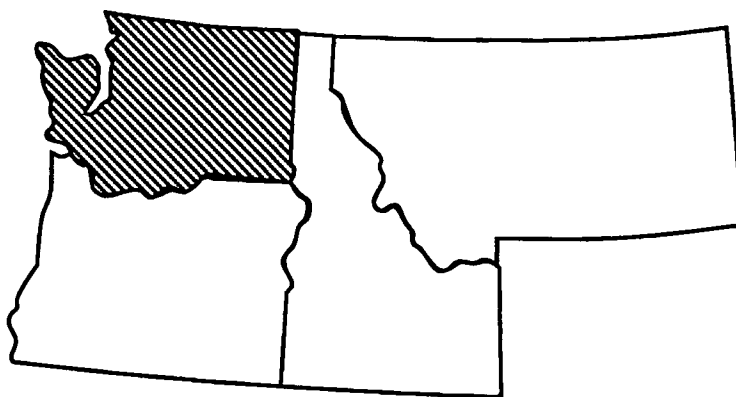


Bin Data Sites in Washington

EM 8364 / January 1988



Oregon State University Extension Service

Bin Data Sites in Washington

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Introduction

The economical design of energy efficient commercial buildings is dependent, in part, on the ability to predict their energy use from historical hourly weather data. For the weather data to be useful, it is commonly organized into a "bin" format. The bin format represents the number of hourly occurrences in various 5 °F temperature bins. The mean coincident wet bulb temperature is also recorded for each bin.

Previously, there were eighteen sites in the four northwestern states of Oregon, Washington, Idaho, and Montana that reported hourly data in the bin formats. As a result of this project, the number of sites having tabulated bin data was increased to fifty-one.

Bin Data Table History

In 1978 the Departments of the Air Force, the Army, and the Navy jointly published a publication entitled "Engineering Weather Data (AFM 88-29)" containing information useful for facility designing and planning. Included in this volume was a section giving monthly tabulations of the frequency of occurrence of temperatures in various categories and an associated mean wet bulb temperature. Only a limited number of cities were selected from each state for inclusion in this manual. The sites usually coincided with military establishments.

For inclusion in the 1978 compilation, any station had to have recorded 24 hourly observations per day for a period of at least 5 years. The particular years used for each station were not given. It is suspected that 1964 was the ending year for many of the tabulations in the 1978 manual. The reasoning for this follows.

In most cases, the National Climatic Data Center in Asheville, North Carolina has been the original source of digital hourly observations used in climatological studies. In general, with some exceptions, hourly weather observations have been digitized (that is, converted to electronic form) for each hour from 1948 through 1964. As an economy measure, from 1965 through July 1981, observations were only digitized eight times per day, at the Greenwich hours (Universal time) divisible by 3. Though this is true at most stations, some have had all 24 of the hourly observations digitized for one or more years during this period to satisfy certain user requests in the past. The particular years involved, however, vary from station to station. In August 1981 the digitization of each of the 24 hours was resumed at all locations in the country, a practice that continues to the present. Therefore, at the time of the 1978 publication, 24 values per day in digital form would only be available through 1964.

Temperature distributions are presented by 5 degree (F) temperature intervals, for each month and on an annual basis. The year is split into a warm half and a cold half. Following the same format, values are further given for 3 eight-hour periods: 01 - 08 hours LST ("sleep"), 09 - 16 Local Standard Time ("work"), and 17 - 24 hrs LST ("recreation"). A fourth column gives the total for all hours.

The mean coincident wet bulb temperature is the mean of all wet bulb temperatures recorded when the dry bulb temperature is within the 5 degree interval under consideration. In completely saturated air the wet bulb temperature will equal the dry bulb temperature. Otherwise the wet bulb temperature will be lower. For a given absolute air moisture content (that is, a constant dewpoint), the wet bulb temperature will rise as air temperature rises, but at an intermediate rate. The wet bulb temperature can be no lower than the dewpoint temperature and no higher than the dry bulb temperature.

Bin Data Generation

In 1987 the Oregon State University Extension Service, in conjunction with the Climatic Research Institute at Oregon State University, purchased digital hourly airways data for the period of record through 1983.

