EVANS ASSOCIATES

ENGINEERING EXHIBIT
ON BEHALF OF THROW FIRE PROJECT
REGARDING KYES, 1180 KHZ, ROCKVILLE, MN
AND AN APPLICATION TO MOVE WMCW
TO WESTON, WI AND CHANGE FREQUENCY TO 1180 KHZ

Recently, Throw Fire Project applied to modify its construction permit (BMP-20070119AFM) for a new AM station, KYES, to operate on 1180 KHz at Rockville, Minnesota. Specifically, Throw Fire proposes to increase the authorized daytime power from 35 to 50 kilowatts.

The modification of the KYES authorization technically conflicts with an application that is pending for reconsideration (BMJP-20050114ADY), a proposal to move station WMCW, now licensed on 1600 KHz in Harvard, Illinois, to Weston, Wisconsin, and change its frequency to 1180 KHz. The FCC originally dismissed the WMCW application on March 2, 2006, but the WMCW licensee, Kovas Communications, filed a petition for reconsideration and reinstatement on April 3, 2006. The FCC has not acted on Kovas' request to date.

The technical conflict between the KYES application and the WMCW application specifically is due to prohibited contour overlap between the KYES 0.5 mV/m service contour and the WMCW 0.025 mV/m interference contour. This engineering exhibit was prepared for the purpose of breaking the interlock that currently exists between the two applications.

In 1999, a set of field strength measurements was obtained on station WSAU, 550 KHz, in Wausau, Wisconsin, in connection with an application to increase the daytime power of WSAU from 5 to 15 kilowatts. These measurements were filed with the WSAU application (BP-19991222ABB) and were accepted by the FCC. Two of the measured WSAU radials, 280° and 300° are in the general direction towards the theoretical contour overlap with the requested KYES facility.

As will be shown herein, the use of these measurements, and the ground conductivities that were determined from those measurements, will clearly establish the absence of contour overlap between the two proposed daytime facilities. The WSAU site is the closest operating AM facility to the proposed Weston site. The distance and direction to WSAU from the Weston site is 3.4 miles, on a bearing of 217.8°.

Current FCC allocation guidelines contain a restriction of the distance between the measured AM station and the site of the proposed new station to which the measurements are to be applied in order to determine the placement of the new station's field strength contours. That distance restriction is not more than two miles.

However, the FCC in the past has made exceptions to this policy in the interest of breaking deadlocks between applicants for AM stations that overlap each other, or for other public

interest considerations. For an example, refer to BC Docket No. 82-603, FCC File No. BP-19810410AZ, Petition for Leave to Amend, Severance and Grant, filed by Bowman and Caselman Enterprises on January 28, 1983, regarding an application to modify AM Station KHOG (now KFAY) in Farmington, Arkansas. In that particular case, the FCC accepted the use of measurements on station WMC in Memphis, Tennessee, which were applied to a proposed new station in Memphis on 1030 KHz whose specified transmitter site was 3.1 miles from WMC's site. Prior to that, measurements were also taken on WMC by an applicant for a new station in White Bluff, Tennessee on 1030 KHz (BP-19810410AA), now WQSE, which were used to resolve its overlap with the same proposed Memphis 1030 KHz station. This set of measurements was also accepted by the FCC.

This engineer is intimately familiar with the attenuation characteristics of AM signals in northern Wisconsin, where WMCW is to be relocated, having made and analyzed hundreds of field strength readings on AM transmitting stations located near the community of Weston, such as WSAU in Wausau and WRIG in Schofield. The ground conductivities as determined from these field measurements are much lower than indicated on the FCC's Figure M-3 conductivity map, owing to the rocky soil in the area. In the analysis that follows, use was made of two radials from WSAU that were measured out to about 200 kilometers in July of 1999. Again, these measurements[1] are in the FCC's files and have been accepted in connection with FCC File No. BP-19991222ABB.

Simply stated, these measurements eliminate the mutual exclusivity between the KYES modification application and the WMCW application. Taking the ground conductivities from the aforementioned measurements into consideration, the distances to the WMCW 0.025 mV/m contour in the direction of the KYES site would be substantially less than what they would be by using M-3 conductivities. The result of this analysis is the complete elimination of contour overlap between the two proposed facilities.

