

**LONG DISTANCE MESSAGE TELECOMMUNICATIONS SERVICE**

**A. Method of Applying Rates**

Long Distance Message Telecommunications Service message rates between points (cities, towns or localities) are based on the V-H mileage between rate centers. In general, each point is designated as a rate center; certain small towns or localities are assigned adjacent rate centers with which they are closely associated for communication purposes or by community of interest.

For the purpose of determining V-H mileage's vertical and horizontal grid lines have been established across the United States and Canada. The spacing between adjacent vertical grid lines and between horizontal grid lines represents a distance of one coordinate unit. This unit is the square root of 0.1, expressed in statute miles. A vertical (V) and a horizontal (H) coordinate is computed for each rate center from its latitude and longitude location by use of appropriate map projection equations. A pair of V-H coordinates locates a rate center, for determining V-H mileage's, at a particular intersection of an established vertical grid line with an established horizontal grid line. The distance between any two-rate centers is the V-H mileage computed as explained in 4.3 following, with fractional miles being considered full miles.

**B. Determination of V-H Mileages**

To determine the rate distance between any two rate centers proceed as follows:

1. Obtain the "V" and "H" coordinates for each rate center found in Bellcore's V-H Tape and NECA FCC Tariff No. 4.
2. Obtain the difference between the "V" coordinates of the two rate centers. Obtain the difference between the "H" coordinates. Note: The difference is always obtained by subtracting the smaller coordinate from the larger coordinate.
3. Divide each of the differences obtained in 2. by three, rounding each quotient to the nearer integer.
4. Square these two integers and add the two squares. If the sum of the squares is greater than 1777, divide the integers obtained in 3. by three and repeat step 4. Repeat this process until the sum of the squares obtained in 4. is less than 1778.
5. The number of successive divisions by three in steps 3. and 4. determines the value of "N". Multiply the final sum of the two squares obtained in step 4. by the multiplier specified in the following table for this value of "N" preceding:

<u>N</u>	<u>Multiplier</u>	<u>Minimum Rate Mileage</u>
1	0.9	---
2	8.1	41
3	72.9	121
4	656.1	361
5	5,904.9	1,081
6	53,144.1	3,241

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**B. Determination of V-H Mileage (cont'd)**

6. Obtain square root of product in 5. and, with any resulting fraction, round up to next higher integer. This is the message rate mileage except that when the mileage so obtained is less than the minimum rate mileage shown in 5. preceding, the minimum rate mileage corresponding to the "N" value is applicable. Example: The message rate distance is required between Eldorado, Oklahoma, and Oklahoma City, Oklahoma.

	V	H
a. Eldorado	8285	4651
Oklahoma City	7947	4373
b. Difference	338	278

- c. Dividing each difference by three and rounding to nearer integer = 113 and 93

d. Squaring integers and adding,	113 x 113 = 12,769
Sum of squared integers	93 x 93 = <u>8,649</u> 21,418

Sum of squared integers is greater than 1777, so divide integers in c. by three and repeat d.

- e. Dividing integers in c. by three and rounding = 38 and 31

f. Squaring integers and adding,	38 x 38 = 1,444
	31 x 31 = <u>961</u> 2,405

Sum of squared integers is greater than 1777, so divide integers in e. by three and repeat f.

- g. Dividing integers in e. by three and rounding = 13 and 10

h. Squaring integers and adding,	13 x 13 = 169
Sum of squared integers	10 x 10 = <u>100</u> 269

This sum of squared integers is less than 1778 and was obtained after three successive divisions by three; therefore, "N" = 3.

i. Multiply final sum of squared integers by factor 72.9 (corresponding to "N" = 3)	269
	<u>x 72.9</u> 19,610.1

- j. Square root of 19,601.1 = 140 and a fraction, which is rounded up to 141 miles (fractional miles being considered full miles). The 141 miles is larger than the minimum of 121 rate miles applicable when "N" = 3, so the message rate mileage is 141 miles.