Data were obtained in TDF-14 format from the National Climatic Data Center in Asheville, North Carolina. The sites consist of First Order and Second Order stations, primarily airports, with a few supplemental mountaintop contract stations included. The observations were first converted to an internal space-efficient representation. Hourly dry bulb and wet bulb temperatures were subsequently extracted from these files and used to generate the tables.

The numbers presented in the tables give the number of hours expected in each month, or the year, and time interval with the temperature in the indicated category. A 31-day month contains 744 hours, and a non-leap year contains 8760 hours. Numbers may not sum exactly to expected totals due to rounding. An asterisk represents a value that has been observed, but for less than an average of one-half hour per month or year.

Values in the extreme categories at the tails of the distributions tend to occur in major cold or warm spells, and thus are not found each year. A better representation of the more extreme temperatures can thus be obtained from a longer record. However, since a portion of the digital record contains only every third hour, the three eight-hour intervals will not receive an equal number of observations, with two intervals receiving 3 observations and one interval receiving 2 observations. If temperature is on average rising or falling during an interval, sampling deficiencies may lead to a systematic bias in that interval if not all hours within the interval are available. Since the day is uniformly sampled with

eight 3-hourly values, however, the daily total should be relatively unaffected. For this reason, years with either all 24 hours, or with eight 3-hourly values, were used for these tables.

A few stations have operated for most or all of their existence primarily during daytime hours. For these stations a cautionary note is given indicating that the 3 eight-hour intervals have not been uniformly sampled. A few other stations have operated around the clock during part of their record, and as daytime-only stations during other parts of the record. Tables for these stations have been produced twice, once with all available observations, and once with observations available every hour or 3 hours throughout all 24 hours.

A separate table showing the number of observations from each hour and each year that were used to construct the data tabulations is given in the appendix to assist in their interpretation.

Bin Data Validation

Prior to this project, it was not known how bin data derived from hourly airport observations compared with published military data for the same site. A study was undertaken to compare bin data generated from original observations at two Oregon airports with bin data published for the same location.

Bin data were generated for the period 1948-1964 from hourly airport temperature data for Portland and Pendleton, Oregon. These tables were compared to military bin data for the same period. Three methods were used to compare the data: (1) the weighted percent difference between samples, (2) a slope comparison of hourly observations, and, (3) an energy use comparison of a sample building. In all cases, the difference from military data was less than 1.4 percent. Bin data were also generated from the most current Portland and Pendleton weather files. A comparison with the military data showed differences of less than 4.4 percent^{1/}.

Summary

The choice of stations for this report was governed by a need to increase the number of stations, a need to increase the number of years used, and by the cost of obtaining the data. Stations already represented in the 1978 military manual were given lower priority in this regard. The original tables from the 1978 manual are reproduced here for completeness. Exact agreement with these earlier tables is neither expected nor required, since climate variability and urban influences will affect temperature distributions.

