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Project No. 197-641-01R

CLIMATOLOGICAL SUMMARIES

VISIBILITIES BELOW 1/2 MILE
AND CEILINGS BELOW 200 FEET
Volume 32

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DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
Systems Research & Development Service

by

U.S. DEPARTMENT OF COMMERCE
Environmental Science Services Administration
ENVIRONMENTAL DATA SERVICE
NATIONAL WEATHER RECORDS CENTER

Asheville, N.C.
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SKDS Report No. RD-69-22

CLIMATOLOGICAL SUMMARIES

VISIBILITIES BELOW 1/4 MILE
AND CEILINGS BELOW 200 FEET

JUNE 1969

This report has been prepared by U. S. Department of Commerce, Environmental Science Services Administration, Environmental Data Service, National Weather Records Center, Asheville, N.C. for the Systems Research and Development Service, Federal Aviation Administration, under Contract No. FA-67-WAI-129. The contents of this report reflect the views of the contractor, who is responsible for the facts and the accuracy of the data presented herein, and do not necessarily reflect the official views or policy of the FAA. This report does not constitute a standard, specification or regulation.
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III Visibility, ceiling 100 ft.  
IV Visibility, ceiling zero.  
V Visibility, ceiling 100 ft. or zero.  
VI Total time at or below each visibility classified as one incident, irrespective of ceiling.  
VII Total time at or below each visibility classified as one incident, ceiling 100 ft.  
VIII Total time at or below each visibility classified as one incident, ceiling zero.  
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1. 0700-1359 Local Standard Time
2. 1400-2159 Local Standard Time
3. 2200-0659 Local Standard Time
4. All Hours

<table>
<thead>
<tr>
<th>Table</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>XII</td>
<td>All conditions.</td>
</tr>
<tr>
<td>XIII</td>
<td>Temperature less than 33°F.</td>
</tr>
<tr>
<td>XIV</td>
<td>Temperature less than 33°F, with fog, no precipitation and winds of less than 9 knots.</td>
</tr>
<tr>
<td>XV</td>
<td>Temperature less than 33°F, with fog, no precipitation and wind 9-12 knots.</td>
</tr>
<tr>
<td>XVI</td>
<td>Temperature less than 29°F.</td>
</tr>
<tr>
<td>XVII</td>
<td>Temperature less than 29°F, with fog, no precipitation and wind less than 9 knots.</td>
</tr>
<tr>
<td>XVIII</td>
<td>Temperature less than 29°F, with fog, no precipitation and wind 9-12 knots.</td>
</tr>
<tr>
<td>XIX</td>
<td>Temperature greater than 32°F.</td>
</tr>
<tr>
<td>XX</td>
<td>Temperature greater than 32°F, with fog, no precipitation and wind less than 9 knots.</td>
</tr>
<tr>
<td>XXI</td>
<td>Temperature greater than 32°F, with fog, no precipitation and wind 9-12 knots.</td>
</tr>
</tbody>
</table>
INTRODUCTION

The tables contained herein have been prepared and organized for use in evaluating the cost/benefits of all weather landing systems and fog dissipation techniques. Thus, the time intervals of duration of the categories of weather are significant in determining the times of the delay, diversion or cancellation of an aircraft flight resulting from a restricted weather category. This information together with the number and types of aircraft affected by the restricted weather and the costs of a delay, diversion or cancellation combine to provide the total costs resulting from the weather restrictions.

Climatological summaries have been prepared for 41 airports. Their location and associated volume numbers are listed in Table A.
The Greater Pittsburgh International Airport is situated on a hill, nearly surrounded by valleys. The surrounding country is rugged in character with hills rising between numerous small river valleys. The highest point in the vicinity is 1340 feet above sea level.

At times heavy ground fog develops along the river valleys and winds with a trajectory from the southeast, south, or southwest may cause the fog to overflow the valleys and drift over the airport.

