

WADC TECHNICAL REPORT 55-175

PART 2

*Contrails*

**METEOROLOGICAL AND SOLAR RADIATION DATA  
COLLEGE, ALASKA**

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UNIVERSITY OF ALASKA

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MATERIALS LABORATORY  
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UNITED STATES AIR FORCE  
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## FOREWORD

This report was prepared by the Department of Chemistry of the University of Alaska under Contract AF 18(600)-40. The contract was begun under Project No. 7312, "Finishes and Materials Preservation," Task No. 73124, "Preservative Chemicals," formerly RDO No. 611-16, "Effect of Actinic Exposure," and was administered under the direction of the Materials Laboratory, Directorate of Research, Wright Air Development Center, with Dr. A. E. Prince, acting as project engineer. This report includes data collected from 1 September 1954 to 31 August 1955. These data were collected in conjunction with investigations on the exposure of USAF materials to sub-arctic conditions.

## ACKNOWLEDGEMENTS

The work of the following persons is acknowledged in the collection and compilation of the data and the preparation of the report:

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|--------------------|--|
| 1. Dan Wilder      | Draftsman, for the preparation of the graphs.    |
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WADC-TR-55-175 Pt. 2.

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## ABSTRACT

The daily observations of maximum and minimum temperatures, maximum, minimum, and mean of the relative humidity with the approximate time (Alaska Standard Time) of the occurrence of each maximum and minimum, maximum intensity of solar radiation and total radiation received on a horizontal surface and a surface slanted 45° to the south are tabulated along with the monthly averages and totals of each of these factors as obtained in connection with the project on the "Exposure of USAF Materials near College, Alaska." The temperature data in each year are represented on a composite graph. The monthly values of all data are accumulated in separate tables. The period covered is from 1 September 1954 through 31 August 1955.

## PUBLICATION REVIEW

This report has been reviewed and is approved.

FOR THE COMMANDER:



M. R. WHITMORE  
Technical Director  
Materials Laboratory  
Directorate of Research

# *Contrails*

## TABLE OF CONTENTS

	Page
Section I - Procedures . . . . .	1
Section II - Temperature . . . . .	2
Section III - Humidity . . . . .	2
Section IV - Precipitation . . . . .	2
Section V - Solar Radiation. . . . .	19
Section VI - Summary . . . . .	34
Literature . . . . .	34

WADC-TR-55-175 Pt. 2.      iv

# *Contrails*

## LIST OF ILLUSTRATIONS

	Page
Figure I - Daily Temperature (Maximum-Minimum) at College, Alaska, 1954.....	17
Figure II - Daily Temperature (Maximum-Minimum) at College, Alaska, 1955.....	18

WADC-TR-55-175 Pt. 2.      v

*Contents*  
LIST OF TABLES

	Page
Table 1 - Temperature, Humidity and Precipitation Data, College, Alaska September 1954 . . . . .	4
Table 2 - Temperature, Humidity and Precipitation Data, College, Alaska October 1954 . . . . .	5
Table 3 - Temperature, Humidity and Precipitation Data, College, Alaska November 1954 . . . . .	6
Table 4 - Temperature, Humidity and Precipitation Data, College, Alaska December 1954 . . . . .	7
Table 5 - Temperature, Humidity and Precipitation Data, College, Alaska January 1955 . . . . .	8
Table 6 - Temperature, Humidity and Precipitation Data, College, Alaska February 1955 . . . . .	9
Table 7 - Temperature, Humidity and Precipitation Data, College, Alaska March 1955 . . . . .	10
Table 8 - Temperature, Humidity and Precipitation Data, College, Alaska April 1955 . . . . .	11
Table 9 - Temperature, Humidity and Precipitation Data, College, Alaska May 1955 . . . . .	12
Table 10 - Temperature, Humidity and Precipitation Data, College, Alaska June 1955 . . . . .	13
Table 11 - Temperature, Humidity and Precipitation Data, College, Alaska July 1955 . . . . .	14
Table 12 - Temperature, Humidity and Precipitation Data, College, Alaska August 1955 . . . . .	15
Table 13 - Monthly averages of the maximum, minimum and mean values of the Temperature and Relative Humidity and Monthly Totals of the Precipitation at College, Alaska for the period September 1954 through August 1955 . . . . .	16
Table 14 - Solar Radiation (Langley's) College, Alaska September 1954 . . . . .	20