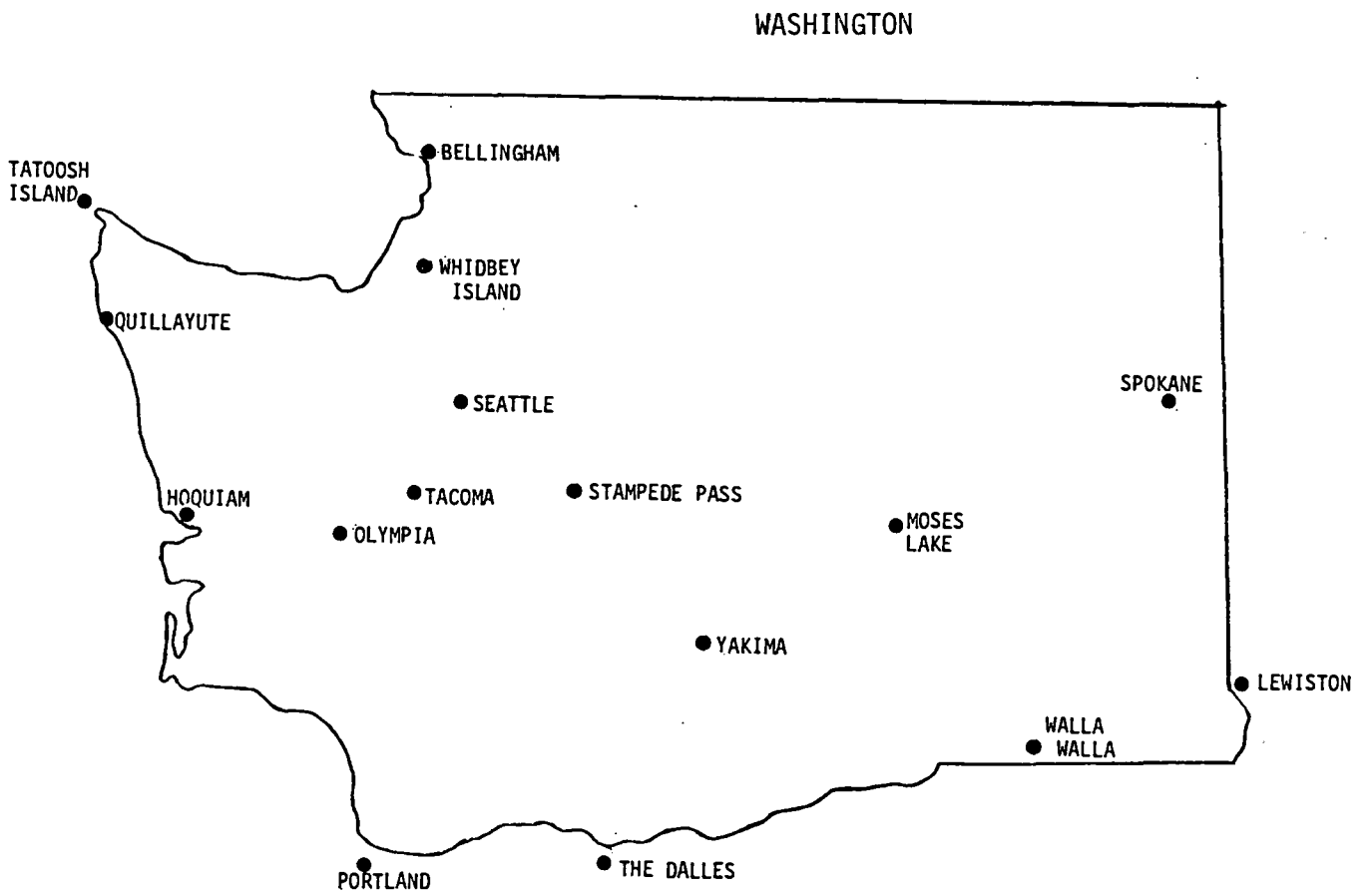
1. Wykes, R. Thomas, and Kelly Redmond, "A Comparison of Bin Data Samples for Portland and Pendleton, Oregon," unpublished paper. No charge for single copy; order from Deschutes County Branch Office, OSU Extension Service, 1128 NW Harriman, Bend, OR 97701.

Table 1. List of stations.

<u>WBAN No.</u>	<u>Site</u>	<u>Overall period</u>	<u>Years skipped</u>
WASHINGTON			
24217	Bellingham	1948 - 1954	
24219	Dallesport	1948 - 1964	
24141	Ephrata	1948 - 1954	
94225	Hoquiam	1949 - 1981	1949 - 1952, 1959 - 1976
	* Moses Lake		
24227	Olympia	1948 - 1983	
94240	Quillayute	1966 - 1983	
24233	Seattle - Tacoma	1948 - 1983	
24234	Seattle - Boeing	1948 - 1972	1966 - 1971
24157	Spokane	1948 - 1983	
24237	Stampede Pass	1948 - 1983	1981 - 1982
	* Tacoma (McChord)		
24240	Tatoosh Island	1948 - 1966	
24160	Walla Walla	1948 - 1965	
24255	Whidbey Island	1945 - 1980	
24243	Yakima	1948 - 1983	

* - Reproduced from 1978 military report
 Dates not known

Figure 1. Distribution of bin sites.