The tables in this publication are based on the period January 1, 1956—December, 1965. Celiometer measurements of ceiling height were made for the entire period. Transmissometers (500 ft. baseline) were commissioned on runway 28L on June 10, 1957, runway 10L on April 30, 1964, and (250 ft. baseline) runway 28R on December 9, 1965. Location of the airport weather station, its elevation, and the height of wind instrumentation were as follows:

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Lat. N.</th>
<th>Long. W.</th>
<th>Height of Wind Instrument Feet above ground</th>
<th>Station Elevation Feet above MSL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1-56</td>
<td>10-23-58</td>
<td>40° 30'</td>
<td>80° 13'</td>
<td>110</td>
<td>1151</td>
</tr>
<tr>
<td>10-24-58</td>
<td>12-31-65</td>
<td>40° 30'</td>
<td>80° 13'</td>
<td>20</td>
<td>1151</td>
</tr>
</tbody>
</table>
NATURE OF DATA

The data used in the preparation of the climatological tables were extracted from 10 years of WBAN 10-A forms from January 1956 through December 1965. There were two exceptions: The data for Dallas International covered the period January 1963 through December 1965 and for Kansas City - Mid-Continent the period July 1957 through December 1965. All data (Record, Special, Local, Check observations) were recorded on punched cards to the hour and minute whenever a change occurred in the ceiling, surface visibility, present weather, runway visual range or runway visibility during the time the ceiling was less than 200 feet and/or the surface visibility was less than 1/2 mile. The observation which ended a category of the above conditions was punched and if this observation was not a Record observation, the next Record observation was punched. The elements transcribed were: the time in hours and minutes, ceiling, surface visibility, tower visibility, present weather, temperature, dew-point, surface wind, altimeter setting and remarks concerning runway visual range and runway visibility.

These data should prove to be a valuable source for additional studies where low visibilities are considered.

Runway visual range (RVR) is the operational weather criteria for airport landing systems. The limits of visibility conditions for categories of aircraft operations are presented in Table B. Only Cat. II criteria are currently operational. Because RVR as such, is not available on a uniform basis for the station and period of record under study, visibilities and ceilings were used for delineating categories of weather minimums for landing and take-off operations. The determination of RVR would require:

1. The light setting of the edge lights,
2. the background lighting,
3. the location with respect to runway,
4. a special analyzer to integrate the transmissiometer readings etc.

This information has not often been recorded with the transmissiometer data.

* Except Kansas City - Mid-Continen. Only Record (hourly) observations were taken during the period of record at this station; 16 hours per day (0700-2200) through November 1957 and 24 hours per day December 1957 through December 1965.
EXPLANATION OF TABLES

All the tables of climatological summaries except Table are based on the reported visibilities of less than 1/2 mile or ceiling less than 200 feet.

The tables of climatological summaries in these publications include:

1. reported visibility and ceiling values versus time intervals of duration.

2. weather categories of aircraft landing systems based on their relationship to ceiling and visibility as presented in Table C, versus intervals of duration. This is Table X only.

3. percentage frequency of wind direction versus wind speed for each category of aircraft landing system using the relationship of Table C for Record observations only. These are presented for 13 stations only. This is Table XI only. *

4. weather categories of landing systems based on their relationship to ceilings and visibility as presented in Table E, versus intervals of duration. These tables are also summarized on the basis of wind speed and temperature values.

* These stations are:
REPORTED VISIBILITY AND CEILING VALUES VERSUS INTERVALS OF DURATION

Nine summaries are presented. In Tables I - V the values represent the individual incidents of specified ceiling and visibility. Thus, in Table III 3/8 mile visibility with 100 ft. ceiling occurs with a specific frequency for each interval of duration.

In Tables VI to IX, the frequency of occurrence represents visibilities for specific conditions of ceilings at or below the listed visibility. They are cumulative incidence wherein the total time at or below a certain visibility value for the ceiling value specified is considered as one incident. Thus, if in Table VII there are 172 incidents of 3/8 mile in the interval of 1-15 minutes, it represents 172 times during the 10-year period that visibilities 3/8 mile or less with ceilings 100 feet.

Another example which combines the entries in the individual and the cumulative tables is as follows: If visibility is distributed as shown in the figure, for ceiling 100 feet, if for 20 minutes the visibility was 3/16 then went to 1/8 for 10 minutes, then went to 3/16 for 5 minutes and then to greater than 1/2 mile visibility in Table III there would be 2 counts for 3/16, one under 16-30 minutes and one under 1-15 minutes; and one count for 1/8 under 1-15 minutes; whereas, in the cumulative table for visibilities at or below a given visibility with 100-foot ceilings - Table VII in the 3/8, 5/16, 1/4 and 3/16 mile categories there would be one count under 31-45 minutes (actually 35 minutes) and one count in 1/8 mile category under 1-15 minutes (actually 10 minutes).
To estimate the total time of occurrence for a particular interval of time for the period of record one multiplies the average of time period by the frequency of occurrence of the specified conditions for this time period. Thus, if visibility of 3/8 mile with ceiling 100 feet (Table III) occurred 14 times between 16-30 minutes, the estimated total time would be 14 x 23 or 322 minutes.