Using only M-3 ground conductivities, there is no overlap between the KYES 0.025 mV/m contour and the WMCW 0.5 mV/m contour. Therefore, the WSAU measurements were used for the WMCW-into-KYES interference analysis, i.e., the WMCW 0.025 mV/m to the KYES 0.5 mV/m. Use was made of the ground conductivities along the WSAU 280° and 300° radials in calculating the location of the WMCW 0.025 mV/m contour in the direction towards the KYES 0.5 mV/m contour. The net conductivities are firmly established at 159 kilometers and 149 kilometers, respectively[2]. The measured conductivity values were assumed to extend over an arc of +/- 10° on either side of the measured radials, as per accepted engineering practice. M-3 conductivities were used outside of these arcs.

[1] These measurements were taken on the former WSAU 5 KW daytime pattern, before the 15 KW upgrade that was applied for in BP-19991222ABB. For convenience, they have been included as attachments hereto.

[2] Since the last conductivity shown on both graphs is on the basis of only two or three readings, which may not be enough to establish that value as the net conductivity of the entire path, the conductivity closer in to the site was used in an abundance of caution.

As can be seen by the attached Figure 1, the proposed WMCW 0.025 mV/m contour will not overlap the proposed KYES 0.5 mV/m contour. This analysis fully demonstrates that WMCW's application and KYES's application to modify its construction permit are not mutually exclusive. Since the overlap with WMCW is the only obstacle to final FCC action on the KYES application, that application can now be granted.

Although the 3. 4-mile distance between WSAU and the Weston sites departs somewhat from FCC policy, roughly the same distance to the measured station was involved in the above-mentioned cases in which the Commission made exceptions to the policy and accepted the use of the measurements. Furthermore, this engineer firmly believes that if there were an AM station on the Weston site to measure, ground conductivities similar to the ones found for WSAU would be ascertained in directions towards the KYES service contour. This is borne out not only by the measurements on the two long WSAU radials that were used for the attached study, but by measurements made for the 2004 WSAU proof of performance. Two measured radials from the WSAU proof, 15° and 45°, which pass by the Weston site on either side, exhibit measured ground conductivities of between 1.5 and 2 mmhos per meter[3]. These are similar to the conductivities found along the 280° and 300° long radials, and are much lower than M-3 conductivities.

It has been demonstrated herein that the deadlock between KYES and WMCW can be resolved through the use of the WSAU measurements. We firmly believe that the very slight increase in distance from the measured station to the actual proposed site from what has previously received exceptions from the FCC (3.4 miles, as compared to 3.1 miles) will not compromise the integrity of the FCC's guidelines. There are no other currently-operating AM stations closer than WSAU is to the Weston site, thus there is no more suitable station that can be measured. Also, the low conductivity of the area is an established fact supported by voluminous measured field data which exists in the FCC's own files.

In our opinion, a great public benefit would flow from the acceptance of these measurements. The application can be granted, and Minnesota residents can enjoy a maximized 50-kilowatt radio service that can be built and begin operating without further delay.

Respectfully submitted,

B. Benjamin Evans, P.E.
Consulting Engineer for Throw Fire Project

April 18, 2008

[3] The graphs of the readings on these two radials, from the WSAU application for license BL-20040302ABW, are attached hereto.

ATTACHED FIGURES:

Figure 1 - - Contour Protection Study - WMCW into KYES Using WSAU Measurements
Figure 2 - - Summary of WMCW 0.025 mV/m Contour Distance Calculations

Field Strength Graphs of WSAU 1999 Field Strength Measurements on 280° and 300° (from BP-19991222ABB)

Tabulations of Readings on WSAU 280° and 300° Shown on Graphs (from BP-19991222ABB)

Field Strength Graphs of WSAU 15° and 45° Radials from 2004 Proof of Performance (BL-20040302ABW)

Figure 1

Daytime Allocation Study - KYES, 1180 KHz, Rockville, MN

KYES
Rockville MN
Latitude: 45-21-42 N
Longitude: 094-17-39 W
Power: 50.0 kW
Frequency: 1180 KHz
Horiz. Pattern: DA
Prop Model: FCC