STATIONS

STATION : SPOKANE AIRPORT

WBAN NO. : 24157 YEARS : 1948 - 1983
 LAT 47 38N LON 117 32W ELEV 2359 FT

NUMBER OF HOURS PER MONTH OR YEAR WITH DRY BULB TEMPERATURE IN SELECTED RANGE, BY TIME OF DAY, AND AVERAGE WET BULB WHEN DRY BULB TEMPERATURE IS IN THIS RANGE ("MEAN COINCIDENT WET BULB (MCWB)").

TEMP RANGE (F)	** MAY **					** JUNE **					** JULY **					** AUGUST **					** SEPTEMBER **					** OCTOBER **					
	TIME OF DAY (LST)					TIME OF DAY (LST)					TIME OF DAY (LST)					TIME OF DAY (LST)					TIME OF DAY (LST)					TIME OF DAY (LST)					
	01	09	17	All	MCWB (F)	01	09	17	All	MCWB (F)	01	09	17	All	MCWB (F)	01	09	17	All	MCWB (F)	01	09	17	All	MCWB (F)	01	09	17	All	MCWB (F)	
110 114	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
105 109	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*	*	*	66	0	0	0	0	0	0	0	0		
100 104	0	0	0	0	0	0	0	0	0	0	0	1	*	1	66	0	*	*	1	65	0	0	0	0	0	0	0	0	0		
95 99	0	0	0	0	0	0	*	*	1	66	0	6	2	8	64	0	4	1	5	64	0	*	0	*	62	0	0	0	0	0	
90 94	0	1	*	1	63	0	4	1	6	64	0	22	9	31	63	0	17	6	24	63	0	3	*	3	62	0	0	0	0	0	
85 89	0	3	1	5	61	0	12	4	17	62	0	37	18	55	62	*	32	13	45	61	0	8	1	10	61	0	0	0	0	0	
80 84	0	9	3	12	59	0	22	11	33	60	*	47	28	75	60	*	46	21	67	60	0	23	5	28	59	0	1	0	1	58	
75 79	*	15	6	21	57	1	34	16	51	58	5	45	35	85	58	3	46	32	81	58	*	31	11	42	57	0	3	*	4	56	
70 74	1	29	13	43	55	5	42	28	76	56	20	39	45	103	56	15	43	44	101	56	1	38	22	61	55	0	9	1	10	55	
65 69	5	37	21	62	53	16	45	39	99	54	43	29	44	116	55	39	29	48	115	54	6	40	33	79	53	*	16	3	19	53	
60 64	12	42	32	86	50	36	40	48	125	53	63	15	35	114	53	63	20	44	126	52	24	38	44	105	51	*	30	9	40	50	
55 59	27	42	43	113	48	56	26	45	127	50	61	7	22	90	50	69	8	27	104	50	51	32	46	129	49	4	44	24	72	48	
50 54	49	41	49	139	46	63	11	32	106	47	40	2	9	51	47	43	3	11	57	47	62	19	43	124	46	26	56	47	129	46	
45 49	62	23	46	131	43	44	3	13	60	44	13	*	1	15	44	15	*	2	17	44	54	6	24	84	43	49	48	63	159	43	
40 44	55	6	24	86	39	15	*	2	18	40	2	0	*	2	39	2	0	*	2	40	29	1	9	39	39	66	27	56	149	39	
35 39	29	1	7	37	35	3	0	*	3	36	*	0	0	*	36	*	0	0	*	36	11	*	2	13	34	57	10	33	99	35	
30 34	8	*	1	9	31	*	0	0	*	34	0	0	0	0	0	0	0	0	0	0	2	0	*	2	30	34	3	11	48	31	
25 29	1	0	0	1	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	0	0	*	26	10	1	2	13	26	
20 24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	*	*	1	22	
15 19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	0	*	*	13	
10 14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-5 -1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-10 -6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-15 -11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-20 -16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-25 -21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



APPENDIX

(Number of Observations Used)

STATION : BELLINGHAM AIRPORT

WBAN NO. : 24217

NUMBER OF OBSERVATIONS USED

HOUR (L.S.T.)