*Contents*

Table 15 - Solar Radiation (Langley's) College, Alaska, October 1954 . . . . .	21
Table 16 - Solar Radiation (Langley's) College, Alaska, November 1954 . . . . .	22
Table 17 - Solar Radiation (Langley's) College, Alaska, December 1954 . . . . .	23
Table 18 - Solar Radiation (Langley's) College, Alaska, January 1955 . . . . .	24
Table 19 - Solar Radiation (Langley's) College, Alaska, February 1955 . . . . .	25
Table 20 - Solar Radiation (Langley's) College, Alaska, March 1955 . . . . .	26
Table 21 - Solar Radiation (Langley's) College, Alaska, April 1955 . . . . .	27
Table 22 - Solar Radiation (Langley's) College, Alaska, May 1955 . . . . .	28
Table 23 - Solar Radiation (Langley's) College, Alaska, June 1955 . . . . .	29
Table 24 - Solar Radiation (Langley's) College, Alaska, July 1955 . . . . .	30
Table 25 - Solar Radiation (Langley's) College, Alaska, August 1955 . . . . .	31
Table 26 - Monthly averages of the Daily Maximum and Daily Solar Radiation and Monthly Totals on a Horizontal Surface and on a 45° Slant (South) Surface at College, Alaska, for the period September 1954 through August 1955... .	32
Table 27 - Clear days during the period 1 September 1954 through 31 August 1955 . . . . .	33

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*Centrally*  
METEOROLOGICAL AND SOLAR RADIATION DATA

COLLEGE, ALASKA

1 September 1954 - 31 August 1955

SECTION I

Procedures

The content of this report is a compilation, in tabular and graphical form, of meteorological and solar radiation data collected in connection with the operation of the test site for the "Exposure of USAF Materials in the Sub-arctic at College, Alaska." The data herein contained have been to the larger extent collected at the site which is about one and one-half miles from the main campus of the University of Alaska (latitude 85° N., longitude 148° W.) with the remainder obtained from the records of the Fairbanks Weather Bureau which is about three miles from the campus in southerly direction. The pertinent details concerning the various recordings are described below. The data presented include the following:

1. Daily values of the maximum and minimum temperatures.
2. Daily values of the maximum, minimum, and mean of the relative humidity, together with the approximate time (Alaska Standard Time) of the occurrence of each maximum and minimum.
3. Daily values of the precipitation as rainfall.
4. Daily values of the maximum and intensity of the solar radiation.
5. Monthly averages of the maximum and minimum daily temperatures.
6. Monthly averages of the maximum, minimum and the means of the daily values of the relative humidity.
7. Monthly averages of the daily total solar radiation values.
8. Monthly totals of precipitation as rainfall and of the solar radiation received.
9. Certain observations on clear days and weather trends.

Monthly averages or totals, whichever applies, of the above groups of data are collected in tables. A composite graph, of the daily values of the maximum and minimum temperatures, is included. The various recordings are described in the sections which follow.

*Continued*

The data in this report are a continuation of the program of collection of the above data at College, Alaska presented in WADC TR-55-175 Pt. 1. Details relating to the collection of the data are different and outlined in the discussions below.

## SECTION II

### Temperature

The daily observations of the temperature were from the dial graph of a mechanical Bristol Recorder which was located in a heated shelter and whose active element was located in the weather shelter at the site. The lead from the recorder to active element was about 130 feet. This recording system has proven very reliable. The readings from the recorder are checked at intervals against standard thermometers.