WEATHER CATEGORIES OF AIRCRAFT LANDING SYSTEMS
VERSUS INTERVALS OF DURATION BASED ON TABLE D

A single table (Table X) based on Table C for the period of record is presented. Table C is based on the current practices relating RVR to meteorological visibilities as shown in Table D.

Table X is in three sections:

Xa. Frequency of occurrence of the landing categories versus the indicated duration intervals:

In this summary Categories II, IIIa, IIIb, and IIIc are represented by the frequency of these conditions occurring during the specified intervals.

In Category II + III the frequency represents the visibilities and ceilings at or below Category II weather, i.e., below 200 feet and/or 1/2 mile for a continuous period of time.

In Category III, the number of occurrences represent the frequency the weather was in Category IIIa and IIIb/c i.e., observation below 1/4 mile and equal to and above 1/4 mile when the ceiling is reported as zero for a continuous period of time.

Xb. Total time in each duration versus the duration intervals in hours and tenths of hours. The entries in this table are arrived by adding the times in minutes associated with the frequencies above. These totals are converted to hours and tenths. This table also contains the percentage of time for the 10-year period of observations of specified duration intervals, i.e., 1-90, 91-all, 1-all. This table is derived by dividing the total time under each category for the specified duration interval by the total number of hours. Thus the percentage value for Category II + III the 1-all group (last column, 4th value down) represents the frequency of occurrence for the ten-year period in percent of visibility and ceilings below 1/2 mile and/or 200 feet.

Xc. Average time in each duration versus the duration intervals.

This table is derived by dividing the total time in minutes of each item in Table Xb by the frequency of occurrence in Table Xa.

WIND DIRECTION VERSUS SPEED BY PERCENTAGE FREQUENCY (Table XI)

Table XI (for 13 stations) (unnumbered on summaries) show the percentage distribution of the different categories in accordance with Table D by wind direction to 16 points versus specified speed intervals. These categories, II, IIIa and IIIb/c, are divided into 2100-0500 and 0600-2000 hour groups making a total of six sub-tables.
Only the hourly (Record) observations when Category II or below conditions exist are used in these summaries. The percentages are determined by dividing the number of hourly observations which were recorded during the entire period of record for the indicated hour group. The percentage figures can be combined to obtain percentages for the quadrants of different speed intervals.

WEATHER CATEGORIES OF LANDING SYSTEMS VERSUS INTERVALS OF DURATION BASED ON TABLE E

Nine tables XII - XXI are presented for the ten-year period. These tables are presented in three sections:

a. Frequency of occurrences of landing categories versus duration intervals:

Categories II, IIIa, IIIb, and IIIc are represented by the total time for the specified hour group that these conditions occur during the indicated intervals.

In Categories II + III the frequency represents the visibilities and ceilings at or below Category II weather e.g., below 2400 RVR. In Category III the frequency represents the visibilities at or below Category III weather e.g., below 1000 RVR.

b. Total time in each duration versus the duration intervals hours and tenths.

The entries in this table are derived by adding the time in minutes associated with the frequency above and converting them to hours and tenths.

c. Average time in each duration versus the duration intervals.

This table is derived by dividing the total time in minutes of each value in b by the corresponding frequency of occurrence in a.

In these tables, since the period of duration is the important element, each incident of weather is attributed to the hour group during which it began. Thus, if Category IIIa weather began in the 22-06 hour group and continued into the 07-12 hour group the total time is placed in the 22-06 group. It is probable then, that the incidence of the various categories may be overestimated in the 22-06 group. The totals appearing in the all hour group, however, are correct.

The sum of Categories IIIa, IIIb, and IIIc in the all-hour groups and sometimes in the other hour groups are frequently greater than under Cat. III. This results from the addition of 5% of observations of 3/16 mile or greater with ceiling 100 feet added to Cat. IIIa, whereas, this 5% is not included in the Cat. III totals at the bottom of each table.

