

ENGINEERING EXHIBIT
APPLICATION FOR CONSTRUCTION PERMIT
RADIO STATION KELT(FM)
ADELANTO, CALIFORNIA

June 29, 2001

CH 224A 0.28 KW 449 M

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Table of Contents

| | |
|------------|--|
| | Engineering Statement |
| Figure 1 | Proposed Antenna and Supporting Structure |
| Figure 2 | Tabulation of Average Elevations and Distances to Coverage Contours |
| Figure 3 | Predicted Coverage Contours and Predicted 70 dBu Coverage Based on Supplemental Method |
| Figure 4 | Allocation Study |
| Figure 5 | Longley-Rice Analysis Graphs |
| Appendix 1 | Vertical Plane Radiation Pattern for Proposed Transmitting Antenna |
| Appendix 2 | Terrain Profile Data for Longley-Rice Analysis |

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RADIO STATION KELT(FM)
ADELANTO, CALIFORNIA
CH 224A 0.28 KW 449 M

Engineering Statement

This Engineering Exhibit was prepared on behalf of radio station KELT(FM), Adelanto, California in support of an application for construction permit to relocate its transmitter site. This application is being filed in connection with the FCC *Report and Order* in MM Docket No. 99-329, which resulted in the change in city of license of KELT(FM) from Riverside, California to Adelanto.*

Proposed Facilities

The proposed facility will operate on Channel 224A with a nominal non-directional effective radiated power (ERP) of 0.28 kW (circular polarization) and an antenna height above average terrain (HAAT) of 449 m. The proposed transmitter site is located 46.0 km north of the KELT(FM) licensed transmitter site and 16.2 km east of the Channel 224A reference point for Adelanto established in MM Docket No. 99-329.

The proposed antenna will be mounted on an existing tower used for broadcast and non-broadcast transmission facilities. The existing tower structure is 30 m in overall height above ground and it does not require FCC antenna structure registration. The proposed antenna will result in an increase in overall structure height to 31 m AGL. However, the proposed antenna structure does not require FCC antenna

Radio Station KELT(FM)
Adelanto, California

Page 2

structure registration. The tower is located on Quartzite Mountain near Oro Grande, California.

Environmental Considerations

The proposed facility is categorically excluded from environmental processing pursuant to Section 1.1306 of the FCC Rules. A conservative calculation of the FM energy in the downward direction indicates an RF level for KELT(FM) of no greater than 2.8% of the FCC uncontrolled standard.[†] Therefore, the proposal complies with the FCC limits for human exposure to RF radiation and it is categorically excluded from environmental processing. The applicant shall reduce power or cease operation as necessary to protect persons having access to the tower from RF energy in excess of the FCC guidelines.

Predicted Coverage Contours

The predicted coverage contours were calculated in accordance with Section 73.313 of the FCC Rules. The average terrain elevations from 3 to 16 km from the proposed site were computed using the U.S.G.S 3-second terrain database.

The distances to the conventional FCC predicted coverage contours were determined using the average elevations of 3-16-km radials spaced every 45-degrees of azimuth. The antenna radiation center HAAT in each radial direction and the ERP were used in conjunction with the propagation prediction curves of Section 73.333 to determine the distances to contours. Figure 2 is a tabulation of average elevations and

* See *Report and Order*, MM Docket No. 99-329, RM-9701, *In the Matter of Amendment of Section 73.202(b) Table of Allotments, FM Broadcast Stations (Avalon, Fountain Valley, Adelanto, Ridgecrest and Riverside, California)*, Released: March 9, 2001.

[†] This is based on the KELT(FM) antenna radiation center height above ground of 31m; effective radiated power in each polarization plane of 0.28 kW; and, a downward relative field factor of 0.5. Calculations were made at 2-m AGL according procedures outlined in FCC OET Bulletin No. 65. Calculated combined RF energy will not exceed 5.6 uW/cm² according to these conservative assumptions. This is 2.8% of the FCC limit of 200 uW/cm² for uncontrolled environments.

Radio Station KELT(FM)
Adelanto, California

Page 3

distances to coverage contours. Figure 3 is a map showing the predicted coverage contours.

As indicated in Figure 3, the proposed predicted 70 dBu contour based on the conventional FCC propagation method will not encompass the entire community of Adelanto. The city limits of Adelanto were obtained from the 2000 Census TIGER data files. An area analysis indicates that the proposed facility will provide 70 dBu contour coverage of 98 square kilometers of the Adelanto city limits. This is 71.0% of the total area within the Adelanto city limits of 138 square kilometers.

Pursuant to Section 73.313(e) of the FCC Rules, a supplemental method for contour prediction has been employed. As detailed below, the results of the supplemental analysis demonstrate that 90.6% of the Adelanto city limits will be encompassed by the predicted KELT(FM) 70 dBu contour.

The proposed transmitter site is located on Quartzite Mountain, which is elevated well above the surrounding terrain. The elevation of Quartzite Mountain is 1329 m above mean sea level. The terrain in the valley, in which Adelanto is located, averages about 890 m above mean sea level. Furthermore, the terrain in the valley is smooth and gently rising over most of the Adelanto city limits which results in greater coverage than would be predicted under the conventional FCC terrain averaging method. The Adelanto city limits are located along bearings from approximately 220 to 300 degrees true from the proposed KELT(FM) transmitter site with distances ranging from 10 to 20 km from the site. Terrain profiles graphs were prepared along these bearings at 10-degree intervals. These are included herein at Appendix 2. It is evident from the terrain profiles that the terrain in the area of Adelanto is smooth and gently rising; and that the terrain itself would significantly depart from the terrain average assumed for the f(50,50) curves.

A propagation analysis was conducted using the well-known and widely accepted Longley-Rice propagation model.[‡] This analysis indicates that the predicted 70 dBu contour for KELT(FM) will extend to as great as 24.5 km over the arc of azimuths from 220 to 300 degrees true. Figure 5 includes a series of graphs showing the predicted Longley-Rice field strength versus distance for KELT(FM) over the arc of azimuths from 220 to 300 degrees true. This analysis includes a clutter factor of 5 dB.[§] The predicted 70 dBu contour for KELT(FM) based on the conventional FCC contour method over the 220-300 arc extends to a nominal 16.5 km. Therefore, the proposed Longley-Rice analysis indicates at least a 48% increase in the distance to the 70 dBu contour using the supplemental method.

As indicated in Figure 3, the predicted 70 dBu contour based on the supplemental method extends beyond the city limits of Adelanto in most directions. In fact, calculations indicate that the predicted 70 dBu contour based on the supplemental method will cover 125 square kilometers of the Adelanto city limits. This is 90.6% of the total area within the Adelanto city limits of 138 square kilometers. Therefore, the proposed facility is believed to be in substantial compliance with Section 73.315 of the FCC Rules based on the supplemental coverage analysis.

The following sample calculations are provided concerning the supplemental Longley-Rice prediction method:

[‡] See, for example, FCC Office of Engineering and Technology Bulletin No. 69, *Longley-Rice Methodology for Evaluating TV Coverage and Interference*, July 2, 1997.

[§] The lack of significant trees, tall vegetation and urban buildup argues for a lesser clutter factor in this case. However, as a conservative estimate of coverage, a 5 dB clutter factor was employed.

Radio Station KELT(FM)
Adelanto, California

Page 5

| Parameter | Value |
|---|-----------------------------|
| Transmitter site coordinates (NAD27) | 34-36-44 / 117-17-27 |
| Calculation point coordinates (NAD27) | 34-26-22 / 117-27-57 |
| Distance to calculation point (km) | 25.0 |
| Bearing to calculation point (degrees true) | 220.0 |
| Effective radiated power (kW) | 0.28 |
| Calculated free-space field at point (dBu) | 73.4 |
| Additional estimated transmission loss (dB) | 0.0 |
| Clutter loss factor (dB) | 5.0 |
| Net received field (dBu) | 68.4 |
| Mode of variability | 11 (individual mode) |
| Confidence | 50% |
| Time / Location variability | 50% |
| Polarization | H |
| Frequency (MHz) | 92.7 |
| Relative permittivity | 15 |
| Conductivity (S/m) | 0.005 |
| Climate code | 5 |
| Surface refractivity | 300 |
| Effective earth curvature | 1.33 |
| Path | Line-of-sight |
| Profile | 301 points; 0.1 km interval |
| Path terrain delta-H (m) | 158 |
| Antenna heights (m) | TX: 31; REC: 9 |
| Effective antenna heights (m) | TX: 454; REC: 98 |
| Site elevations (m AMSL) | TX: 1329; REC: 1106 |

Based on the foregoing, it is concluded that the KELT(FM) proposal is compliant with the FCC supplemental contour analysis showing requirements; and that the proposed KELT(FM) facility will, in fact, provide 70 dBu coverage over 90.6% of the principal community of license of Adelanto.

Radio Station KELT(FM)
Adelanto, California

Page 6

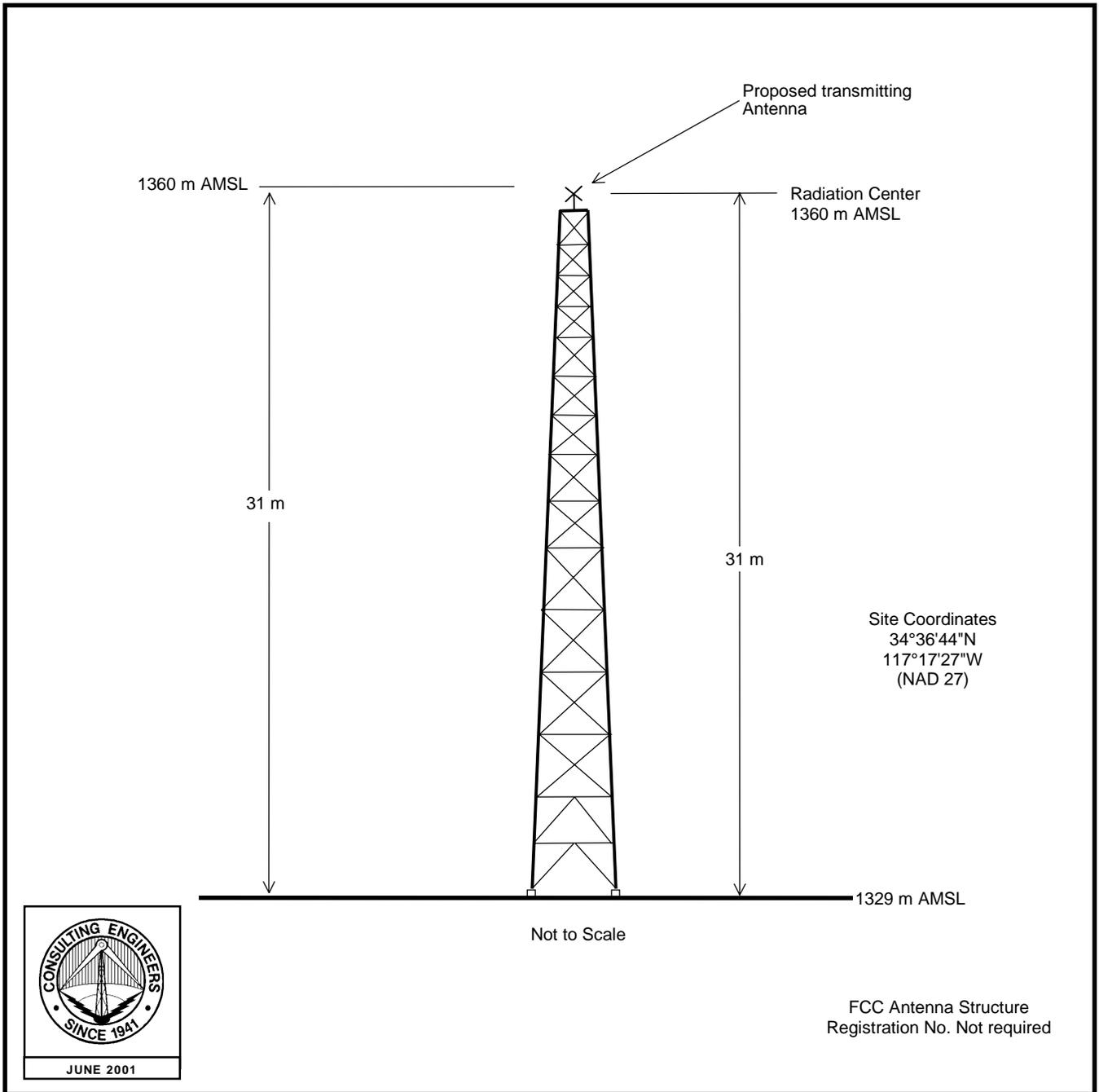
Allocation Considerations

As outlined in Figure 4, the proposed KELT facility meets the separation requirements of Section 73.207 of the FCC Rules with respect to all pertinent allotments and assignments.

