
Acting Secretary
Federal Communications Commission
Mass Media Bureau
1919 M Street, NW
Room 222
Washington, DC 20554

Re: Response to Request to Downgrade the Facilities of Station WGGC(FM) Glasgow, Kentucky

Dear Mr. Caton:

Heritage Communications, Inc. ("HCI") and Skytower Communications, Inc. ("SCI"), the parties to a pending application for transfer of control of Station WGGC(FM), Glasgow, Kentucky, (BTCH-970822GC) by their respective counsel, hereby jointly respond to the request of Thunderbolt Broadcasting Company ("TBC"), licensee of Station WCDZ(FM), Dresden, Tennessee, to downgrade the class of Station WGGC(FM) to Class C1. TBC asserts that WGGC's antenna height above average terrain (HAAT) is below the minimum height set forth in Section 73.211(b) of the Commission's Rules by 23 feet. TBC bases this assertion on the results of antenna and tower height measurement data provided by a surveyor and an analysis of the terrain data from a consulting firm. However, as will be demonstrated by HCI/SCI, WGGC's HAAT complies with the Commission's minimum height requirements for a Class C station and TBC's attempt to challenge WGGC's classification contains numerous defects and is unreliable.

TBC has been seeking an upgrade of its station's facilities from Class A to Class C3 through the "one-step" application process (BPH-951120IE). However, this application was denied due to TBC's inability to specify a non short spaced site for its Class C3 reference point. See Commission letter of September 27, 1996 (1800B3-RPC). TBC then filed an Application for Review which is currently pending. In its request for Commission review, TBC argued that since WGGC operates at facilities below the maximum for Class C stations, WGGC should not be protected as a maximum Class C station. The Commission has never granted a waiver of its allotment spacing rules under the circumstances presented herein and TBC has failed to cite a case

as precedent for such an extraordinary action. Apparently, TBC has now concluded that its chances of success in its Application for Review are not promising. Thus, in a desperation attempt to have its application granted, TBC asks the Commission to downgrade WGGC to a Class C1.

HCI/SCI states from the outset that they have no objection to WCDZ attaining Class C3 status. But not at the expense of WGGC's status as a Class C facility. TBC has a substantial burden to demonstrate that WGGC's facility which was constructed in 1987 should now be downgraded.

As stated in the attached statement from Paul Dean Ford, WGGC's engineer, the station was carefully constructed to comply with the 300 meter Class C HAAT requirement. There is nothing unusual about WGGC being constructed at or near the minimum height for a Class C station. As the Commission recognized in BC Docket 80-90 nearly 80% of all Class C stations operated close to or at the minimum Class C height See Report and Order 48 FR 29486 (1983). Memorandum Opinion and Order 49 FR 10264 (1984). Furthermore, the transferee, SCI, has every intention of increasing the height of the WGGC tower and the HAAT after it consummates the transaction. The FCC permits all classes of stations, not just Class C, to have the opportunity and flexibility to increase facilities within its class. See e.g. Section 73.215(b)(2)(ii) of the Commissions' Rules. Thus, the Commission should not consider a request to involuntarily downgrade a station's class without requiring a convincing showing. Otherwise, the Commission would encourage the reexamination and resulting disruption to most Class C stations across the country.

TBC's attempt to reclassify WGGC is far from convincing and contains several errors. First, TBC's surveyor failed to properly measure the length of the antenna with its 10 bays from top to bottom. The length of the antenna is 87.12 feet, not 106.5 feet as asserted by TBC, a difference of 19.38 feet.

Second, the surveyor made incorrect assumptions in calculating the elevation at the base of the tower. See attached statement of Paul Dean Ford. These assumptions were based on one unreliable benchmark. Other more reliable benchmarks could have been used to obtain or confirm the data. Perhaps this failure is a result of the surveyor's unfamiliarity with FCC terms and requirements. See attached Affidavit of Billy R. Evans in which Mr. Evans was told by the surveyor that the surveyor did not know the meaning of the terms "height above average terrain" and "center of radiation". Further compounding this problem was the fact that the surveyor chose to perform his survey on a day with fog conditions making it difficult to find benchmarks.