The difference between Cat. III totals and the sum of Cat. IIIa, IIIb, and IIIc are subtracted from the Cat. II totals for the all-hour group and appears at the end of the Cat. II line with an asterisk. This value is a better estimate of the occurrence of Cat. II weather for the 10-year period.
EXPLANATION OF TABLE E

The relationship of RVR with light setting 5 for a 500' baseline to the meteorological report of visibility, based on the information in Circular N, is given in Table F. This was the basis for establishing the relationships in Table E. The use of the highest setting for the edge lights for approaches in low visibility is the current operational practice. Although the selection of some of the relationships in Table E have been somewhat arbitrary, it can be expected that the observers report of low visibilities and ceilings will be more inexact than the cut off point of these relationships.


ACKNOWLEDGEMENTS

This publication, one of a series, was prepared for the Federal Aviation Administration by the Environmental Science Services Administration's Environmental Data Service, Dr. W. C. Jacobs, Director. Technical supervision for the Environmental Data Service was by Mr. Julius F. Bosen and for the Federal Aviation Administration by Mr. Arthur Hilsenrod. The text was prepared and the tables compiled and prepared for printing at the National Weather Records Center, Asheville, North Carolina, Mr. William H. Haggard, Director. Principal participants in the project at NWRC included Meserve, Joseph M., Meserve, Oliver M., Davis, Ronald G., Baldwin, M., Larry Snelson, James D. Matthews, David H. Stancil, and Lloyd F. Stevens.
This is one of 41 volumes of Report RD-69-22. The volumes are as follows:

<table>
<thead>
<tr>
<th>VOL.</th>
<th>CITY</th>
<th>AIRPORT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Anchorage, Alaska</td>
<td>International</td>
</tr>
<tr>
<td>2.</td>
<td>Atlanta, Georgia</td>
<td>Atlanta</td>
</tr>
<tr>
<td>3.</td>
<td>Baltimore, Maryland</td>
<td>Friendship International</td>
</tr>
<tr>
<td>4.</td>
<td>Birmingham, Alabama</td>
<td>International</td>
</tr>
<tr>
<td>5.</td>
<td>Boston, Massachusetts</td>
<td>General E. L. Logan International</td>
</tr>
<tr>
<td>7.</td>
<td>Burbank, California</td>
<td>Hollywood-Burbank</td>
</tr>
<tr>
<td>8.</td>
<td>Chicago, Illinois</td>
<td>O'Hare International</td>
</tr>
<tr>
<td>9.</td>
<td>Cincinnati, Ohio</td>
<td>Greater Cincinnati</td>
</tr>
<tr>
<td>10.</td>
<td>Cleveland, Ohio</td>
<td>Cleveland-Hopkins International</td>
</tr>
<tr>
<td>11.</td>
<td>Columbus, Ohio</td>
<td>Port Columbus International</td>
</tr>
<tr>
<td>12.</td>
<td>Dallas, Texas</td>
<td>Love Field</td>
</tr>
<tr>
<td>13.</td>
<td>Dayton, Ohio</td>
<td>James M. Cox Municipal</td>
</tr>
<tr>
<td>14.</td>
<td>Denver, Colorado</td>
<td>Stapleton International</td>
</tr>
<tr>
<td>15.</td>
<td>Detroit, Michigan</td>
<td>Detroit Metropolitan-Wayne County</td>
</tr>
<tr>
<td>17.</td>
<td>Houston, Texas</td>
<td>William P. Hobby</td>
</tr>
<tr>
<td>18.</td>
<td>Indianapolis, Indiana</td>
<td>Weir Cook</td>
</tr>
<tr>
<td>19.</td>
<td>Kansas City, Missouri</td>
<td>Mid-Continent International</td>
</tr>
<tr>
<td>20.</td>
<td>Los Angeles, California</td>
<td>International</td>
</tr>
<tr>
<td>21.</td>
<td>Louisville, Kentucky</td>
<td>Standiford Field</td>
</tr>
<tr>
<td>22.</td>
<td>Miami, Florida</td>
<td>International</td>
</tr>
<tr>
<td>23.</td>
<td>Milwaukee, Wisconsin</td>
<td>General Mitchell Field</td>
</tr>
<tr>
<td>24.</td>
<td>Minneapolis, Minnesota</td>
<td>Minneapolis-St. Paul International</td>
</tr>
<tr>
<td>25.</td>
<td>Nashville, Tennessee</td>
<td>Metropolitan</td>
</tr>
<tr>
<td>26.</td>
<td>Newark, New Jersey</td>
<td>Newark</td>
</tr>
<tr>
<td>27.</td>
<td>New Orleans, Louisiana</td>
<td>International</td>
</tr>
<tr>
<td>29.</td>
<td>New York, New York</td>
<td>La Guardia</td>
</tr>
<tr>
<td>30.</td>
<td>Oakland, California</td>
<td>Metropolitan Oakland International</td>
</tr>
<tr>
<td>31.</td>
<td>Philadelphia, Pennsylvania</td>
<td>International</td>
</tr>
<tr>
<td>32.</td>
<td>Pittsburgh, Pennsylvania</td>
<td>Greater Pittsburgh International</td>
</tr>
<tr>
<td>33.</td>
<td>Portland, Oregon</td>
<td>International</td>
</tr>
<tr>
<td>34.</td>
<td>Rochester, New York</td>
<td>Rochester-Monroe County</td>
</tr>
<tr>
<td>35.</td>
<td>St. Louis, Missouri</td>
<td>Lambert-St. Louis Municipal</td>
</tr>
<tr>
<td>36.</td>
<td>Salt Lake City, Utah</td>
<td>Municipal No. 1</td>
</tr>
<tr>
<td>37.</td>
<td>San Francisco, California</td>
<td>International</td>
</tr>
<tr>
<td>38.</td>
<td>Seattle, Washington</td>
<td>Seattle-Tacoma International</td>
</tr>
<tr>
<td>39.</td>
<td>Syracuse, New York</td>
<td>Clarence E. Hancock</td>
</tr>
<tr>
<td>40.</td>
<td>Washington, D. C.</td>
<td>Dallas International</td>
</tr>
<tr>
<td>41.</td>
<td>Washington, D. C.</td>
<td>National</td>
</tr>
</tbody>
</table>