Louis Robert du Treil, Jr.

June 29, 2001

Figure 1



PROPOSED ANTENNA AND SUPPORTING STRUCTURE

RADIO STATION KELT(FM)

ADELANTO, CALIFORNIA

CH 224A 0.28 KW 449 M

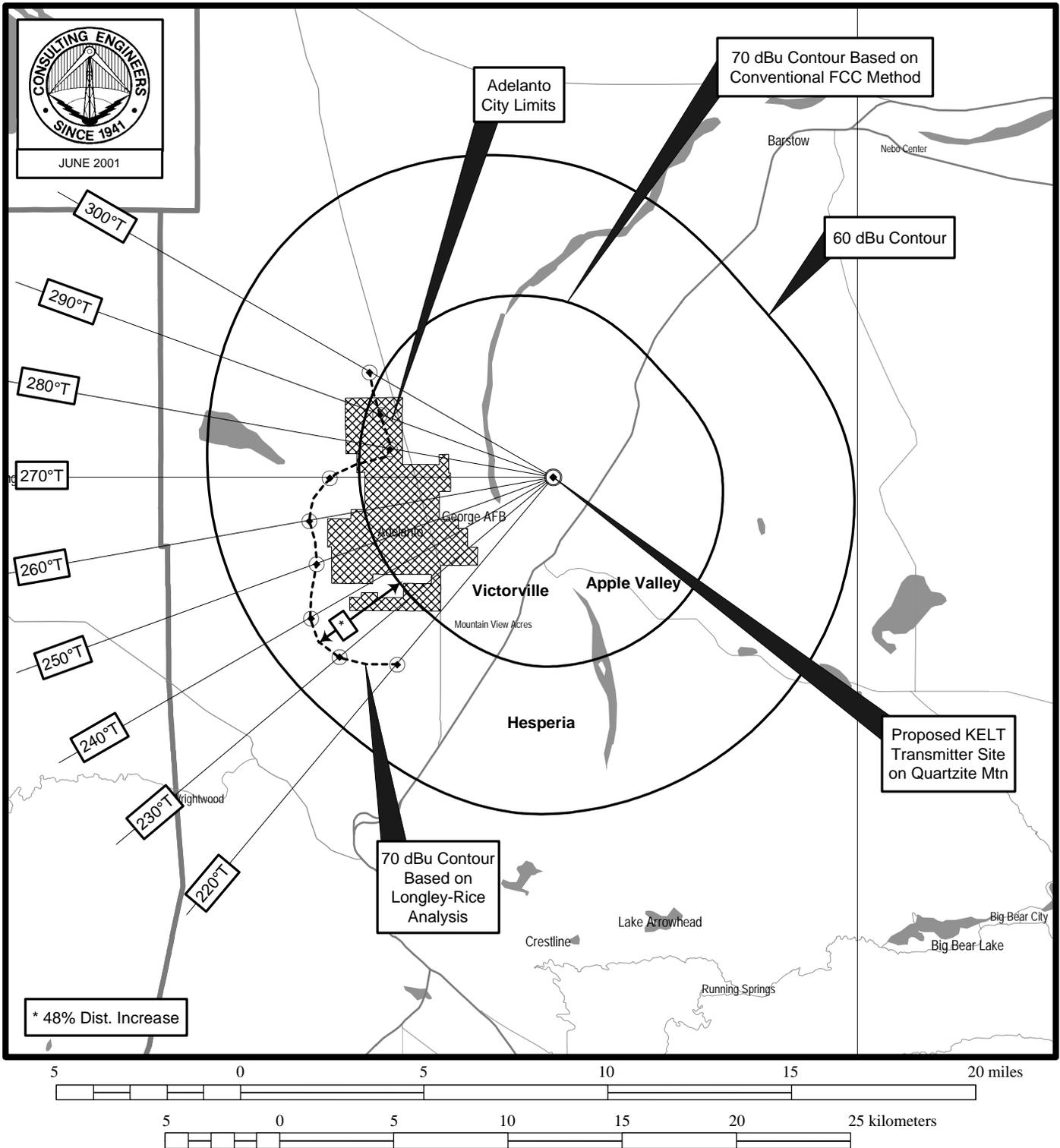
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ENGINEERING EXHIBIT
APPLICATION FOR CONSTRUCTION PERMIT
RADIO STATION KELT(FM)
ADELANTO, CALIFORNIA
CH 224A 0.28 KW 449 M

Tabulation of Average Elevations
and Distances to Coverage Contours

| <u>Azimuth</u> (deg.T) | <u>3-16 km</u> <u>Average</u> <u>Terrain</u> (m) | <u>Antenna</u> <u>HAAT</u> (m) | <u>ERP</u> (kW) | <u>Distance to</u> <u>70 dBu</u> <u>Contour</u> (km) | <u>Distance to</u> <u>60 dBu</u> <u>Contour</u> (km) |
|---------------------------|---|--------------------------------------|--------------------|---|---|
| 0 | 921 | 439 | 0.28 | 15.7 | 27.8 |
| 45 | 1049 | 311 | 0.28 | 13.3 | 23.6 |
| 90 | 970 | 390 | 0.28 | 14.8 | 26.2 |
| 135 | 915 | 445 | 0.28 | 15.8 | 27.9 |
| 180 | 869 | 491 | 0.28 | 16.6 | 29.5 |
| 225 | 891 | 469 | 0.28 | 16.2 | 28.7 |
| 270 | 848 | 512 | 0.28 | 17.0 | 30.2 |
| 315 | 821 | 539 | 0.28 | 17.5 | 31.2 |

Note: The 3-16-km average terrain is 911 m based on the eight conventional radials (0°, 45°, 90°, etc.). The overall antenna radiation center height above average terrain is 449 m based on the eight conventional radials.