WMCW-P
Weston WI
44-53-46; 089-32-40
1180 KHz
BMJP-20050114ADY
35 KW DA

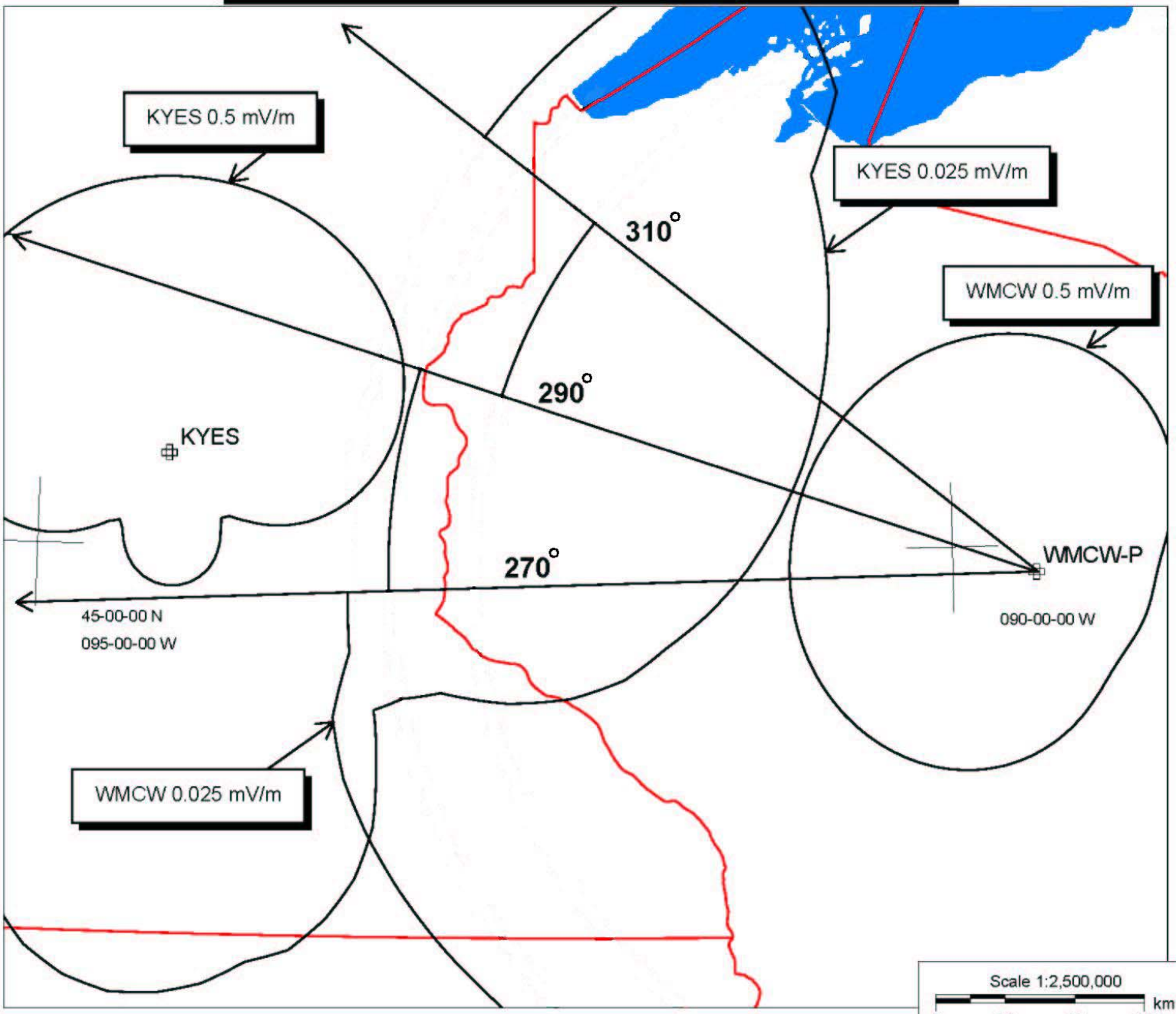


Figure 2

Summary of Contour Distances Calculations
Over Measured Conductivity Arc 270-310°