**TABLE A**
LIMITS OF LANDING CATEGORIES

* CAT. II  Operations down to minima below 200 feet decision height and 2400 RVR and to as low as 100 feet decision height and 1200 RVR.

** CAT. IIIA  Below 100 feet decision height and 1200 RVR and to as low as 50 feet decision height and 700 RVR.

** CAT. IIIB  Below 700 RVR to 150 RVR.

** CAT. IIIC  No external visual reference.

TABLE B

* Current operational criteria
** Criteria not firm, used for planning purposes
CEILING AND VISIBILITY EQUIVALENTS FOR CATEGORIES
OF AIRCRAFT LANDING OPERATIONS CURRENT PRACTICE
CRITERIA for Table X and XI

Category II:
Visibility = 1/2 and ceiling = 100
Visibility = 3/8 and ceiling ≤ 0
Visibility = 5/16 and ceiling ≤ 0
Visibility = 1/4 and ceiling ≤ 0

Category III-a:
Visibility = 1/4 and ceiling = 0
Visibility = 3/16 and all ceilings
Visibility = 1/8 and all ceilings

Category III-b/c:
Visibility = 1/16 and all ceilings
Visibility = 0 and all ceilings

Category III: The sum of IIIa, IIIb, and IIIc

TABLE C
RVR VERSUS VISIBILITY (Current Practice)

<table>
<thead>
<tr>
<th>METEOROLOGICAL VISIBILITY</th>
<th>RVR EQUIVALENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statute Miles (feet)</td>
<td>Feet</td>
</tr>
<tr>
<td>3/16 (990 feet)</td>
<td>1200</td>
</tr>
<tr>
<td>1/4 (1320 feet)</td>
<td>1600</td>
</tr>
<tr>
<td>1/2 (2640 feet)</td>
<td>2400</td>
</tr>
</tbody>
</table>