PREDICTED COVERAGE CONTOURS AND PREDICTED 70 DBU COVERAGE BASED ON SUPPLEMENTAL METHOD

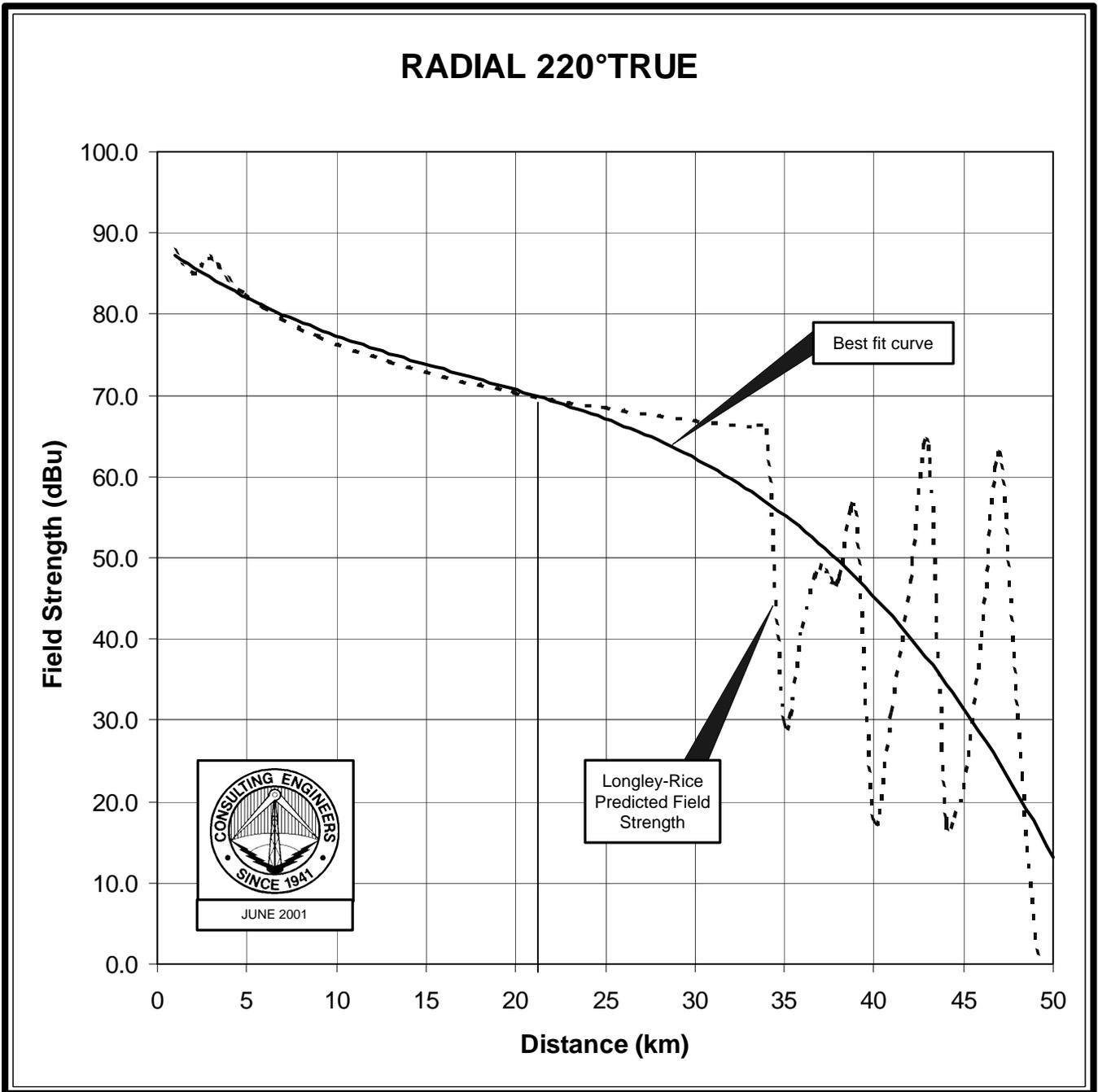
RADIO STATION KELT(FM)
 ADELANTO, CALIFORNIA
 CH 224A 0.28 KW 449 M

Figure 4

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RADIO STATION KELT(FM)
ADELANTO, CALIFORNIA
CH 224A 0.28 KW 449 M

Allocation Study

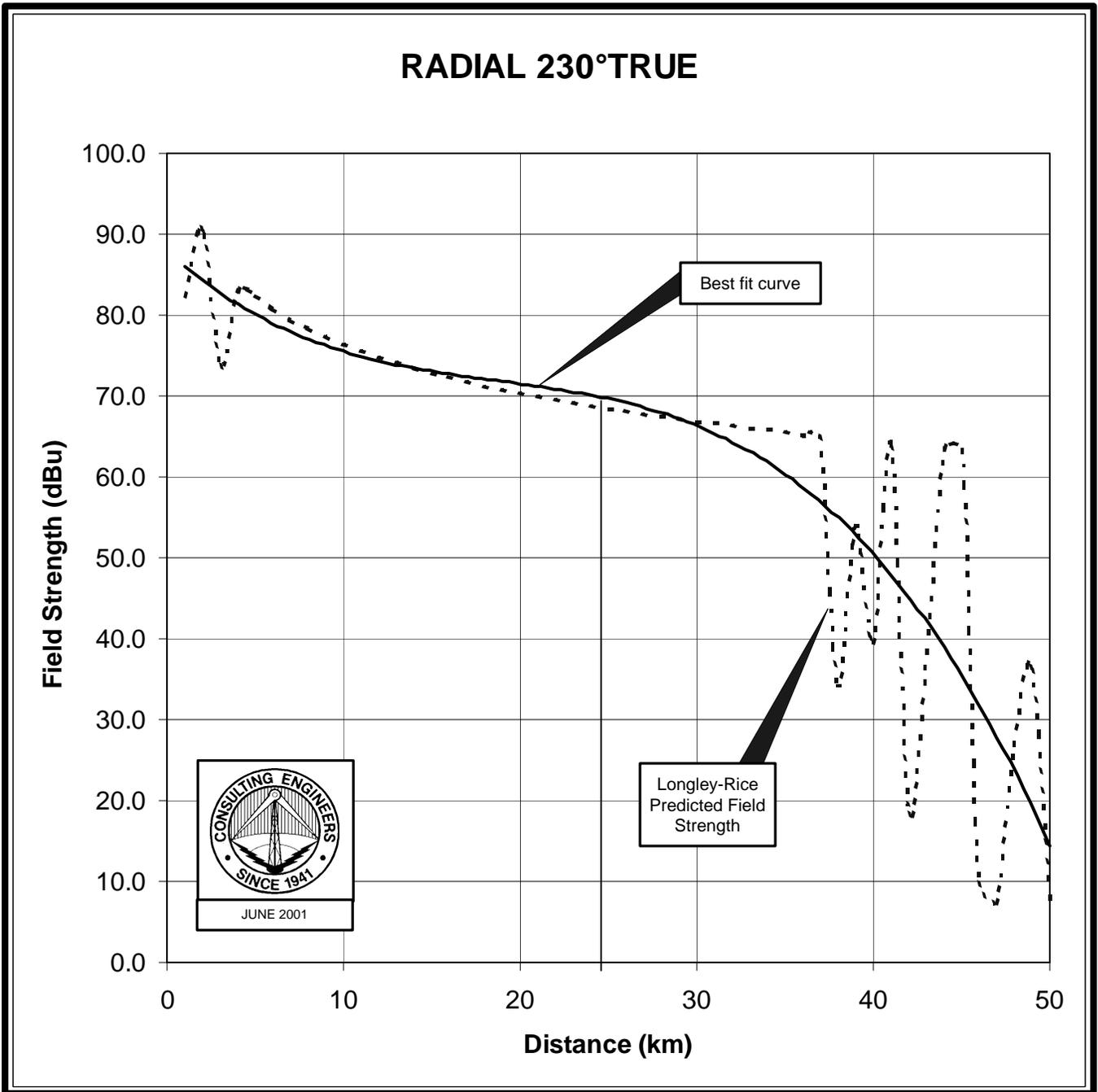
| Call Id | City St | File Status | Channel Num | ERP Freq | HAAT | DA Id | Latitude Longitude | 73 215 | Bear | Dist. (km) | Req. (km) min | max |
|--|-------------------|-----------------|----------------|----------------|----------------|----------|-----------------------|-----------|-------|------------------|------------------|-------|
| KCMG 35022 | LOS ANGELES CA | BMLH LIC C | 19921021KA | 222 B 92.3 | 43.000 887 | N | 34-13-36 118-03-57 | N | 239.1 | 83.10 14.10 | 69.0 Close | 69.0 |
| KELT 0 | ADELANTO CA | RM RSV C | 9701 | 224 A 92.7 | 0.000 | N | 34-36-11 117-28-01 | N | 266.4 | 16.19 -98.81 | 115.0 Short | 115.0 |
| <i>(Adelanto Docket 99-329 rule making allotment site.)</i> | | | | | | | | | | | | |
| KELT 1244 | RIVERSIDE CA | BLH LIC C | 19970715KC | 224 A 92.7 | 6.000 100 | N | 34-11-51 117-17-10 | N | 179.5 | 46.01 -68.99 | 115.0 Short | 115.0 |
| <i>(Applicant's authorized facility.)</i> | | | | | | | | | | | | |
| KZIQ-F 30158 | RIDGECREST CA | BLH LIC C | 19900403KB | 224 B1 92.7 | 1.500 395 | N | 35-28-39 117-41-58 | N | 339.0 | 102.98 -40.02 | 143.0 Short | 143.0 |
| <i>(Pursuant to Docket 99-329 rule making, KZIQ-FM to downgrade to Class A and relocate transmitter site.)</i> | | | | | | | | | | | | |
| KZIQ-F 0 | RIDGECREST CA | RM RSV C | 9701 | 224 A 92.7 | 0.000 | N | 35-37-27 117-41-10 | N | 342.4 | 117.91 2.91 | 115.0 Close | 115.0 |
| <i>(KZIQ-FM Docket 99-329 rule making allotment site and downgrade to Class A.)</i> | | | | | | | | | | | | |
| KZIQ-F 30158 | RIDGECREST CA | | APP C | 224 B1 92.7 | 3.000 -40 | N | 35-36-58 117-38-35 | N | 344.0 | 115.90 0.90 | 115.0 Close | 115.0 |
| <i>(KZIQ-FM application to relocate site and downgrade to Class A.)</i> | | | | | | | | | | | | |
| KLIT 9304 | FOUNTAIN CA | VA BPH APP C | 20010620AAE | 224 A 92.7 | 0.690 293 | Y | 33-36-20 117-48-35 | Y | 203.3 | 121.49 6.49 | 115.0 Close | 115.0 |
| <i>(Application to relocate KLIT pursuant to Docket 99-329 rule making.)</i> | | | | | | | | | | | | |
| KLIT 0 | FOUNTAIN CA | VA RM RSV C | 9701 | 224 A 92.7 | 0.000 | N | 33-36-56 117-55-33 | N | 208.0 | 125.12 10.12 | 115.0 Close | 115.0 |
| <i>(Fountain Valley Docket 99-329 rule making allotment site.)</i> | | | | | | | | | | | | |
| KKUU 11658 | INDIO CA | BLH LIC C | 19971020KE | 224 A 92.7 | 6.000 100 | N | 33-47-45 116-13-19 | N | 132.4 | 133.81 18.81 | 115.0 Clear | 115.0 |
| KCBS-F 9612 | LOS ANGELES CA | BLH LIC C | 19980505KC | 226 B 93.1 | 28.500 1056 | | 34-13-55 118-04-18 | | 239.7 | 83.26 14.26 | 69.0 Close | 69.0 |
| KBHR 51566 | BIG BEAR CA | CI BLH LIC C | 19960111KP | 227 A 93.3 | 1.500 202 | N | 34-16-41 116-47-31 | Y | 128.9 | 58.96 27.96 | 31.0 Clear | 31.0 |