The daily values of the maximum and minimum temperatures are tabulated in tables 1-12, pages 4-15 of this report. The monthly totals are also included at this point and are summarized in table 13, page 16. The daily values also are shown in the graphs of figures I and II.

## SECTION III

### Humidity

The daily values of the maximum, minimum and mean values of the relative humidity are given in tables 1-12, pages 4-15. The monthly averages of each are included at this point and are summarized in table 13, page 16. The observed values were all obtained from the records of the U. S. Weather Bureau at the Fairbanks International Airport.

The approximate times quoted are representative of the time of occurrence of the maximum and minimum. All times are Alaskan Standard Time.

## SECTION IV

### Precipitation

Daily precipitation as rainfall is also recorded in tables 1-12, pages 4-15. The monthly totals are included in table 13, page 16.

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## TABLE 1-12

## WEATHER DATA

The following 12 tables, pages 5-14, include a tabulation of the daily values of the maximum and minimum temperatures, the daily values of the maximum, minimum, and mean values of the relative humidity, with the approximate times (Alaskan Standard Time) of the maximum and minimum values of the relative humidity, the daily values of precipitation, and the monthly averages of the temperature and humidity data and the monthly totals of precipitation gathered in connection with the operation of Contract AF 18(600)-40 at College, Alaska. Each table contains the monthly compilation of the above weather elements. The period of time extends from September 1954 through August 1955.

*Contrails*

Table 1-- TEMPERATURE, HUMIDITY AND PRECIPITATION DATA

College, Alaska				AF 18(600)-40				September 1954			
Date	Temperature (°F)			Relative Humidity (%)			Precipitation (inches-rain)				
	Max	Min	Mean	Max	Time	Min	Time	Mean			
1	68	38	53	100	0400	49	1425	75	0		
2	68	35	52	100	0525	44	1325	72	0		
3	58	39	49	100	0525	69	1325	85	T		
4	61	34	48	100	0325	52	1625	76	0		
5	71	42	47	98	0200	44	1525	71	0		
6	57	45	51	94	0525	61	1525	78	0.01		
7	53	28	41	97	2300	51	1425	74	T		
8	52	26	39	100	0025	48	1425	72	T		
9	65	39	52	98	0525	46	1425	72	0.05		
10	54	28	41	99	0225	62	1525	81	0.01		
11	54	32	43	98	0825	49	1625	74	0		
12	60	23	42	100	0325	32	1625	66	0		
13	67	22	45	95	0525	21	1500	58	0		
14	55	24	40	92	2325	43	1425	68	0		
15	55	36	46	96	2025	59	1725	78	T		
16	48	43	46	100	0900	92	1525	96	1.21		
17	55	34	45	100	0300	45	1825	73	0.01		
18	44	20	32	87	2025	41	1525	64	0		
19	46	14	30	90	0625	38	1400	64	0		
20	47	15	31	69	0225	29	1425	49	0		
21	47	26	37	69	2325	30	1525	50	0		
22	50	20	35	81	2025	34	1500	58	0		
23	54	27	41	75	2025	38	1525	57	0		
24	45	33	39	100	2225	60	0125	80	0.02 (MS)		
25	40	30	35	100	0325	76	1600	88	T (MS)		
26	49	24	37	100	0525	54	1525	77	0		
27	52	19	36	95	0400	39	1425	67	0		
28	52	30	41	97	1425	40	1525	69	T		
29	47	34	41	100	0125	78	1025	89	0.50		
30	54	30	42	100	0125	55	1625	78	0.01		
											Total 1.82
Avrg.	54.3	29.7	41.9	94.3	49.3			72.0			

(MS) Melting snow all other precipitation was rain.

September 18, and 20 were clear days, September 12, 13, 19 and 25 were almost clear days.