WMCW(AM), 1180 KHz, Weston WI

Radial (°T)	*Measured Conductivity-Distance (mmhos/m – km)*	*Radiation (mv/m@1km)*	*Dist. to 0.025 mV/m (km)*
269.9	(4)	2649.36	296.8
270.1	3-159; (4)	2649.36	279.2
275.0	3-159; (4)	2653.43	279.3
280.0	3-159; (4)	2655.39	279.4
285.0	3-159; (4)	2656.13	279.4
289.9	3-159; (4)	2656.30	279.4
290.1	2-103; 1.5-149; (4)	2656.30	242.3
295.0	2-103; 1.5-149; (4)	2656.32	242.3
300.0	2-103; 1.5-149; (4 for 107, 8 after)	2656.30	242.3
305.0	2-103; 1.5-149; (4 for 94, 8 after)	2656.13	242.3
309.9	2-103; 1.5-149; (4 for 85, 8 after)	2655.39	242.9
310.1	(4 for 234, 8 after)	2655.39	302.6

M-3 conductivities beyond measured conductivity regions are shown inside parentheses ( ).

FIGURE 16

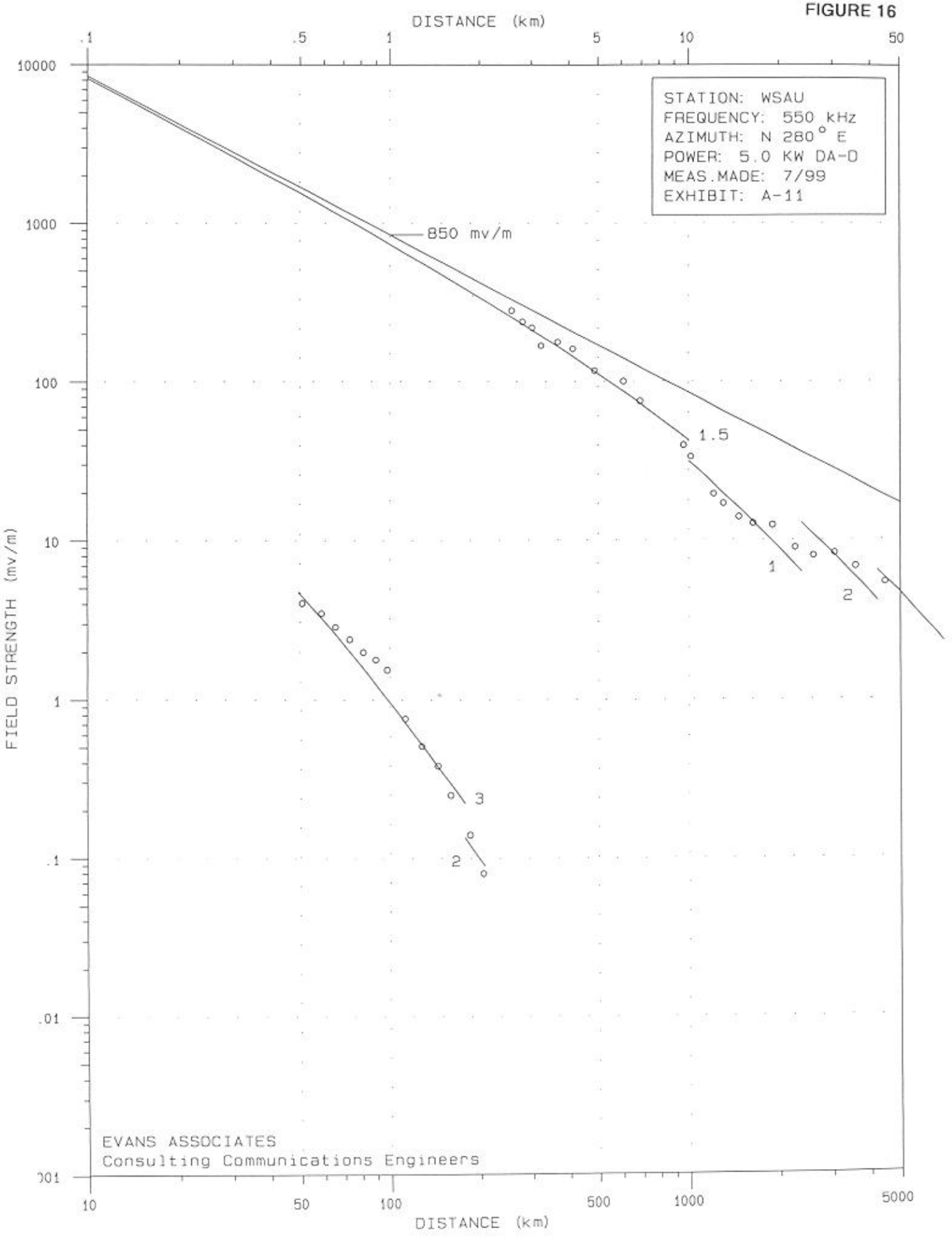
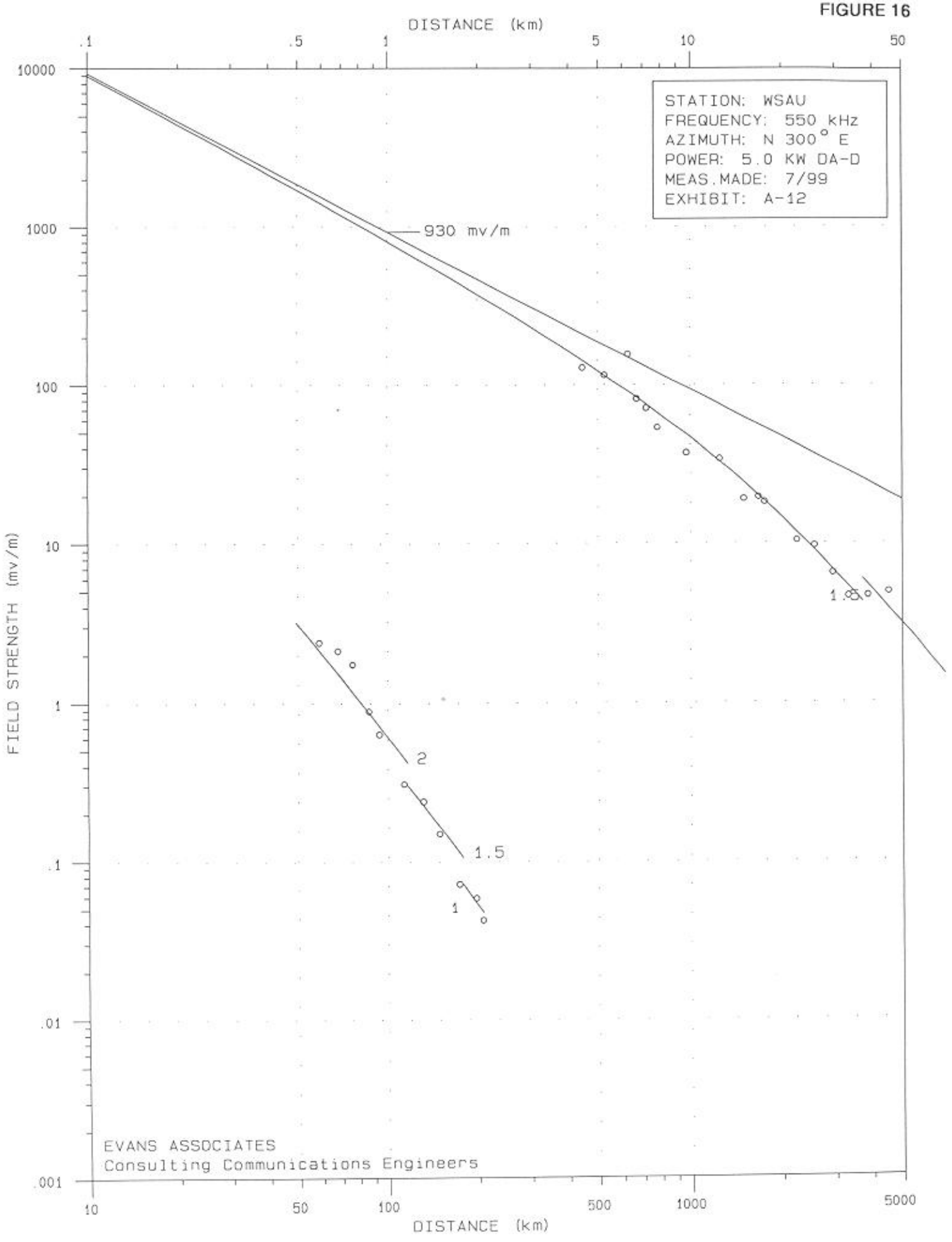