LONGLEY-RICE ANALYSIS GRAPHS

RADIO STATION KELT(FM)
ADELANTO, CALIFORNIA
CH 224A 0.28 KW 449 M

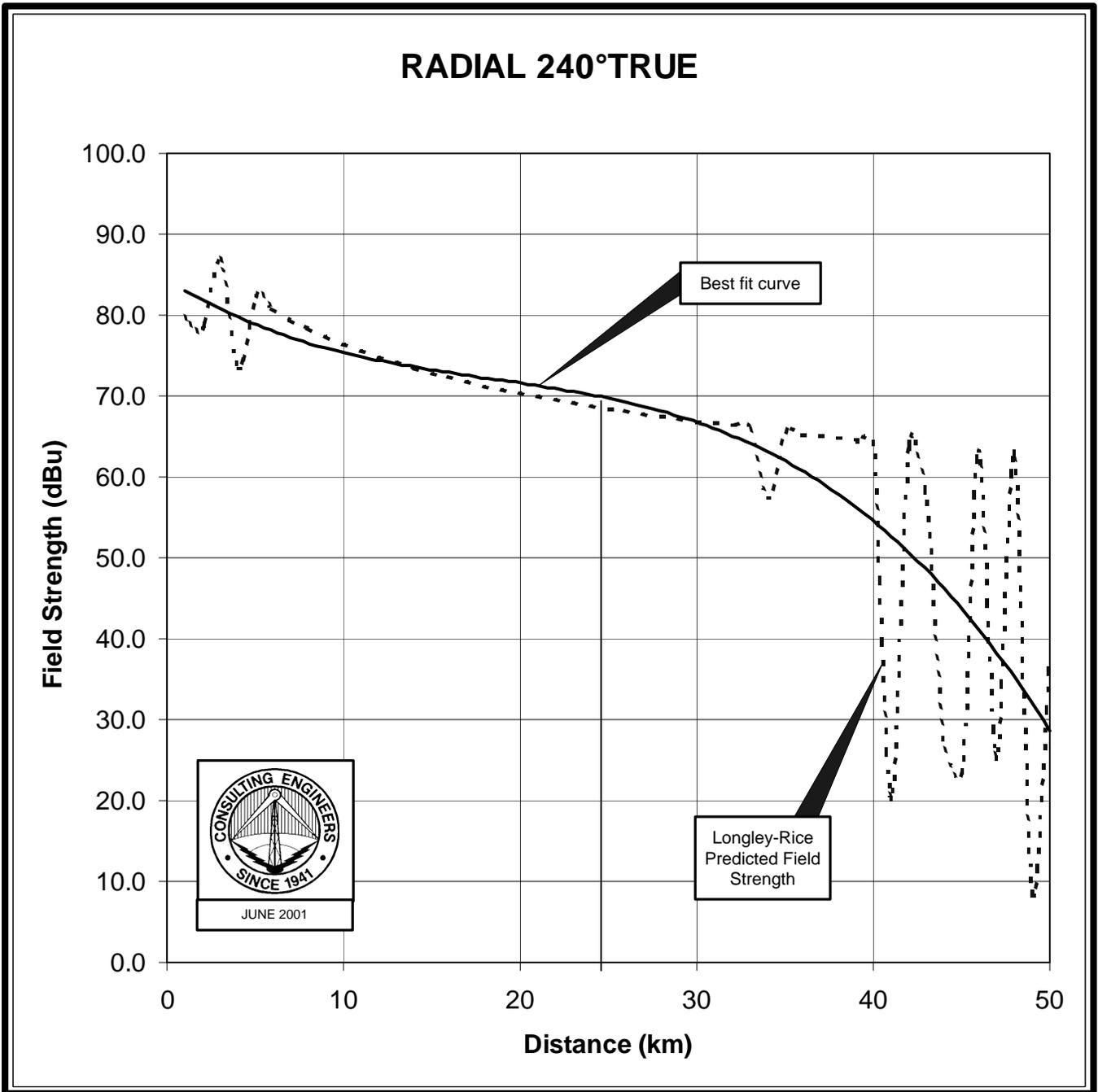
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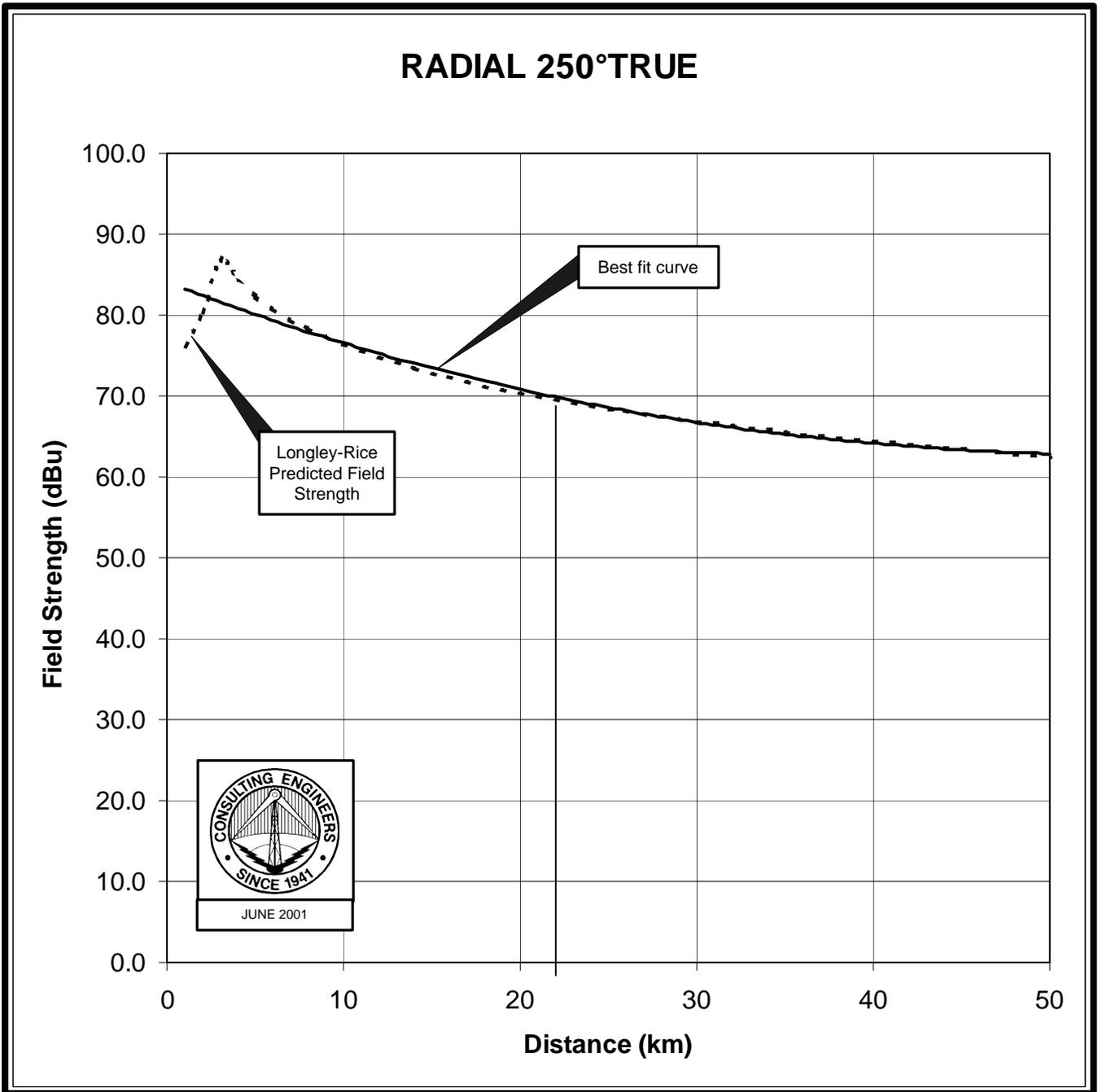
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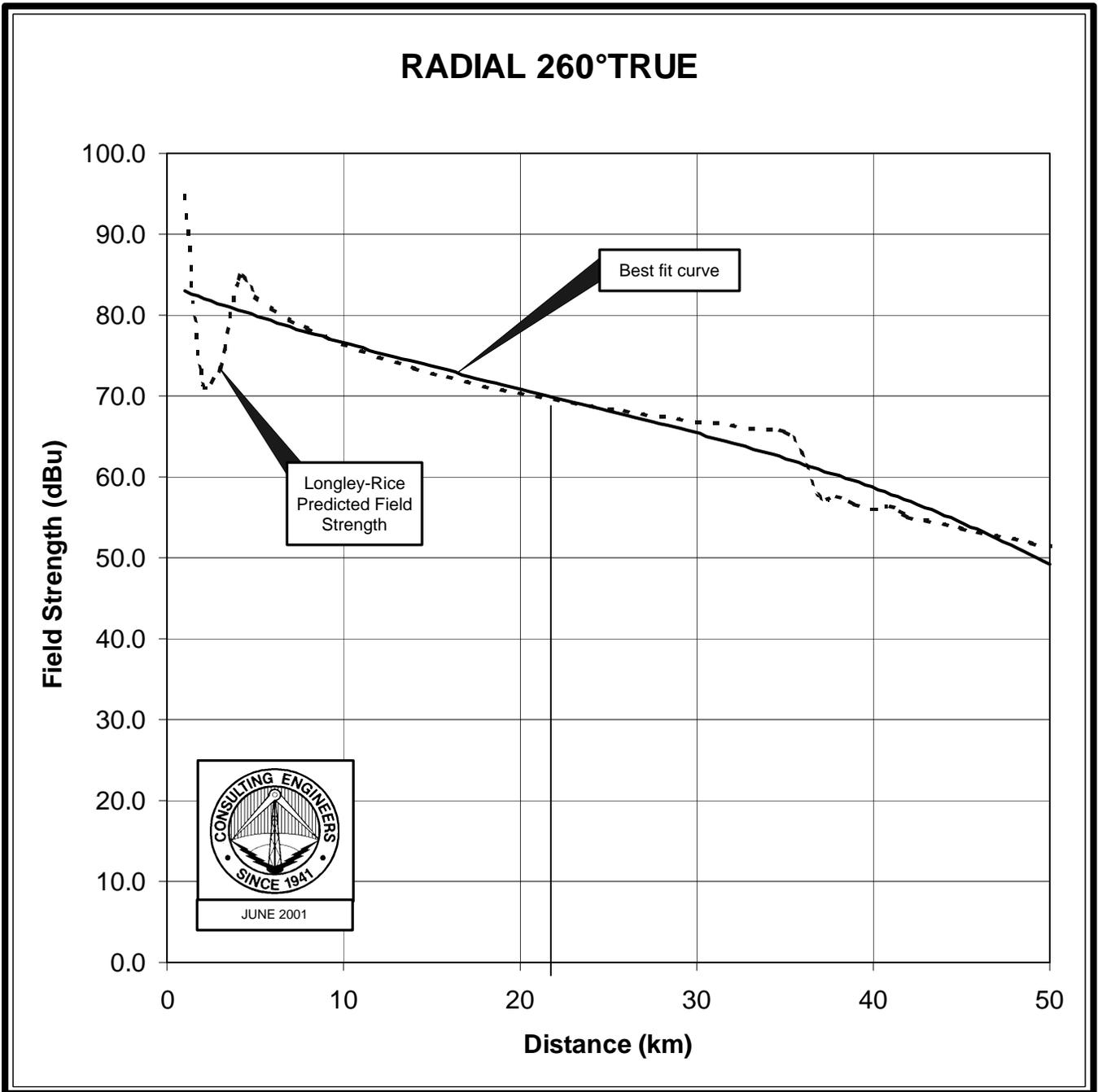
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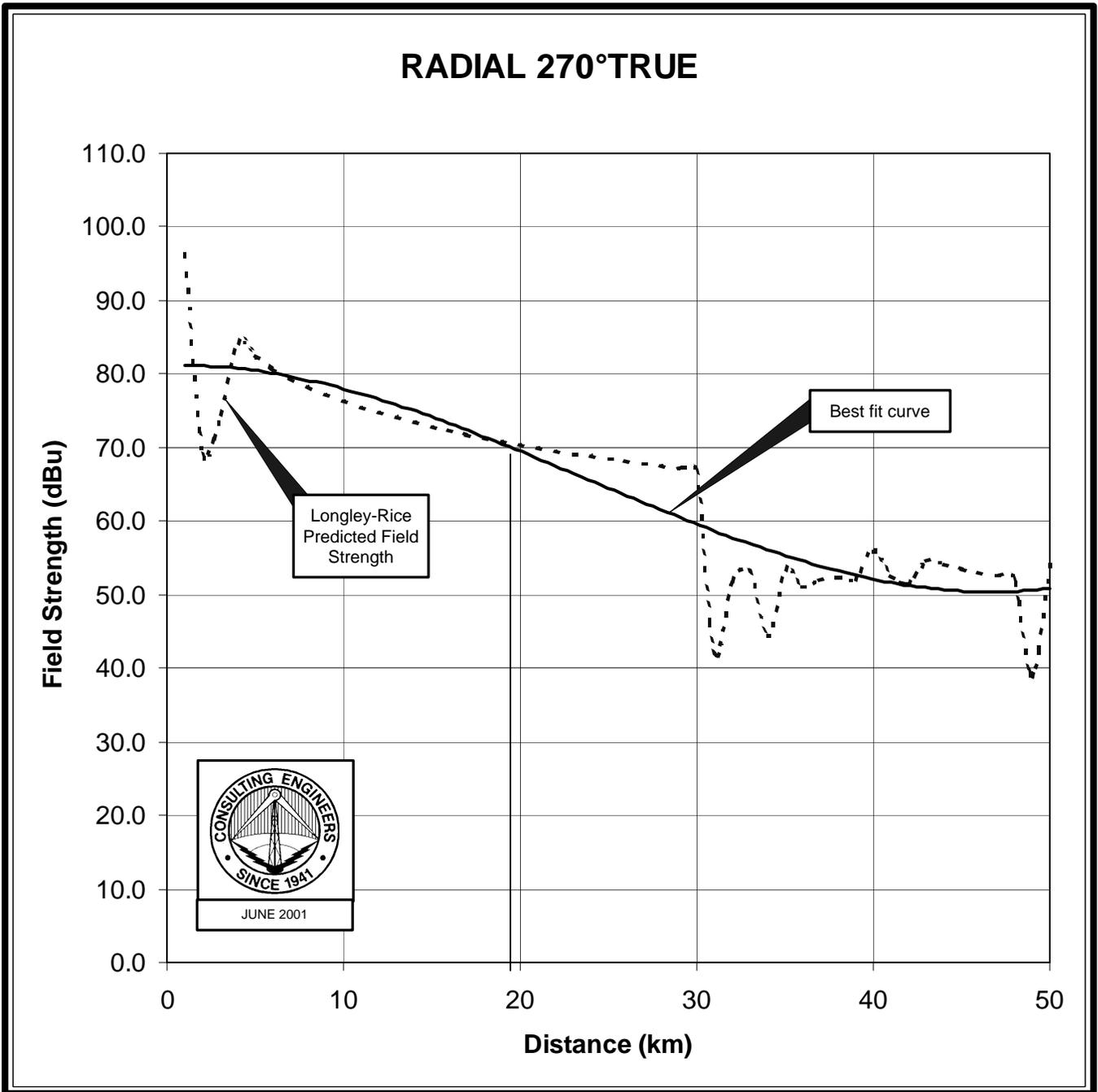
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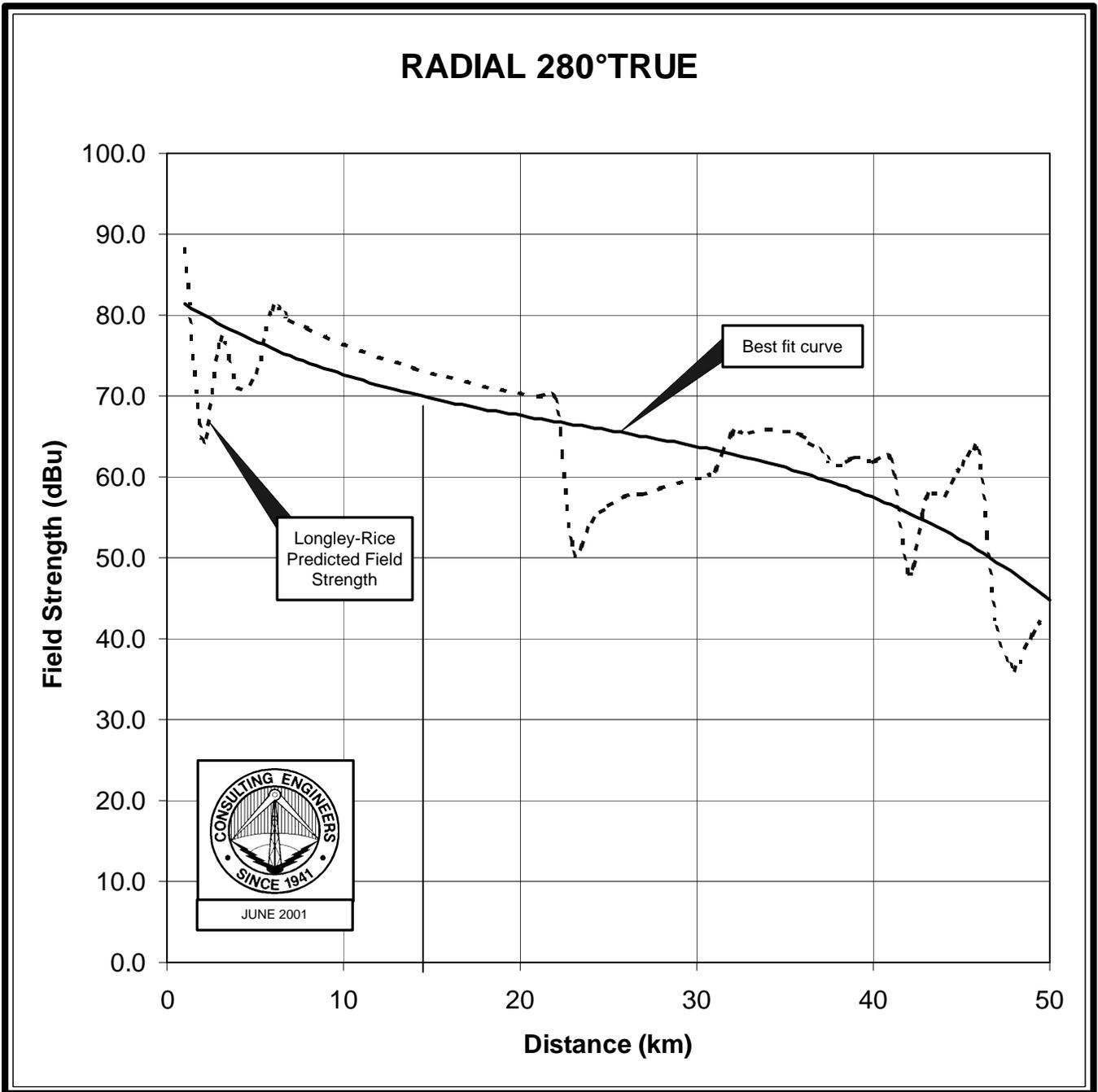
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CH 224A 0.28 KW 449 M