**TABLE D**

CEILING AND VISIBILITY EQUIVALENTS FOR
CATEGORIES OF AIRCRAFT LANDING OPERATIONS
Criteria for Tables XII-XXI

<table>
<thead>
<tr>
<th>Category</th>
<th>Equivalent Meteorological Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Category II</strong></td>
<td></td>
</tr>
<tr>
<td>Below 2400 ft. RVR to 1200 ft. RVR</td>
<td>All observations with visibilities greater than 3/8 mile with ceiling 100 feet.</td>
</tr>
<tr>
<td></td>
<td>All observations of 3/8 mile with ceiling not equal to zero.</td>
</tr>
<tr>
<td></td>
<td>All observations of 5/16 mile with ceiling not equal to zero.</td>
</tr>
<tr>
<td></td>
<td>All observations of 1/4 mile with ceiling not equal to zero.</td>
</tr>
<tr>
<td></td>
<td>All observations of 3/16 mile with ceiling not equal to zero.</td>
</tr>
<tr>
<td><strong>Category III</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Category IIIa</strong></td>
<td></td>
</tr>
<tr>
<td>Below 1200 ft. RVR to 700 ft. RVR</td>
<td>All observations of 1/8 mile.</td>
</tr>
<tr>
<td></td>
<td>All observations of 3/16 mile or greater with zero ceiling.</td>
</tr>
<tr>
<td><strong>Category IIIb</strong></td>
<td></td>
</tr>
<tr>
<td>Below 700 ft. RVR to 150 ft. RVR</td>
<td>50% of all observations of zero miles.</td>
</tr>
<tr>
<td><strong>Category IIIc</strong></td>
<td></td>
</tr>
<tr>
<td>Below 150 ft. RVR</td>
<td>50% of all observations of zero miles.</td>
</tr>
</tbody>
</table>

**TABLE E**
RVR VSVERS METEOROLOGICAL VISIBILITY
Circular N

<table>
<thead>
<tr>
<th>Reported Meteorological Visibilities Miles (feet)</th>
<th>RVR (500 ft. baseline) at Setting 5</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 (less than 330 feet)</td>
<td>*</td>
<td>(IIIc and IIIb)</td>
</tr>
<tr>
<td>1/16 (330 feet-650 feet)</td>
<td>*</td>
<td>(IIIb)</td>
</tr>
<tr>
<td>1/8 (660 feet-980 feet)</td>
<td>1000-1400</td>
<td>(IIIb and IIIa)</td>
</tr>
<tr>
<td>3/16 (990 feet-1310 feet)</td>
<td>1400-1800 1200-1800</td>
<td>(Cat. II)</td>
</tr>
<tr>
<td>1/4 (1320 feet-1640 feet)</td>
<td>1800-2200 1800-2200</td>
<td>(Cat. II)</td>
</tr>
</tbody>
</table>

* No determination of RVR with respect to meteorological visibility.

TABLE F
### TABLE I. VISIBILITY at 1/2 MILE when CEILING < 300 FEET.

<table>
<thead>
<tr>
<th>Duration in Minutes</th>
<th>Visibility</th>
</tr>
</thead>
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**Table 2** - Temperature at South Point (F), Campsite Description and Tent Use: January 1980 - December 1980
# TABLE IV - TEMPERATURE & DEW POINT \(4^1/₂°\) DEGREES RELATIVE HUMIDITY 9:00 PM TO 9:00 AM, JANUARY 1960 - DECEMBER 1969

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**AVERAGE TIME IN EACH DURATION HOURS AND MINUTES**

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<td>9</td>
</tr>
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<td>Total Time in Hours</td>
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**Frequency of Occurrence**

<table>
<thead>
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<th>Time in Hours</th>
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**Average Time in Each Category**

<table>
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**Ratio of Occurrence**

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<th>Total Time in Hours</th>
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</thead>
<tbody>
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**Sum of Occurrence**

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**In Summary of Data**

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**Revised**

<table>
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**Final**

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**Table II**

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**Table III**

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### Table III - Temperature > 32 Degrees F. with Time of Occurrence and Wind Direction

#### Frequency of Occurrence

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<th>31-40</th>
<th>41-60</th>
<th>61-90</th>
<th>91-120</th>
<th>121-150</th>
<th>151-200</th>
<th>201-250</th>
<th>251-300</th>
<th>301-360</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>Time in Minutes</td>
<td>1-60</td>
<td>61-120</td>
<td>121-180</td>
<td>181-240</td>
<td>241-300</td>
<td>301-360</td>
<td>361-420</td>
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</tbody>
</table>

#### Total Time in Each Duration Hours and Minutes

<table>
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<th>31-40</th>
<th>41-60</th>
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</tbody>
</table>

#### Notes on Occurrence of Data

- **Time in Minutes**
- **Category**
- **Total**