DISTANCE (km)
.1
.5
1
5
10
50
10000
1000
100
10
1
.1
.01
.001
FIELD STRENGTH (mv/m)
STATION: WSAU
FREQUENCY: 550 kHz
AZIMUTH: N 280° E
POWER: 5.0 KW DA-D
MEAS.MADE: 7/99
EXHIBIT: A-11
850 mv/m
1.5
1
2
3
2
EVANS ASSOCIATES
Consulting Communications Engineers
10
50
100
500
1000
5000
DISTANCE (km)

FIGURE 16

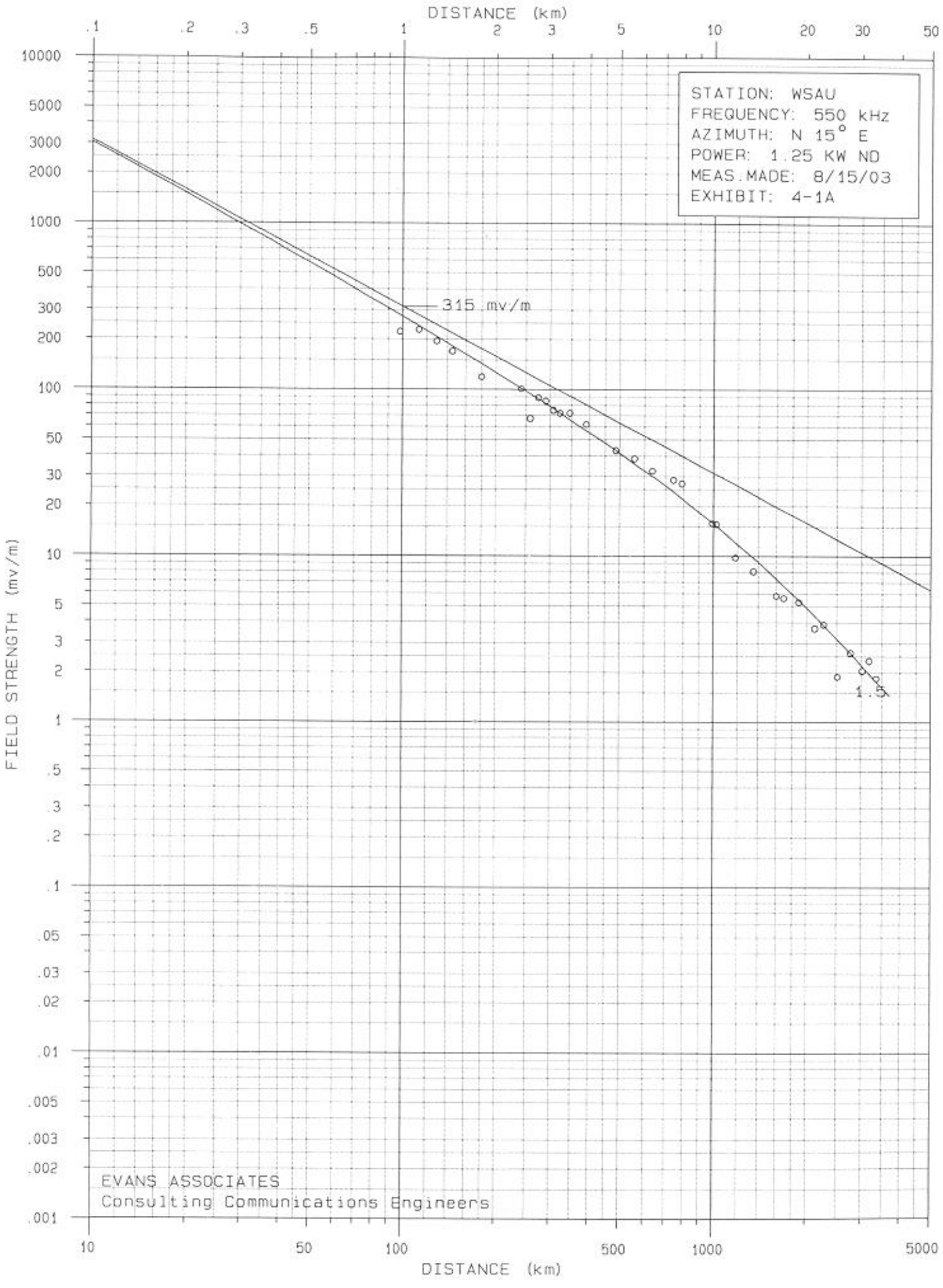

DISTANCE (km)
.1
.5
1
5
10
50
10000
1000
100
10
1
.1
.01
.001
FIELD STRENGTH (mv/m)
STATION: WSAU
FREQUENCY: 550 kHz
AZIMUTH: N 300° E
POWER: 5.0 KW DA-D
MEAS.MADE: 7/99
EXHIBIT: A-12
930 mv/m
1
2
1.5
1
EVANS ASSOCIATES
Consulting Communications Engineers
10
50
100
500
1000
5000
DISTANCE (km)