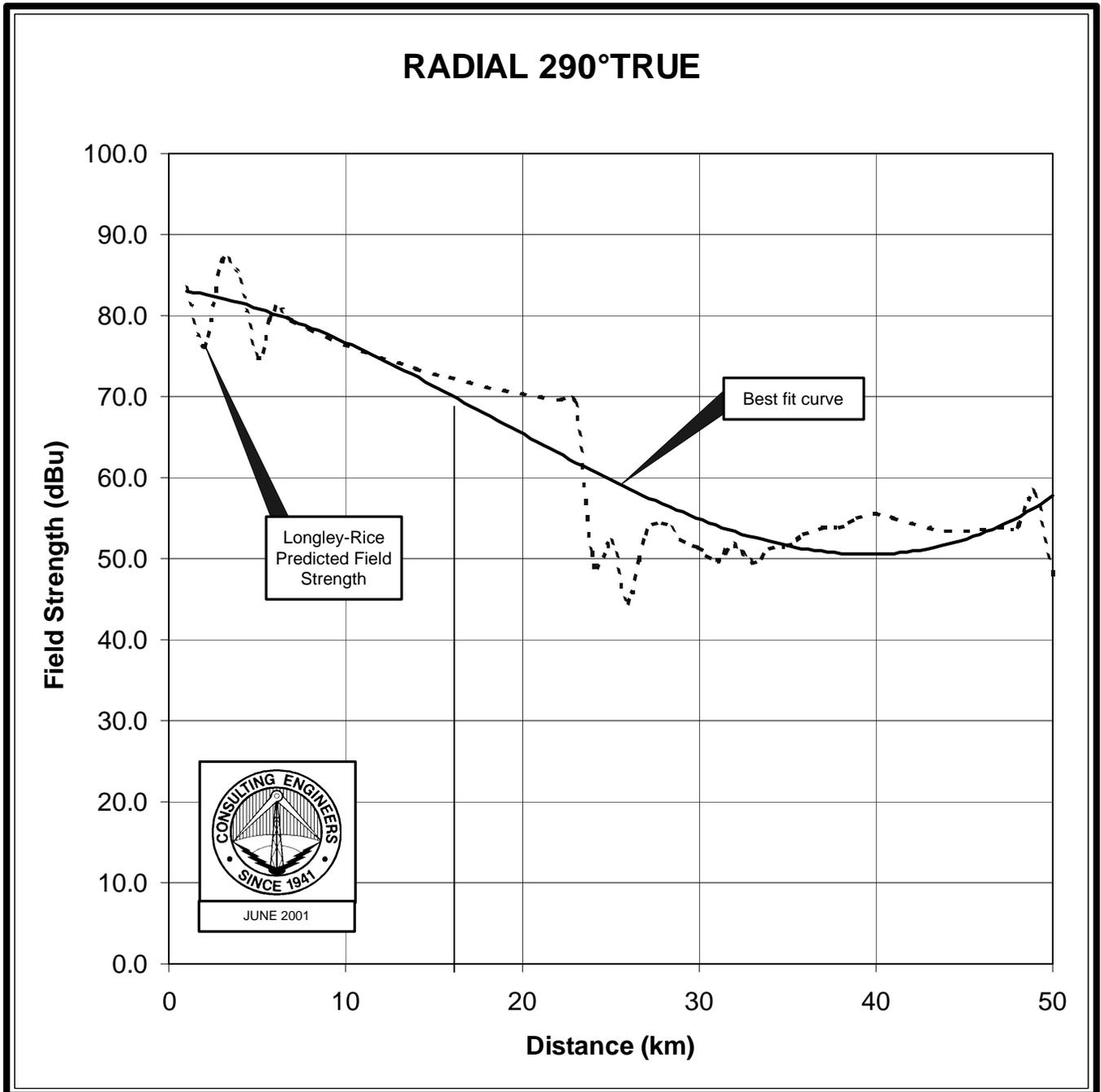
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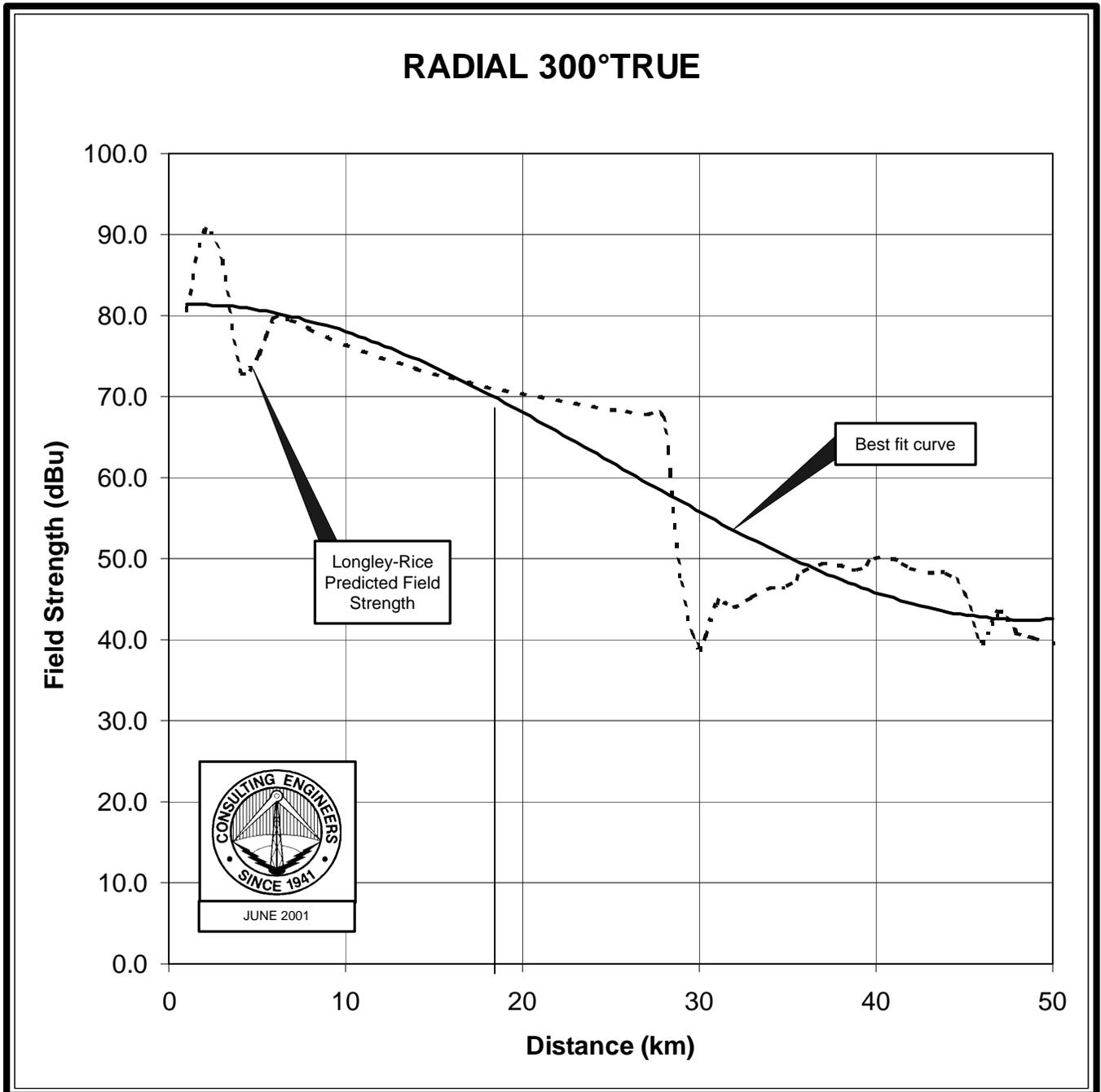
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RADIO STATION KELT(FM)
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CH 224A 0.28 KW 449 M

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RADIO STATION KELT(FM)
ADELANTO, CALIFORNIA
CH 224A 0.28 KW 449 M

Vertical Plane Radiation Pattern for Proposed Transmitting Antenna

(see following sheet)

DIELECTRIC COMMUNICATIONS

A UNIT OF GENERAL SIGNAL

Proposal Number: _____

Date: NOVEMBER 5, 1991

Call Letters: _____

Channel: _____

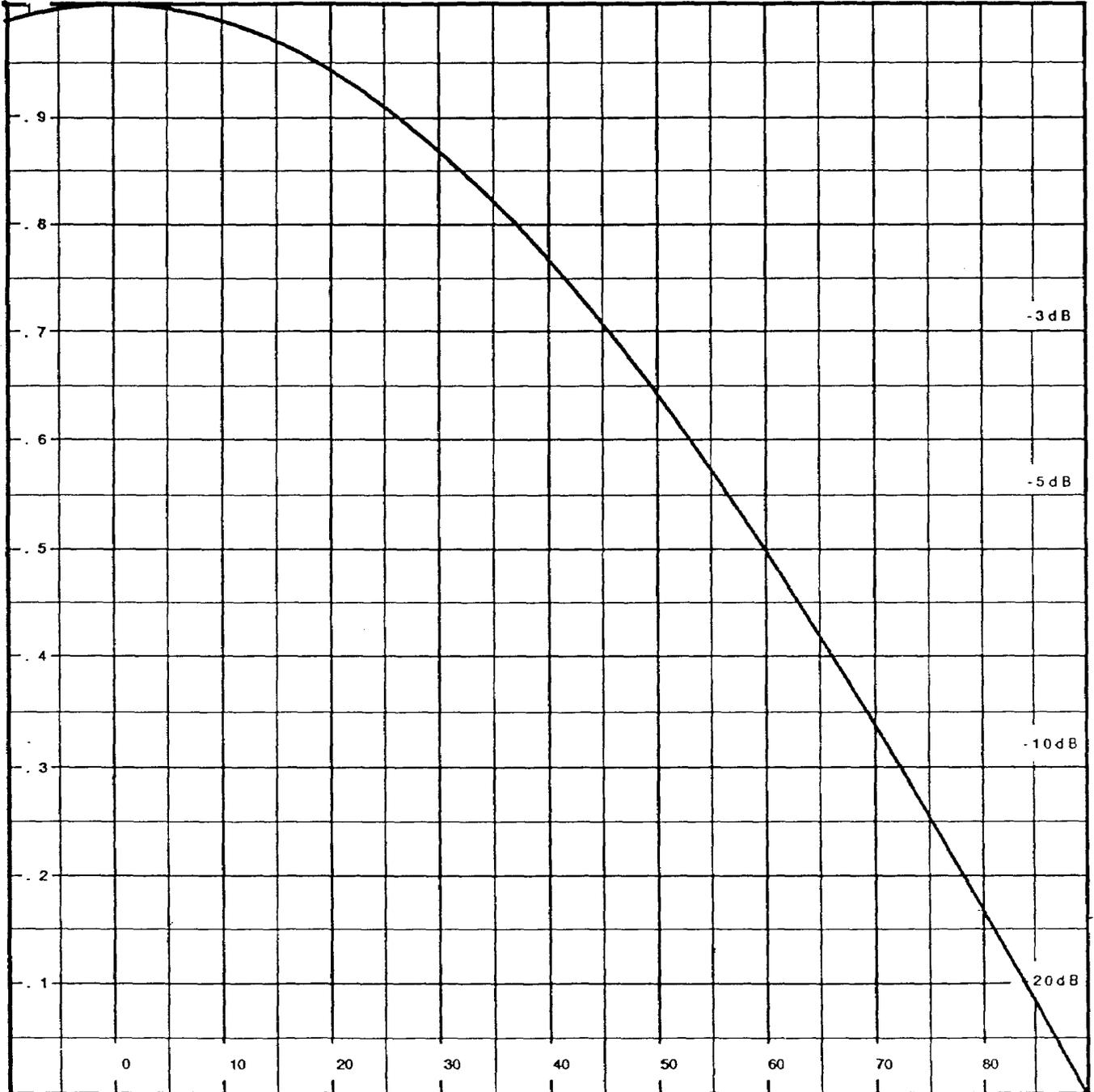
Antenna Type: DCR (1 BAY)

