LONG DISTANCE MESSAGE TELECOMMUNICATIONS SERVICE

A. Method of Applying Rates

   1. Determination of Rate Centers

   Long distance telecommunications service rates between points (cities, towns, or localities) are based on the air line distance 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.

   2. Vertical and Horizontal Coordinates

   For the purpose of determining air line mileage, 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 air line mileage, 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 air line mileage computed as explained in A.3 following, with fractional miles being considered full miles.

   3. Determination of Air Line Mileages

      a. Long Distance Telecommunications Services

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

      1. Obtain the "V" and "H" coordinates for each rate center.

      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 integer 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.

LONG DISTANCE MESSAGE TELECOMMUNICATIONS SERVICE (cont'd)

A. **Method of Applying Rates (cont'd)**

3. Determination of Air Line Mileages (cont'd)

a. Long Distance Telecommunications Services (cont'd)

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:

N	Multipler	Minimum Rate Mileage
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

6. Obtain square root of product in 5. and, with any resulting fraction, round up to next highest 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 Little Rock, Arkansas and Paragould, Arkansas.

		V	H
a.	Little Rock	7721	3451
	Paragould	7330	3283
b.	Difference	391	168

c. Dividing each difference by three and rounding to nearer integer = 130 and 56

d. Squaring integers and adding,   130 x 130 = 16900

                                            56 x   56 = 3136

Sum of squared integers   20036

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

e. Squaring integers and   43 x   43 = 1849
Adding   19 x   19 = 361
Sum of squared integers   2210

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

LONG DISTANCE MESSAGE TELECOMMUNICATIONS SERVICE (cont'd)

A. Method of Applying Rates (cont'd)

3. Determination of Air Line Mileages (cont'd)

   a. Long Distance Telecommunications Services (cont'd)

      6. (cont'd)

         f. Dividing integers in e. by three and rounding = 14 and 6

         g. Squaring integers and   14 x 14   196
            adding,   6 x   6   36

            Sum of squared integers   232

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

         h. Multiply final sum of squared integers   232
            by factor 72.9 (corresponding to "N" = 3) x   72.9
                                                        = 16,912.8

         i. Square root of 16,912.8 = 130.04922 and a fraction, which is rounded up to 131
            miles (fractional miles being considered full miles). The 131 miles is larger than the
            minimum of 121 rate miles applicable when "N" = 3, so the message rate mileage is
            131 miles.