YEAR	MON	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	1- 8	9-16	17-24	ALL
1948	13	363	363	363	363	363	363	362	363	363	363	363	363	363	363	363	363	363	363	363	363	363	363	364	2903	2904	2905	8712	
1949	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760	
1950	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760	
1951	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760	
1952	13	365	365	365	366	366	365	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	2925	2928	2927	8780	
1953	13	365	365	365	365	365	365	365	365	365	365	365	365	364	365	365	365	365	365	365	365	365	365	365	2920	2919	2920	8759	
1954	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760	

STATION : DALLESFORT AIRPORT

WBAN NO. : 24219

YEARS : 1948 - 1964

NUMBER OF OBSERVATIONS USED

HOURS (L.S.T.)

YEAR	MON	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	1- 8	9-16	17-24	ALL
1948	13	365	365	366	365	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	2926	2928	2927	8781	
1949	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760	
1950	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760	
1951	13	365	365	365	365	365	365	365	365	365	365	365	364	365	365	365	364	365	365	365	365	365	365	365	2920	2918	2920	8758	
1952	13	360	360	360	360	360	360	360	360	360	360	360	360	359	360	360	360	360	360	360	360	360	360	360	2880	2879	2880	8639	
1953	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760	
1954	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760	
1955	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760	
1956	13	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	2928	2928	2928	8784	
1957	13	364	364	364	364	364	364	364	364	364	364	364	363	363	364	364	364	364	364	364	364	364	364	364	2912	2910	2912	8734	
1958	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2919	2920	8759	
1959	13	365	365	365	365	365	365	365	365	365	365	365	365	365	364	364	363	365	365	365	365	365	365	365	2920	2916	2920	8756	
1960	13	366	366	366	366	366	366	366	366	366	366	366	366	365	366	366	366	366	366	365	366	366	366	366	2928	2926	2927	8781	
1961	13	363	363	363	363	363	364	364	364	364	364	364	365	363	364	364	365	363	363	363	363	363	363	363	2908	2914	2904	8726	
1962	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	364	364	364	365	365	365	365	365	365	2920	2917	2919	8756	
1963	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760	
1964	13	365	365	365	365	365	365	365	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	2921	2928	2926	8775	

STATION : EPHRATA AIRPORT

WBAN NO. : 24141

YEARS : 1948 - 1954

NUMBER OF OBSERVATIONS USED

HOURS (L.S.T.)

YEAR	MON	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	1- 8	9-16	17-24	ALL
1948	13	363	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	365	365	365	2928	2928	2921	8777	
1949	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760	
1950	13	365	365	365	365	365	365	365	365	365	365	365	365	365	364	364	364	364	364	364	364	364	364	364	2920	2916	2913	8749	
1951	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760	
1952	13	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	2928	2928	2928	8784	
1953	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760	
1954	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760	

STATION : HOQUIAM AIRPORT

WBAN NO. : 94225

NUMBER OF OBSERVATIONS USED

HOURL (L.S.T.)

YEAR	MON	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	1-8	9-16	17-24	ALL
1949	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1950	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1951	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1952	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1953	13	222	223	223	224	224	235	235	235	233	235	234	233	235	236	235	235	234	228	226	227	225	224	1823	1875	1821	5519		
1954	13	360	360	359	358	361	362	361	363	360	361	361	361	362	360	363	360	359	361	361	363	364	359	358	2884	2887	2887	8658	
1955	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760	
1956	13	362	362	362	362	362	362	362	362	361	362	362	362	362	363	362	362	362	362	362	362	362	362	362	2895	2897	2896	8688	
1957	13	364	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2919	8759	
1958	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760	
1959	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1960	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1961	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1962	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1963	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1964	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1965	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1966	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1967	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1968	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1969	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1970	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1971	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1972	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1973	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1974	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1975	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1976	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1977	13	365	365	365	365	365	365	365	365	365	365	365	363	364	364	364	364	365	365	365	365	365	365	365	2920	2914	2920	8754	
1978	13	363	363	362	362	362	362	361	361	361	363	365	365	365	364	364	364	364	364	364	364	364	364	364	2894	2914	2911	8719	
1979	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760	
1980	13	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	2928	2928	2928	8784	
1981	13	363	364	364	364	364	364	364	364	364	364	364	364	364	364	364	364	364	364	364	364	364	364	364	2912	2912	2911	8735	

STATION : OLYMPIA AIRPORT

WBAN NO. : 24227

NUMBER OF OBSERVATIONS USED

HOURS (L.S.T.)