Location: _____

Customer: _____

VERTICAL PATTERN

RMS Gain at Main Lobe: .46 -3.37 dB Beam Tilt: 0 degrees Frequency: FM MHz
RMS Gain at Horizontal: .46 -3.37 dB Calculated: Measured: Drawing #: ELEV-1



DEGREES BELOW HORIZONTAL

NOTE: FROM -85 TO -90 DEGREES, MINIMUM RELATIVE FIELD IS 6% (PER ACTUAL MEASURED PATTERN).

RAYMOND, MAINE

Tel.: 207-655-4555

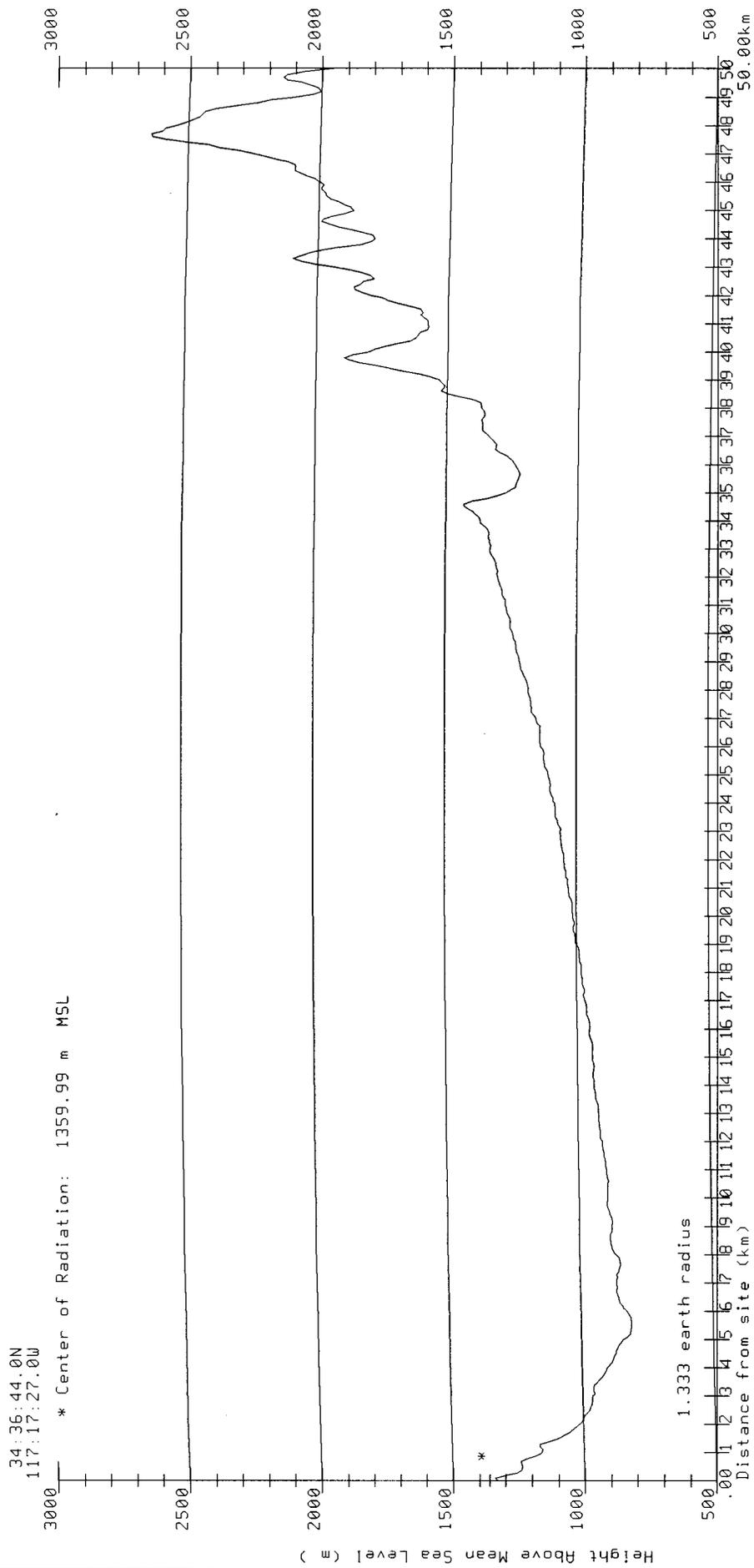
FAX: 207-655-4669

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RADIO STATION KELT(FM)
ADELANTO, CALIFORNIA
CH 224A 0.28 KW 449 M

Terrain Profile Data for Longley-Rice Analysis

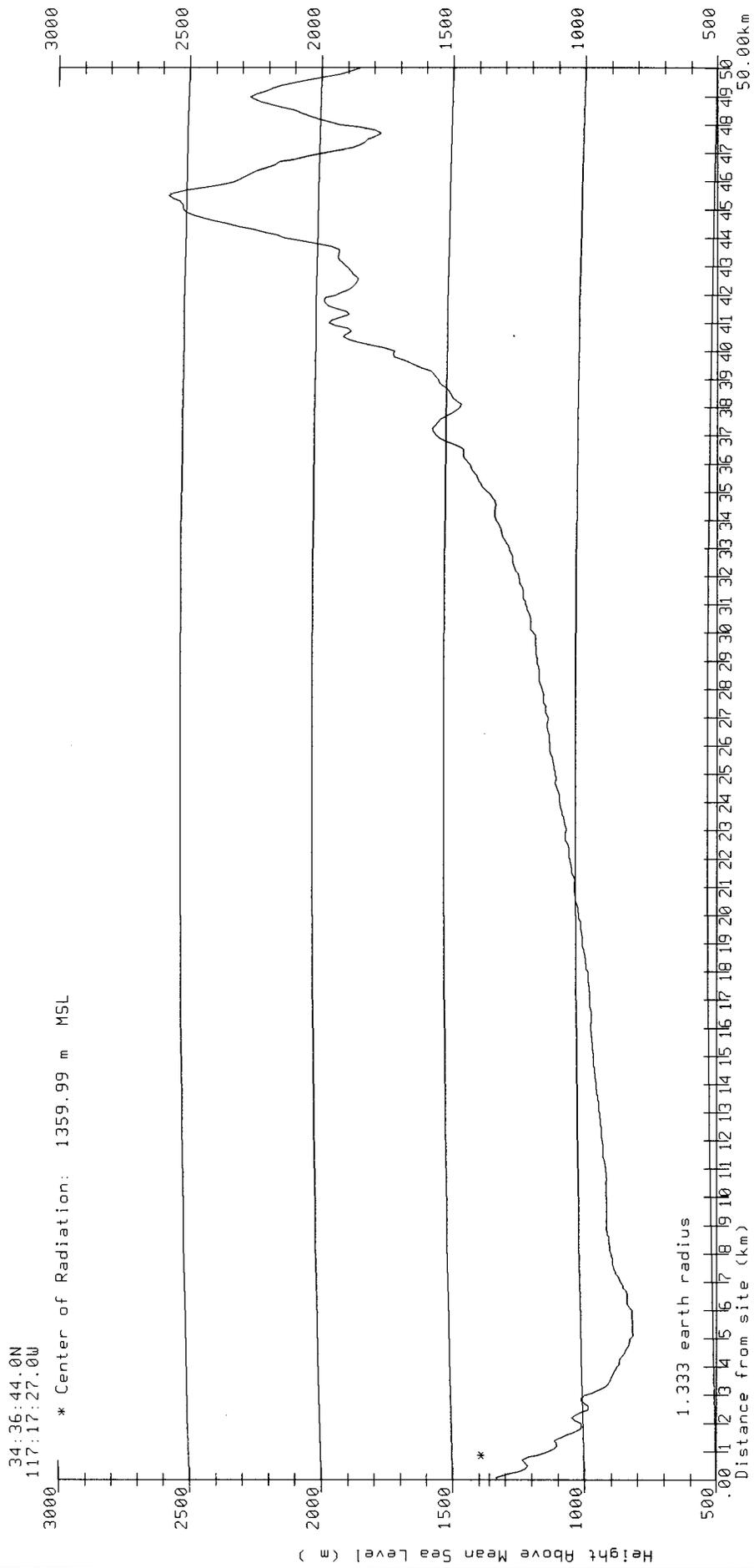
(Nine sheets follow)

EXHIBIT 1
 Page 1
 TERRAIN PROFILE GRAPH
 Azimuth 220.0



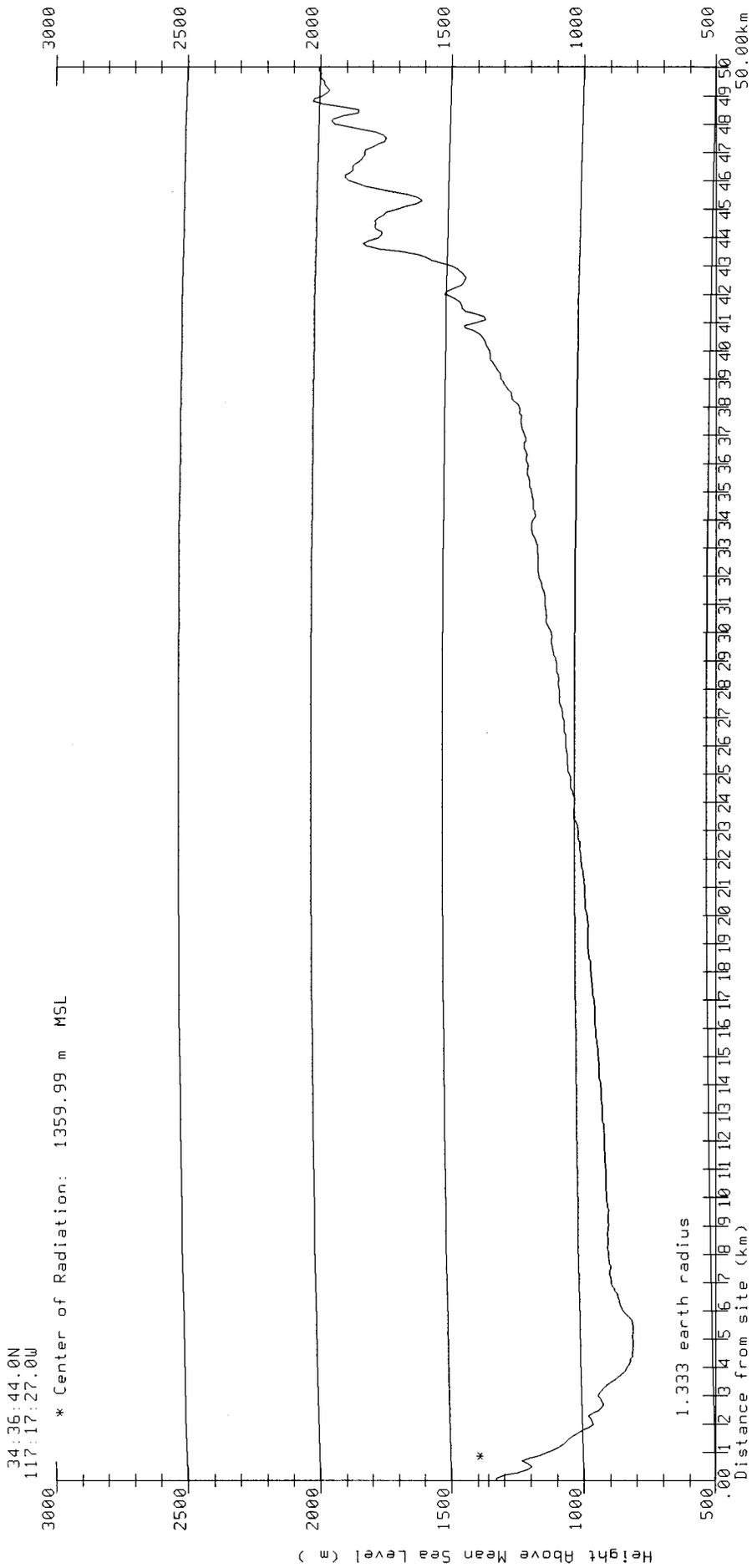
Elevation values from:
 3-second elevation data