Third, the surveyor's determination of the transmitter site coordinates are also faulty and unreliable. Again the surveyor's methods are not set forth in sufficient detail so that they can be evaluated by the Commission's staff and by the affected station.

While it may be appropriate for the applicant to certify the technical information supplied in an application without submitting the underlying methods of supplying the data, it is entirely inappropriate to do so when an opponent is challenging the data that has provided the basis for a constructed and operating facility. Section 73.312(d) of the Commission's Rules contemplates the use of the more reliable data "in cases of dispute". As a result of the surveyor's faulty methods and unreliable data, TBC's consulting engineering firm was unable to accurately extrapolate the data into a correct HAAT.

On the other hand, HCI/SCI hired a professional tower climber to verify the relevant heights. In using this more reliable method, HCI/SCI's engineer was able to calculate the center of radiation above ground to be 913.19 feet and above mean sea level to be 1590.09 feet. Using the average terrain data run on 72 radials, the ground elevation is 605.8 feet resulting in a HAAT of 300.0 meters.

Recently the Commission revised Section 73.1690 of its Rules in MM Docket 96-58 to provide a 4 meter variance for actual heights lower than authorized heights above average terrain. See Amendment of Parts 73 and 74 of the Commission's Rules to Permit Minor Changes in Broadcast Facilities without a Construction Permit, 12 FCC Rcd 12371 (1997). The Commission stated at paragraph 36 and note 32 that it intended to avoid a downgrade in station class where a 4 meter decrease in actual height occurs -- "[t]hus, while the actually constructed values must be specified on the license application, we will retain the authorized values on the license and in the Commission's engineering database. Those licensed values will be used for the prediction of contour and coverage." Therefore, WGGC is entitled to a 4 meter (13.12 foot) variation from the 300 meter (984 foot) HAAT requirement without affecting the station's authorized height values and channel classification.

HCI/SCI strongly believes that the WGGC Class C facility complies with the Commission's height requirements. Certainly, TBC has failed to meet its burden to demonstrate otherwise. The recent Commission ruling providing a 4 meter variance below the authorized height is an effort to allow stations such as WGGC some flexibility and avoid the drastic result sought by TBC, a result which could have far reaching consequences for many Class C stations. HCI/SCI reiterates that they have no objection to WCDZ attaining Class C3 status if there is a way to do so which does not involve WGGC being downgraded involuntarily.

Sincerely,

Mark N. Lipp
Counsel to Skytower Communications, Inc.

Leonard S. Joyce (by MNL)
Counsel to Heritage Communications, Inc.

cc: John Garziglia, Esq.
(Counsel to Thunderbolt Broadcasting Company)

Mr. James Crutchfield, Audio Services Division
Mr. John Karousos, Allocations Branch

PH030.003

::ODMA\PCDOCS\GFBDOCS\29753\1

I, Moena E. Sadler verify that all the statements made in the attached comments are true, and complete to the best of my knowledge and belief, and are made in good faith.

Moena E Sadler

Heritage Communications, Inc.
Moena E. Sadler, President

I, Billy R. Evans verify that all the statements made in the attached comments are true, and complete to the best of my knowledge and belief, and are made in good faith.

Billy R. Evans
Skytower Communications

10/13/97

Statement of Bill Evans. Conversation with Dennis Smith. D D S Engineering, Bowling Green, Kentucky.

I spoke by telephone to Mr. Dennis Smith, shortly after I learned he had surveyed the WGGC tower and tower site for Thunderbolt Broadcasting. Mr. Smith was very cooperative and he related the entire experience for me.

He told me about fog conditions that day and the difficulty he had finding bench marks. He said there was fog from about the 600 foot level of the tower until mid-morning. Mr. Smith was unable to find any bench marks to the South, and he said he had to work off of a bench mark at a bridge to the North for the elevation. In order to determine the coordinates, Mr. Smith said he worked from a pond and a fence line on the topo map. I later learned from Mrs. Norvel, the landowner, that there had been three different ponds over the years, all dug after she moved onto the property. She told me one of the ponds had been filled in because it would not hold water. It is possible that the wrong pond location may have been used.