*Centrafile*  
Table 2-- TEMPERATURE, HUMIDITY AND PRECIPITATION DATA

College, Alaska				AF 18(600)-40				October 1954		
Date	Temperature ( $^{\circ}$ F)			Relative Humidity (%)				Precipitation*		
	Max	Min	Mean	Max	Time	Min	Time	Mean	(inches-rain)	
1	50	20	35	100	0900	33	1325	67	0	
2	53	20	37	88	1400	32	1425	60	0	
3	55	21	33	85	2325	26	1200	56	0	
4	54	15	35	91	0545	40	1425	66	T(MS)	
5	39	21	30	92	1825	55	0025	74	0	
6	35	15	25	94	1425	72	1100	83	T(MS)	
7	46	25	36	96	0725	48	1425	74	T(MS)	
8	50	30	40	66	1125	40	1400	53	0	
9	47	25	36	86	1825	56	1325	71	T(MS)	
10	51	18	35	94	0325	48	1425	71	0	
11	43	33	38	87	0825	60	1225	74	0	
12	36	26	31	80	0725	64	1500	72	T(MS)	
13	47	18	33	95	0528	48	1525	72	0	
14	46	25	36	81	0725	29	1225	55	0	
15	46	25	36	74	0625	47	1525	61	0	
16	30	17	24	93	0725	70	0025	82	0	
17	32	11	22	91	0625	77	1425	84	T	
18	33	9	21	91	2125	62	1325	77	.02	
19	28	25	27	97	0725	82	0225	90	.01	
20	31	23	27	97	0500	75	1721	86	.01	
21	28	21	25	91	2325	67	0325	79	.02	
22	25	20	23	94	0400	83	1725	89	T	
23	40	8	24	91	0125	46	2325	69	0	
24	43	22	33	95	2225	50	0925	73	T	
25	41	13	27	93	0125	56	2225	75	0	
26	45	24	35	84	2325	54	1425	69	.02	
27	32	20	26	95	2325	76	1100	86	0	
28	44	22	33	87	0200	49	1325	68	0	
29	35	20	28	91	1925	70	0425	81	0	
30	46	23	35	89	0500	54	2125	72	0	
31	53	35	44	85	2225	47	0525	66	T	
										Total 0.08
Avrg.				41.4	21.0	31.3	89.5	55.4	72.8	

\* (MS) Melting snow, all other precipitation was rain.  
October 3rd was a clear day; October 2nd and 13 were almost clear days.

*Centrais*

Table 3-- TEMPERATURE, HUMIDITY AND PRECIPITATION DATA

College, Alaska				AF 18(600)-40				November 1954		
Date	Temperature (°F)			Relative Humidity (%)				Precipitation*		
	Max	Min	Mean	Max	Time	Min	Time	Mean	(inches-rain)	
1	40	26	33	99	0525	79	1425	89	0.04	
2	35	25	30	91	0200	56	1725	74	0	
3	32	21	27	90	2225	72	0125	81	0	
4	34	15	25	96	0625	75	1225	86	T	
5	20	13	17	92	1800	85	0725	89	0	
6	27	20	24	100	2125	90	0200	95	0.06	
7	26	23	25	100	0400	94	1200	97	T	
8	23	-2	11	100	0500	81	1725	91	T	
9	25	-1	12	89	1125	74	2025	82	O	
10	23	3	13	75	0425	51	1625	63	0	
11	17	-3	7	76	0025	48	0225	62	0	
12	11	-5	3	72	1925	41	0125	57	0	
13	20	4	12	77	1825	56	0125	67	0	
14	18	-4	7	75	0425	59	0725	67	T	
15	17	0	9	80	0225	63	1625	72	O	
16	16	-2	7	76	0825	61	1425	69	0	
17	15	2	9	100	2125	67	0025	84	0.01	
18	20	12	16	91	2200	80	1025	86	0	
19	19	10	15	93	0525	80	1025	87	0	
20	18	2	10	88	0125	69	1125	79	0	
21	13	0	7	88	1725	80	2125	84	0	
22	5	-5	0	84	0825	79	2025	82	T	
23	13	-5	4	86	1425	78	2325	82	O	
24	20	4	12	87	1500	78	0425	83	O	
25	19	2	11	88	2325	80	1025	84	T	
26	15	-10	3	91	0100	76	1225	84	T	
27	15	-9	3	84	1725	73	1225	79	O	
28	25	5	15	90	0825	58	1525	74	0.04	
29	11	-11	0	84	2525	67	0125	76	0.04	
30	17	-5	6	88	1300	80	0300	84	0.23	
									Total 0.42	
<u>Avg.</u> 20.3 4.2 12.4 87.7 71.0 77.4										