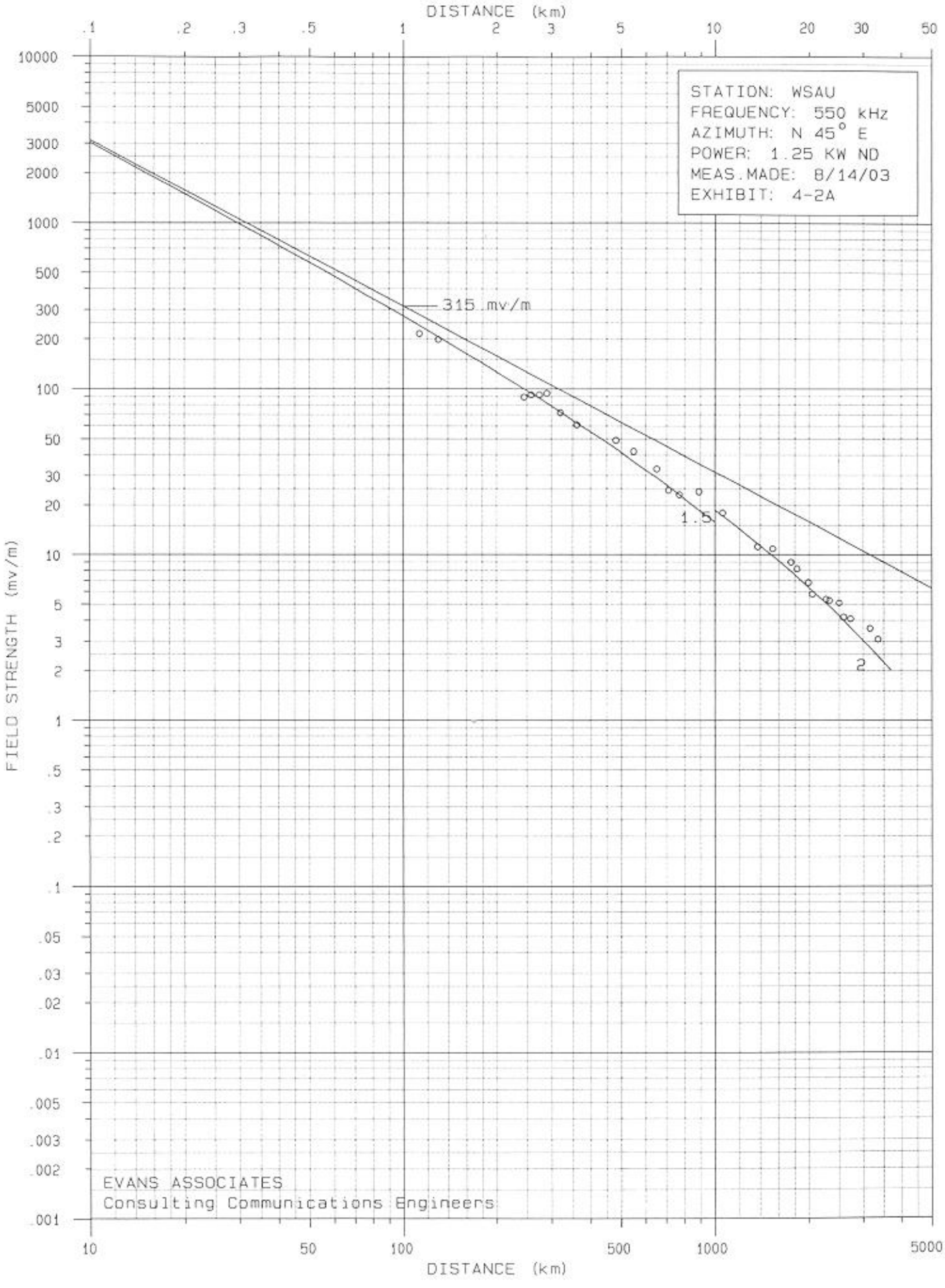
WSAU 550 KHz DAYTIME DIRECTIONAL FIELD STRENGTH MEASUREMENTS

280º Radial	LOCATION No.	DISTANCE (km)	FIELD STRENGTH mV/m	TIME
7/20/1999	1	2.57	280	11:02
Nels Harvey	2	2.80	238	11:04
	3	3.01	219	11:11
	4	3.23	168	11:13
	5	3.67	177	11:19
	6	4.12	160	11:21
	7	4.88	117	11:30
	8	6.08	100	3:20
	9	6.90	75	3:24
	10	9.64	39.5	3:42
	11	10.18	33.5	3:50
	12	12.12	19.5	4:06
	13	13.10	16.9	4:12
	14	14.71	13.9	4:21
	15	16.41	12.7	4:27
	16	18.99	12.4	4:36
	17	22.53	8.9	4:43
	18	25.90	7.9	4:49
	19	30.41	8.2	5:02
	20	35.72	6.8	5:16
7/21/1999	21	44.57	5.4	7:58
Nels Harvey	22	50.84	4.05	8:11
	23	58.73	3.5	8:21
	24	65.49	2.86	8:47
	25	73.05	2.4	8:59
	26	81.25	2	9:16
	27	89.46	1.79	9:41
	28	97.67	1.54	9:52
	29	112.15	0.76	10:08
	30	127.59	0.51	10:31
	31	144.65	0.385	10:58
	32	159.29	0.25	11:30
	33	184.87	0.14	11:57
	34	204.50	0.08	12:23

WSAU 550 KHz DAYTIME DIRECTIONAL FIELD STRENGTH MEASUREMENTS

300º Radial	LOCATION No.	DISTANCE (km)	FIELD STRENGTH mV/m	TIME
7/22/1999	1	4.46	128	7:46
Nels Harvey	2	5.26	115	8:03
	3	6.26	155	8:19
	4	6.68	81	8:24
	5	7.19	71	8:27
	6	7.82	53.5	8:35
	7	9.70	37	8:42
	8	12.50	34	8:54
	9	15.00	19	9:06
	10	16.73	19.5	9:12
	11	17.54	18.1	9:16