YEAR	MON	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	1-8	9-17	18-24	ALL
1948	13	365	365	365	365	365	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	2923	2928	2927	8778	
1949	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760	
1950	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760	
1951	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760	
1952	13	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	2928	2928	2928	8784	
1953	13	365	365	365	365	365	365	365	365	365	364	365	365	365	365	365	365	364	364	364	364	364	364	364	2920	2919	2914	8753	
1954	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760	
1955	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760	
1956	13	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	2928	2928	2928	8784	
1957	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760	
1958	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760	
1959	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760	
1960	13	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	2928	2928	2928	8784	
1961	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760	
1962	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760	
1963	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760	
1964	13	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	2928	2928	2928	8784	
1965	13	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	1095	1095	730	2920
1966	13	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	1095	1095	730	2920
1967	13	0	365	0	0	365	0	0	365	0	1	365	0	0	365	0	0	365	0	0	365	0	0	365	0	1095	1095	730	2921
1968	13	0	366																										

STATION : QUILLAYUTE AIRPORT

WBAN NO. : 94240

YEARS : 1966 - 1983

NUMBER OF OBSERVATIONS USED

HOURS (L.S.T.)

YEAR	MON	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	1- 8	9-16	17-24	ALL
1966	13	0	152	0	0	152	0	0	152	0	0	153	0	0	153	0	0	153	0	0	153	0	0	153	0	456	459	306	1221
1967	13	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	1095	1095	730	2920
1968	13	0	366	0	0	366	0	0	366	0	0	366	0	0	366	0	0	366	0	0	366	0	0	366	0	1098	1098	732	2928
1969	13	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	1095	1095	730	2920
1970	13	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	1095	1095	730	2920
1971	13	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	1095	1095	730	2920
1972	13	0	366	0	0	366	0	0	366	0	0	366	0	0	366	0	0	366	0	0	366	0	0	366	0	1098	1098	732	2928
1973	13	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	1095	1095	730	2920
1974	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760
1975	13	0	360	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	1090	1095	730	2915
1976	13	0	366	0	0	366	0	0	366	0	0	366	0	0	366	0	0	366	0	0	366	0	0	366	0	1098	1098	732	2928
1977	13	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	1095	1095	730	2920
1978	13	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	1095	1095	730	2920
1979	13	0	253	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	983	1095	730	2808
1980	13	0	307	0	0	366	0	0	366	0	0	366	0	0	366	0	0	366	0	0	366	0	0	366	0	1039	1098	732	2869
1981	13	153	361	153	153	365	153	153	365	153	153	365	153	153	365	153	153	365	153	153	365	153	153	365	153	1856	1860	1648	5364
1982	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760
1983	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760

STATION : SEATTLE-TACOMA AIRPORT

WBAN NO. : 24233

NUMBER OF OBSERVATIONS USED

HOURS (L.S.T.)