After talking with Mr. Smith, I believe I know what caused his antenna top bay to bottom bay measurement to be so far off the correct length: Mr. Tinkle, of Thunderbolt Broadcasting, was present during the survey and was directing Mr. Smith in the execution of the survey. Mr. Smith told me that Mr. Tinkle asked him several times about "Height Above Average Terrain" and "Center of Radiation". Mr. Smith told Mr. Tinkle several times that he was not familiar with those terms. He told Mr. Tinkle that he should hire someone who understood the terms of "Height Above Average Terrain" and "Center of Radiation", and possessed the proper equipment and training to determine what Mr. Tinkle needed. He told Mr. Tinkle it would cost him much more than the survey Mr. Smith was doing for him that day.

I believe that the incorrect length of the antenna was due not to Mr. Smith's professional ability, but to he lack of knowledge about FM broadcasting and lack of familiarity of industry terms, such as "Height Above Average Terrain" and "Center of Radiation", and particularly antennas.

This account of my conversation and the facts contained herein are true and accurate to the best of my knowledge.

Billy R Evans

Billy R. Evans

PAUL DEAN FORD
Registered Professional Engineer
BROADCAST ENGINEERING CONSULTANT
6 EAST COLORADO AVENUE
CASEY, ILLINOIS 62420-1505
(217) 932 4869

The engineering portion of the original application for the present WGGC site was prepared by Paul Dean Ford. The purpose of the application was to maintain the full Class C status of WGGC. Every known precaution was taken to be sure that WGGC would have a Center of Radiation greater than 300 meters so that the Class C status would be maintained. The purpose of the move to the present site was to maintain full Class C status. WGGC planned to increase tower height to as high as would be permitted as soon as financially possible. The status of WGGC is now being questioned on the basis of topographic data filed with the Commission, on the exact coordinates of the existing tower, on the elevation of the site at the base of the tower, on the actual height of the tower, on the location of the top bay of the FM antenna, and on the location of the bottom of the antenna.

Paragraph 73.312 Topographic Data of the Commission's Rules describes several methods that may be used to determine terrain data for an FM application. Some of the allowable methods are quite crude, such as Sectional Aeronautical

Statement of Paul Dean Ford (continued)..

Charts, bench marks, railroad depot elevations, and highway elevations from road maps. Even altimeter readings may be recorded and used. The Commission apparently allows applicants to determine pertinent topography using the best means available. No indication is made that an applicant might be subject to review at a later time and his data rendered void by the use of any other data. The Commission does state "If it appears necessary additional data may be requested." The Commission accepted the data filed for the present site and did not request additional data.

Paragraph 73.312 (d) allows for computer generated terrain data except in cases of dispute, as long as the site elevation is determined from the appropriate quadrangle. The WGGC application was filed in accordance with this paragraph. It would appear from this paragraph that the topographic data would be subject to dispute only until a CP was granted by the Commission.

At the time of the WGGC application Dataworld had the 30 second terrain data on line. This was used for the WGGC

Statement of Paul Dean Ford (continued)..

application. It was believed to be accurate and was accepted as such by Dataworld, by Paul Dean Ford and by the Commission. The application states that the NGDC 30-second database was used and that average effective antenna heights give good results but spot elevations are relatively crude and should be used with caution. This is in accordance with Paragraph 73.312 (d). The application notes that the site elevation has been corrected on all terrain tabulations to 680 feet to agree with the MEADOR, KY (7 1/2') topographic quadrangle.

Paul Dean Ford became aware that the tower crew had installed the top antenna bay at a slightly lower height of 956 feet and nine inches (956.75 feet) Above Ground Level, due to strobe lighting at the top of the tower which was not accounted for previously. To the best of his knowledge, the tower crew did not communicate to the Sadlers the information that the top bay had been lowered slightly to accommodate the strobe lighting.