du Treil, Lundin & Rackley
 Sarasota, Florida



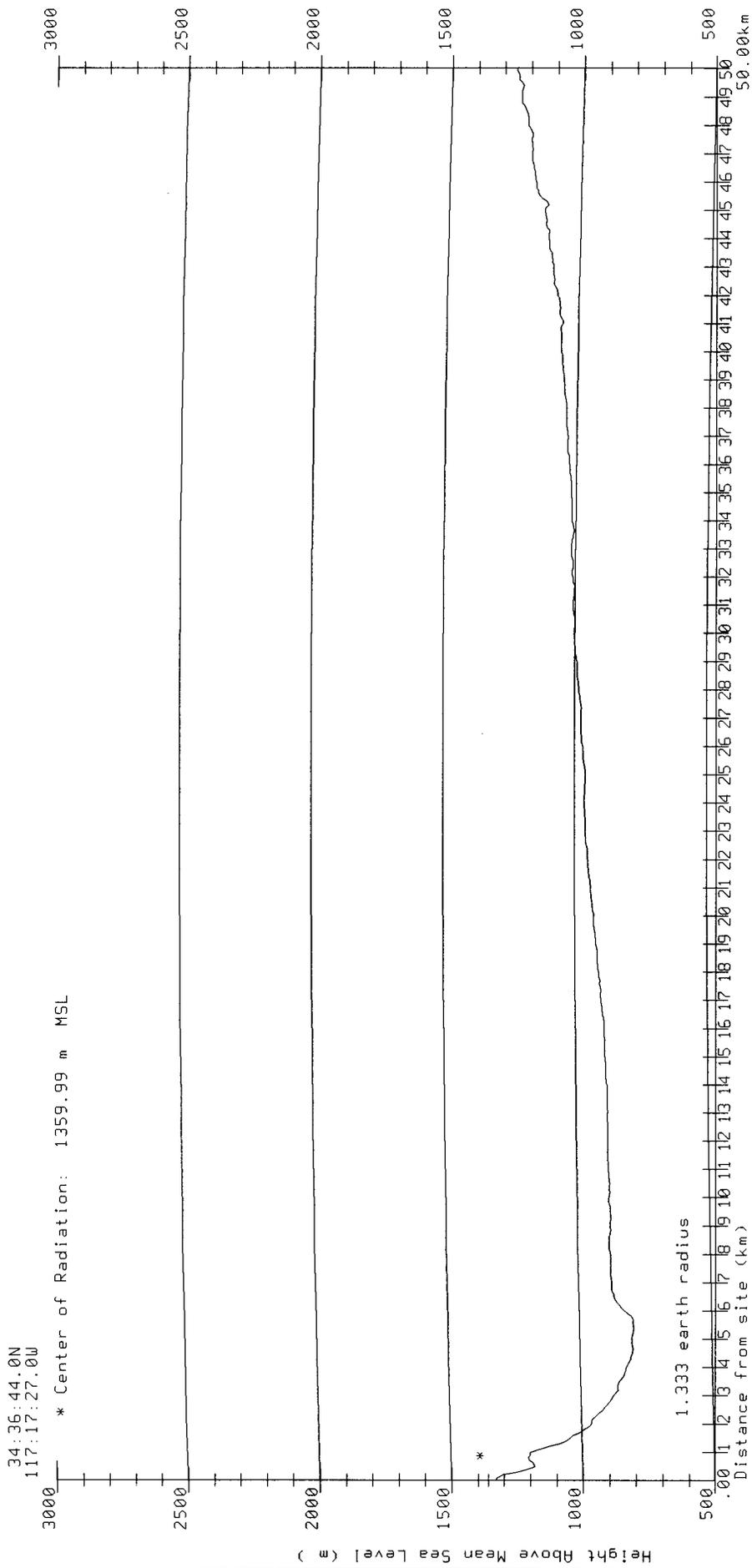
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 Sarasota, Florida



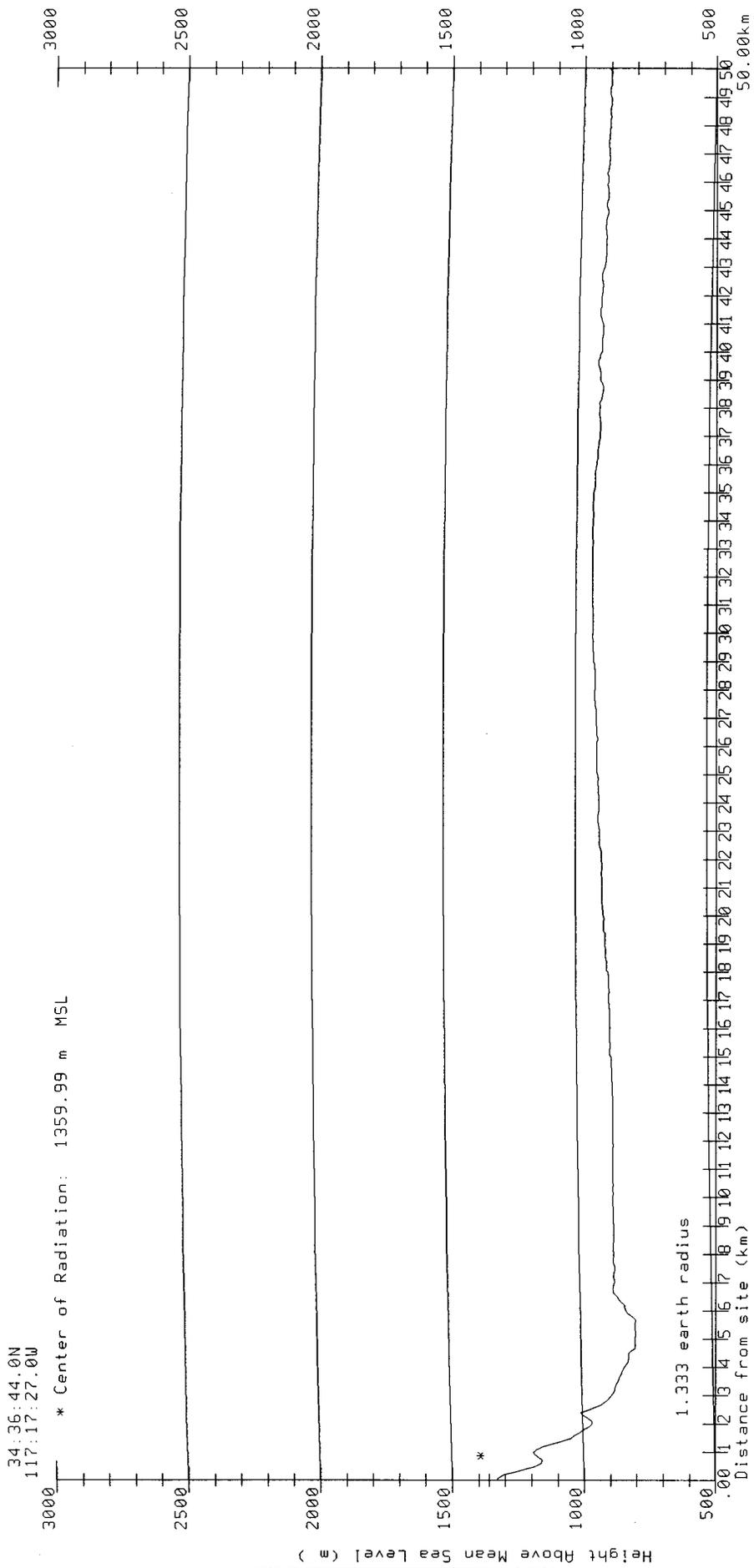
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du Treil, Lundin & Rackley
 Sarasota, Florida



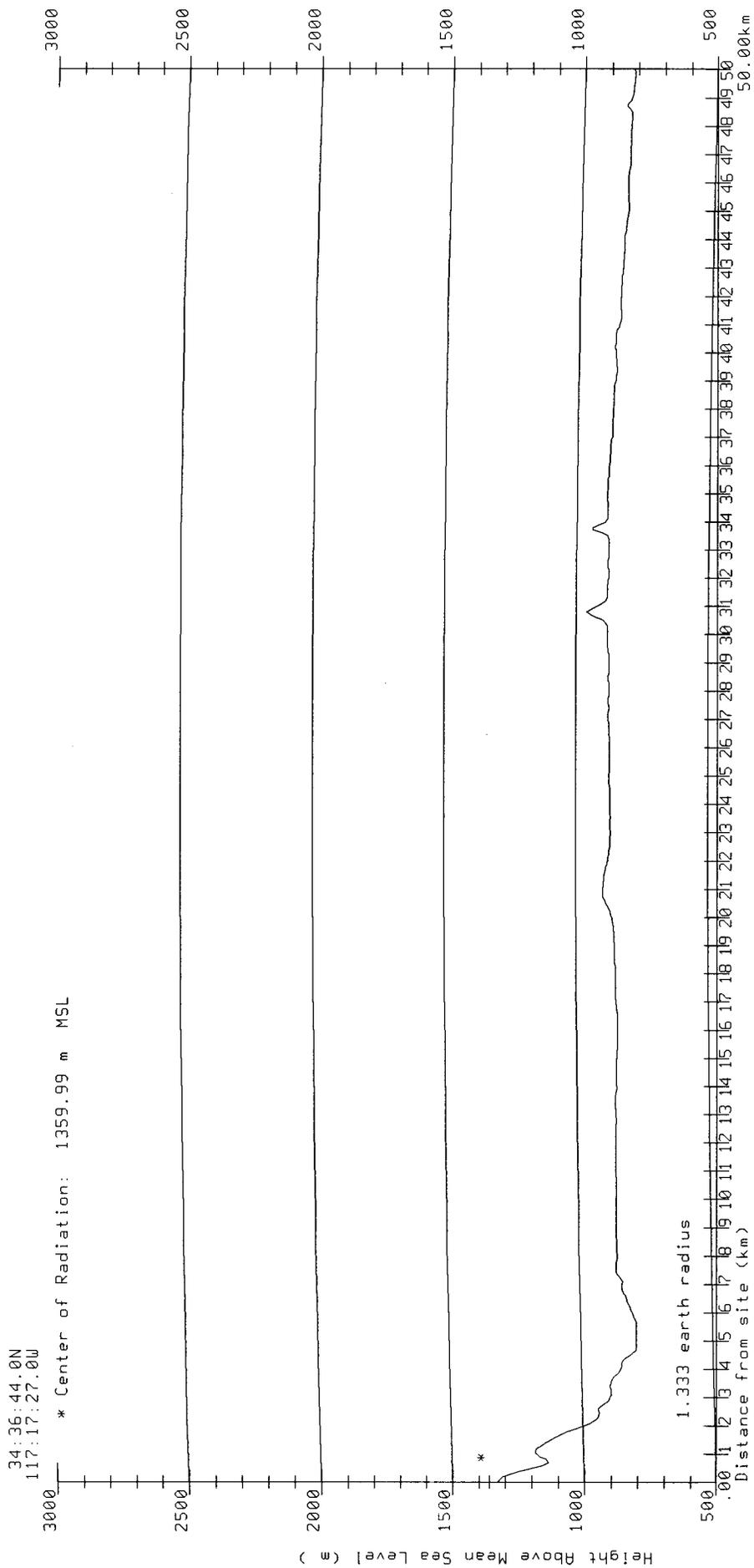
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du Treil, Lundin & Rackley
 Sarasota, Florida