YEAR	MON	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	1- 8	9-16	17-24	ALL
1948	13	365	362	365	363	363	364	365	365	366	363	366	365	364	364	364	366	366	365	366	366	366	366	366	364	2913	2916	2924	8753
1949	13	364	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2919	8759
1950	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2919	8759
1951	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760
1952	13	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	2928	2928	2928	8784
1953	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2919	8759
1954	13	365	365	365	365	365	365	364	365	365	365	365	365	365	365	364	365	365	365	365	365	365	365	365	365	2919	2919	2920	8758
1955	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760
1956	13	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	2928	2928	2928	8784
1957	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760
1958	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760
1959	13	364	365	365	365	365	365	365	365	364	365	365	365	365	365	364	365	365	365	365	364	365	365	365	365	2919	2919	2918	8756
1960	13	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	2928	2928	2928	8784
1961	13	364	365	365	365	364	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2919	2920	2919	8758
1962	13	365	365	365	365	365	365	364	364	364	363	364	364	365	365	365	364	364	365	365	365	365	365	365	365	2917	2914	2920	8751
1963	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2919	2919	8758
1964	13	365	365	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	2927	2928	2924	8779
1965	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760
1966	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760
1967	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760
1968	13	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	2928	2928	2928	8784
1969	13	365	364	365	364	365	365	365	365	365	364	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2918	2919	2920	8757
1970	13	0	364	0	0	364	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	1093	1095	730	2918
1971	13	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	1095	1095	730	2920
1972	13	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	2928	2928	2922	8778
1973	13	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	1095	1095	730	2920
1974	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760
1975	13	365	365	365	365	365	365	364	365	364	364	365	364	363	365	363	365	363	365	365	365	365	365	365	365	2918	2912	2918	8748
1976	13	366	365	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	2925	2924	2925	8774
1977	13	364	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2919	8759
1978	13	364	364																										

STATION : SEATTLE BOEING FIELD

WBAN NO. : 24234

NUMBER OF OBSERVATIONS USED

HOURS (L.S.T.)

YEAR	MON	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	1- 8	9-16	17-24	ALL
1948	13	365	366	365	366	366	366	364	366	366	365	365	366	365	364	366	366	366	366	366	366	366	365	364	365	2925	2923	2923	8771
1949	13	365	365	365	365	365	365	364	365	365	365	364	365	365	364	365	364	365	364	365	364	365	365	364	365	2919	2917	2918	8754
1950	13	365	365	365	365	365	365	364	364	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2918	2920	2920	8758
1951	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2919	2920	8759
1952	13	366	366	366	366	366	366	366	366	365	366	365	365	366	366	366	366	366	366	366	366	366	366	366	366	2927	2926	2928	8781
1953	13	365	365	365	365	365	364	364	364	365	365	365	364	365	365	365	365	364	365	365	365	365	365	365	365	2917	2919	2919	8755
1954	13	364	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	362	365	362	365	365	364	2920	2920	2915	8755
1955	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	364	365	365	365	365	365	365	365	365	365	2920	2919	2920	8759
1956	13	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	2928	2928	2925	8781
1957	13	364	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	364	364	2920	2920	2917	8757
1958	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2919	8759
1959	13	364	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2919	8759
1960	13	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	2928	2928	2928	8784
1961	13	361	364	360	362	365	362	365	365	365	365	365	362	362	365	362	365	365	365	365	365	365	361	361	365	2908	2911	2904	8723
1962	13	363	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	364	365	365	365	365	364	365	365	2920	2919	2917	8756
1963	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760
1964	13	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	2928	2928	2928	8784
1965	13	0	278	0	0	278	0	0	278	0	0	278	0	0	277	0	0	277	0	0	277	0	0	277	0	834	832	554	2220
1966	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1967	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1969	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1971	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	13	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	365	365	365	366	366	366	366	366	366	2928	2926	2927	8781

STATION : SPOKANE AIRPORT

WBAN NO. : 24157

NUMBER OF OBSERVATIONS USED

HOUR (L.S.T.)

YEAR	MON	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	1- 8	9-16	17-24	ALL
1948	13	365	365	365	365	365	365	366	366	366	365	366	366	366	365	365	366	366	366	366	366	366	366	366	366	2922	2925	2927	8774
1949	13	364	364	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2919	2920	2919	8758
1950	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760
1951	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760
1952	13	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	364	366	366	366	366	366	2928	2928	2925	8781
1953	13	365	365	365	365	364	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2919	2920	2920	8759
1954	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760
1955	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760
1956	13	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	2928	2927	2928	8783
1957	13	365	365	365	365	364	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2919	2920	2920	8759
1958	13	365	365	365	365	364	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2919	2920	2920	8759
1959	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760
1960	13	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	2928	2928	2928	8784
1961	13	364	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2919	8759
1962	13	365	365	365	365	365	365	365	365	365	365	365	365	364	365	365	365	365	365	365	365	365	365	365	365	2920	2919	2920	8759
1963	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760
1964	13	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	2928	2928	2928	8784
1965	13	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	1095	1095	730	2920
1966	13	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	1095	1095	730	2920
1967	13	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	1095	1095	730	2920
1968	13	0	366	0	0	366	0	0	366	0	0	366	0	0	366	0	0	366	0	0	366	0	0	366	0	1098	1098	732	2928
1969	13	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	1095	1095	730	2920
1970	13	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	1095	1095	730	2920
1971	13	0	365	0	0	365	0	0	365	0	0	365	0	0</															