7/21/1999	12	22.37	10.4	7:40
Nels Harvey	13	25.58	9.6	7:31
	14	29.44	6.5	7:22
	15	33.15	4.6	7:10
	16	38.46	4.65	6:56
	17	45.05	4.9	6:43
	18	58.73	2.41	6:26
	19	68.06	2.14	6:04
	20	76.27	1.75	5:52
	21	86.56	0.89	5:35
	22	93.80	0.64	5:12
	23	113.43	0.31	4:42
	24	131.46	0.24	4:12
	25	148.67	0.15	3:46
	26	172.65	0.072	2:54
	27	196.14	0.059	2:01
	28	206.27	0.0425	1:41


DISTANCE (km)
.1
.2
.3
.5
1
2
3
5
10
20
30
50
10000
5000
3000
2000
1000
500
300
200
100
50
30
20
10
5
3
2
1
.5
.3
.2
.1
.05
.03
.02
.01
.005
.003
.002
.001
FIELD STRENGTH (mv/m)
STATION: WSAU
FREQUENCY: 550 kHz
AZIMUTH: N 15° E
POWER: 1.25 KW ND
MEAS.MADE: 8/15/03
EXHIBIT: 4-1A
315 mv/m
1.5
EVANS ASSOCIATES
Consulting Communications Engineers
10
50
100
500
1000
5000
DISTANCE (km)


DISTANCE (km)
.1
.2
.3
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1
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10000
5000
3000
2000
1000
500
300
200
100
50
30
20
10
5
3
2
1
.5
.3
.2
.1
.05
.03
.02
.01
.005
.003
.002
.001
FIELD STRENGTH (mv/m)
STATION: WSAU
FREQUENCY: 550 kHz
AZIMUTH: N 45° E
POWER: 1.25 KW ND
MEAS.MADE: 8/14/03
EXHIBIT: 4-2A
315 mv/m
1.5
2
EVANS ASSOCIATES
Consulting Communications Engineers
10
50
100
500
1000
5000
DISTANCE (km)