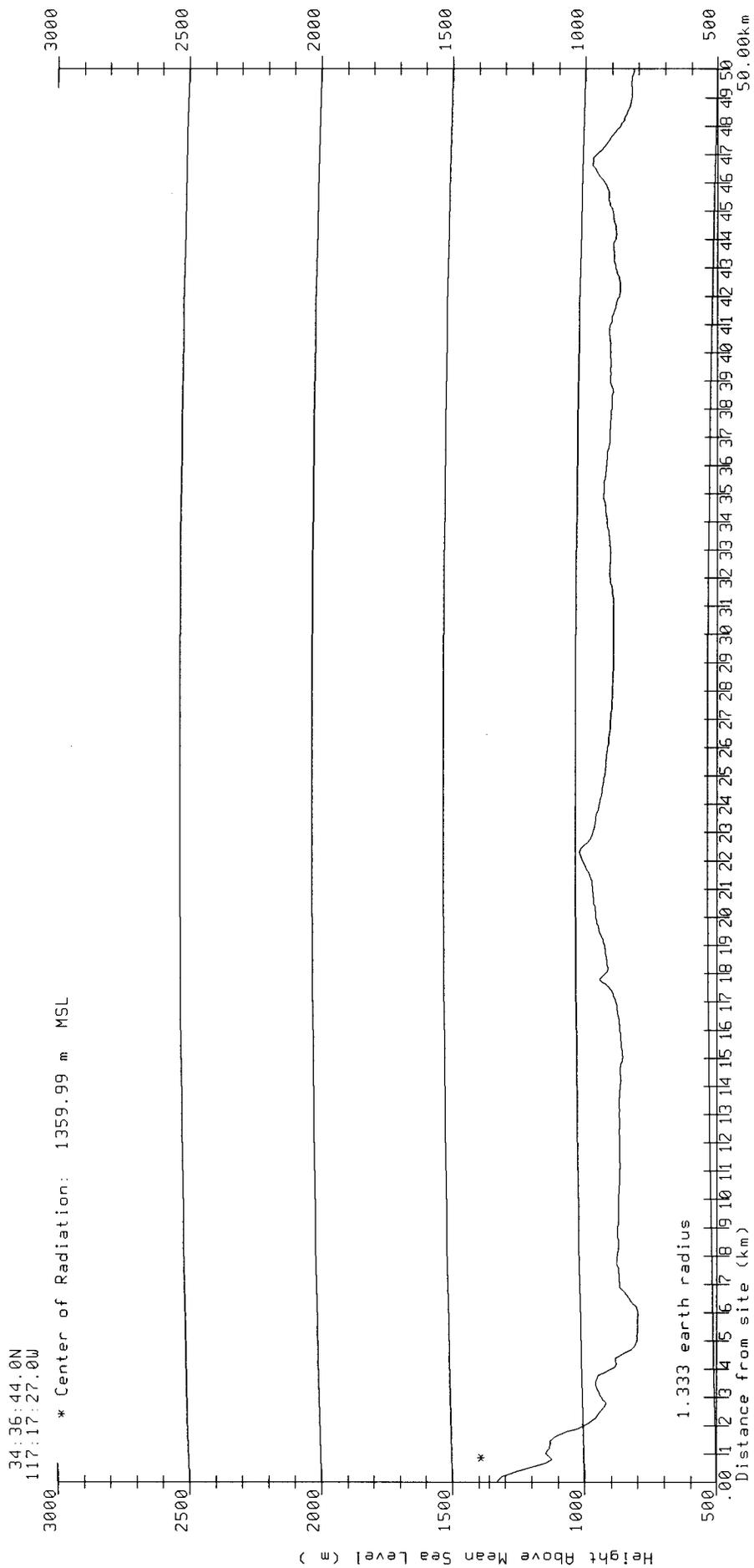
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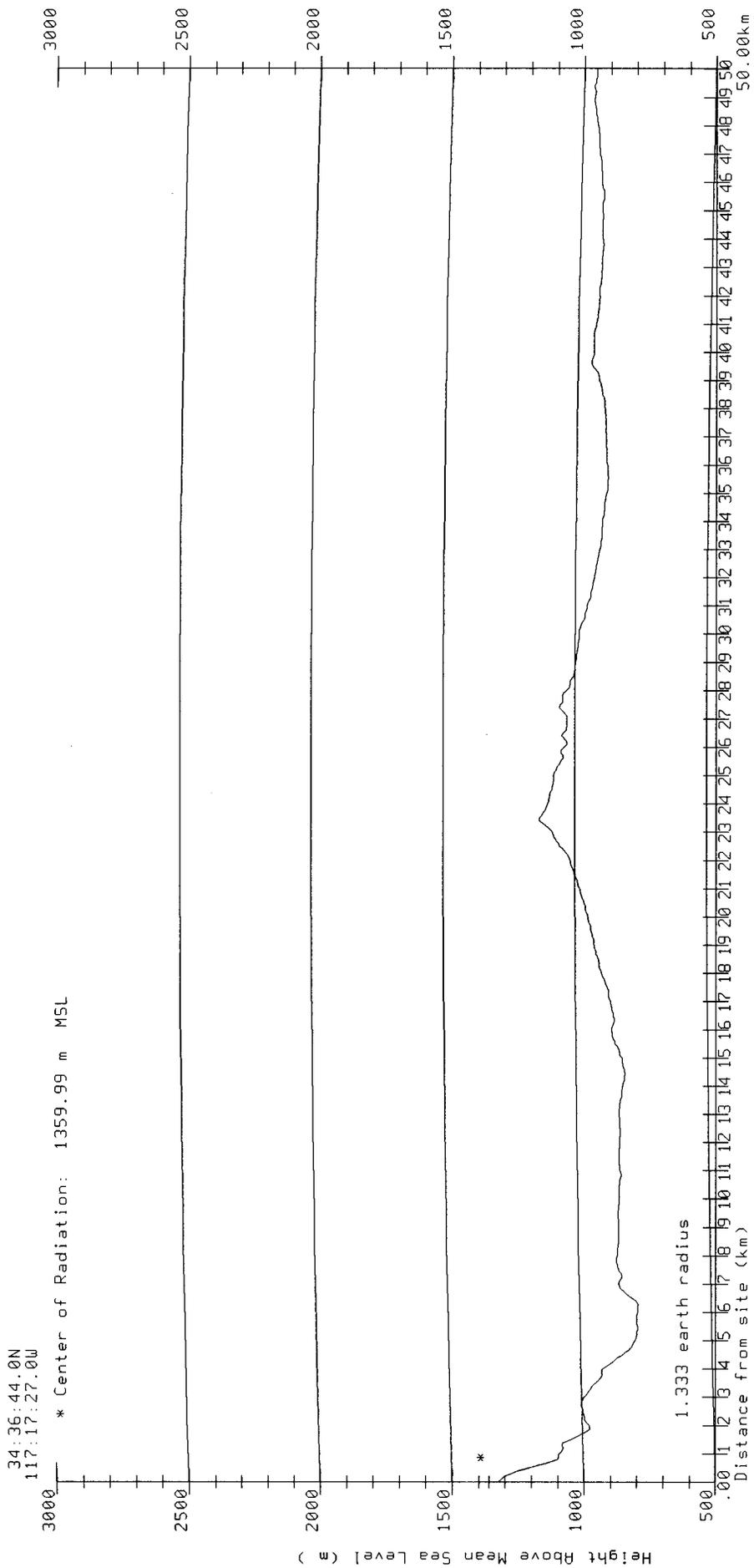
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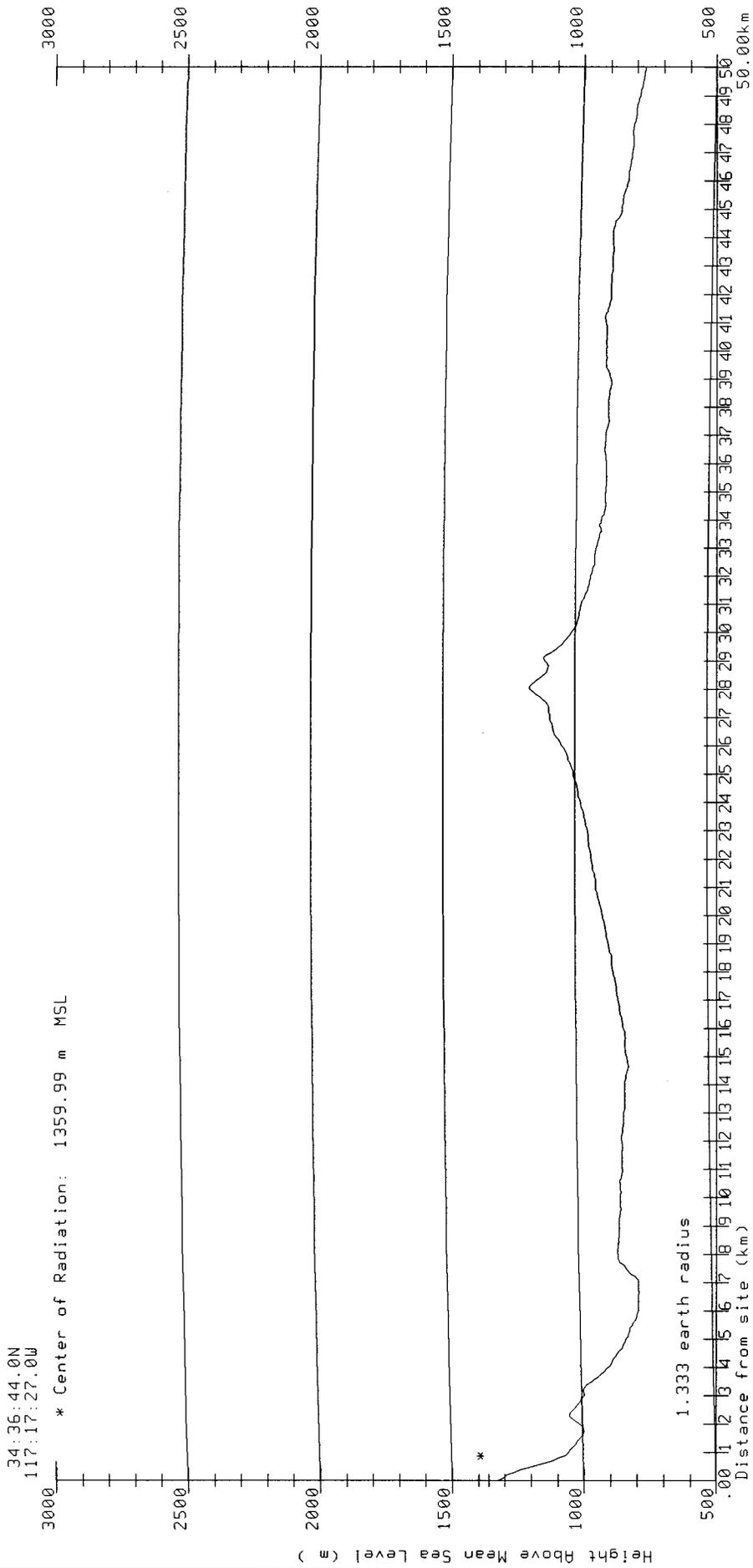
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