STATION : YAKIMA AIRPORT

WBAN NO. : 24243

YEARS : 1948 - 1983

NUMBER OF OBSERVATIONS USED

HOURS (L.S.T.)

YEAR	MON	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	1- 8	9-16	17-24	ALL		
1948	13	365	365	366	366	366	366	366	366	366	365	364	366	365	366	366	366	365	366	366	366	366	366	366	366	2927	2924	2926	8777		
1949	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	364	365	365	365	365	2920	2920	2919	8759	
1950	13	364	365	365	365	365	365	365	365	365	365	365	365	364	364	365	365	365	364	365	365	364	365	365	365	365	2920	2918	2918	8756	
1951	13	365	364	364	365	365	365	365	364	365	364	365	365	365	364	365	365	365	364	365	365	365	361	365	365	2917	2918	2915	8750		
1952	13	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	365	366	2928	2927	2927	8782	
1953	13	365	365	365	365	365	365	365	365	365	365	365	365	365	364	365	364	365	365	365	365	365	365	365	365	365	2920	2918	2920	8758	
1954	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760	
1955	13	364	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2919	2919	8758	
1956	13	365	366	366	366	366	366	366	366	366	365	366	365	366	365	365	365	365	366	366	366	366	363	365	365	366	2927	2923	2922	8772	
1957	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2918	8758	
1958	13	365	365	365	365	365	365	365	365	363	363	364	364	365	365	365	365	365	364	363	365	365	365	365	365	360	2918	2916	2912	8746	
1959	13	365	365	365	365	365	365	365	364	365	365	365	365	365	365	365	365	365	364	365	365	365	365	365	365	365	2919	2920	2919	8758	
1960	13	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	2928	2928	2927	8783	
1961	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760	
1962	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760	
1963	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760	
1964	13	366	366	366	366	364	365	366	365	365	365	365	366	365	366	364	366	364	366	365	366	366	365	366	366	365	2923	2921	2926	8770	
1965	13	0	363	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	1093	1095	730	2918	
1966	13	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	364	0	0	1095	1095	729	2919	
1967	13	0	365	0	0	365	0	0	365	0	0	365	1	0	365	0	0	365	0	0	365	0	0	365	0	0	1095	1096	730	2921	
1968	13	0	366	0	0	366	0	0	366	0	0	366	0	0	366	0	0	366	0	0	366	0	0	366	0	0	1098	1098	732	2928	
1969	13	0	364	0	0	364	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	1093	1095	730	2918	
1970	13	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	1095	1095	730	2920	
1971	13	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	1095	1095	730	2920	
1972	13	0	366	0	0	366	0	0	366	0	0	366	0	0	366	0	0	366	0	0	366	0	0	366	0	0	1098	1098	732	2928	
1973	13	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	1095	1095	730	2920	
1974	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760	
1975	13	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	1095	1095	730	2920	
1976	13	0	339	0	0	365	0	0	366	0	0	366	0	0	366	0	0	366	0	0	366	0	0	340	0	0	1070	1098	706	2874	
1977	13	304	304	304	357	364	364	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	310	304	2788	2920	2743	8451
1978	13	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	1095	1095	730	2920	
1979	13	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	365	0	0	1095	1095	730	2920	
1980	13	0	366	0	0	366	0	0	366	0	0	366	0	0	366	0	0	366	0	0	366	0	0	366	0	0	1098	1098	732	2928	
1981	13	153	365	153	153	365	153	153	365	153	153	365	153	153	365	153	153	365	153	153	365	153	153	365	153	153	1860	1860	1648	5368	
1982	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760	
1983	13	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	2920	2920	2920	8760	



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