Statement of Paul Dean Ford (continued)..

The MEADOR, KY quadrangle indicated an elevation of 680 feet AMSL at the base of the tower. The contour interval of that map is ten(10) feet, therefore, it is not possible to determine elevation more precisely that to the nearest ten(10) feet. In accepting topographic map elevation as the final authority, the Commission is stating that elevations to the nearest ten(10) feet are acceptable. The tower site was plotted just inside the 680 foot contour. Actually, ground contours change from one map contour to another at random rates. Just inside the 680 foot contour could actually be anything from 680 feet to 689 feet. Just outside that contour could be anywhere from 670 to 679 feet.

Although the topographic map indicates an elevation of 680 feet at the base of the tower, Dennis D. Smith, PE, PLS has certified the elevation at the base of the tower to be 676.9 feet. One-tenth of a foot equals 1.2 inches; therefore, he has specified the elevation to the nearest 1.2 inches. The specification to this accuracy appears to be overly precise.

Statement of Paul Dean Ford (continued)..

Mr. Smith states that his elevations were determined from the southern bridge seat elevation of the Kentucky Highway 101 bridge over Barren River, north of the tower site. The MEADOR, KY (7 1/2') quadrangle does not indicate a benchmark at this point. This site is over two (2) kilometers from the tower. Mr. Smith did not present his survey figures but it would appear difficult to maintain an accuracy within 1.2 inches over the rough Kentucky terrain for that distance. If his figures are accurate, he should be able to then measure back to the bridge from the tower and obtain its correct elevation. We do not know whether or not he obtained closure on all of his survey measurements. Paul Dean Ford has hearsay evidence that the bridge used by Mr. Smith as a bench mark was probably built by the Public Works Administration in the 1930's. Many trucks, cars and other vehicles have traveled that bridge for over 60 years. Flooding may have occurred over or around the bridge during that time. It is quite possible that the bridge may have shifted or settled by an inch or more during that period. The elevation figure given for the tower site may be in question because of the use of a benchmark that is old.

Statement of Paul Dean Ford (continued)..

The MEADOR, KY quadrangle shows another benchmark that is less than one (1) kilometer from the tower site, southeast on highway 101. Less than two (2) kilometers on highway 101 south there appears to be another benchmark. There is also a benchmark at Meador, KY that is slightly closer than the bridge benchmark that was used. Mr. Smith did not say why he did not use these closer benchmarks but merely that none were found. Perhaps a more thorough search would reveal additional benchmarks that could be used to either prove or disprove the stated elevation. It is difficult to place a precise value on only one reference point. Because he did not use the closest benchmark and did not use all that apparently were available, the survey elevation would appear questionable (at least to the accuracy of 1.2 inches) even though it is close to the quadrangle elevation of 680 feet.

Mr. Smith determined the coordinates of the WGGC tower to be different from those listed by WGGC. He states that the latitude and longitude were determined by scaling from field measurements of USGS topographic identifiable objects. Because his values differed from the WGGC values he should

Statement of Paul Dean Ford (continued)..

have explained his data in detail. He should have identified the objects that were "identifiable". Paul Dean Ford has hearsay evidence that the pond shown on the topographic quadrangle may not be there now because there may have been several ponds and one or more has been filled. Since no field data was supplied, it may well be that the coordinates given by Mr. Smith are incorrect. It is necessary to have a definite point location to use as a reference. Determination of precise coordinates is difficult and it is easy to disagree with another source.

Apparently, based upon Mr. Smith's data, the firm of Lohnes and Culver has undertaken a study of this matter. Lohnes and Culver retrieved topographic data from area topographic quadrangles and obtained average elevation from those maps by the manual method. They report, "The resulting precise average terrain is 618.45 feet AMSL,..". They have specified elevation to the nearest one-hundredth (0.01) of a foot. That is just over one-tenth of an inch (0.12 inch). The data that they used would have come from topographic quadrangles with 10 foot intervals and from at least