\* All precipitation during November was snow. November 9, 10, 12, 15, 16 and 23 were clear days, November 14 was almost clear.

The relative humidity and precipitation were obtained from the records of the U. S. Weather Bureau Station at the Fairbanks International Airport.

Table 4-- TEMPERATURE, HUMIDITY AND PRECIPITATION DATA

College, Alaska AF 18(600)-40 December 1954

Date	Temperature (°F)			Relative Humidity (%)				Precipitation	
	Max	Min	Mean	Max	Time	Min	Time	Mean	(inches-rain)
1	26	13	19	90	0225	70	1625	80	0.25
2	16	-5	6	86	1325	76	2125	81	0.03
3	0	-33	-16	78	0125	61	2200	70	T
4	-31	-41	-36	M		M		M	0
5	-10	-37	-24	M		M		M	0.01
6	-5	-12	-9	75	2025	60	0525	68	0.01
7	-3	-14	-9	75	0100	58	1525	67	0.01
8	-16	-28	-22	75	1925	45	1125	60	T
9	-13	-22	-18	76	2125	59	1025	68	0
10	-8	-22	-15	76	1700	55	1025	66	0
11	-15	-27	-21	78	0400	62	1325	70	T
12	-25	-30	-28	73	0225	61	1225	67	0
13	-30	-35	-33	73	1225	59	0725	66	0
14	-16	-30	-23	77	2325	53	0725	65	T
15	-16	-33	-25	75	1225	49	1725	62	0.02
16	-8	-25	-17	78	1325	44	0125	61	T
17	-6	-30	-18	85	1425	61	0125	73	0.02
18	-6	-33	-20	81	2300	52	0425	67	0.03
19	+2	-12	-5	82	1425	67	0900	74	0
20	-2	-12	-7	84	1325	73	2325	79	0.08
21	-11	-27	-19	100	1300	67	1325	84	T
22	-11	-34	-23	79	0200	65	0825	72	T
23	-35	-47	-41	M		M		M	T
24	-23	-45	-34	M		M		M	0.01
25	-33	-45	-39	M		M		M	T
26	-43	-55	-49	M		M		M	0
27	-50	-56	-53	M		M		M	0
28	-38	-50	-44	M		M		M	0
29	-30	-45	-38	M		M		M	0
30	-16	-35	-26	77	0625	57	1525	67	T
31	-14	-37	-26	71	0225	47	1825	59	0.02
								Total 0.49	
<u>Avrg.</u> -15.2 -30.7 -23.8 79.3								69.4	

\*All precipitation during December was snow. December 4, 8, 9, 23 and 30 were clear days; December 28 was almost clear. The relative humidity and precipitation were obtained from the records of the U.S. Weather Bureau Station at the Fairbanks International Airport.

Table--5 TEMPERATURE, HUMIDITY, AND PRECIPITATION DATA

*Centrafile*

College, Alaska				AF 18(600)-40				January 1955		
Date	Temperature (°F)			Relative Humidity (%)				Precipitation (inches-rain)		
	Max	Min	Mean	Max	Time	Min	Time	Mean		
1	7	-15	-4	84	2225	77	0025	81	0.16	
2	10	-5	3	89	0900	78	2100	84	0.08	
3	-5	-18	-12	78	0225	66	1325	72	0.06	
4	-18	-20	-19	77	0225	63	0825	70	0.03	
5	-16	-36	-26	78	2125	63	1625	71	T	
6	-10	-21	-16	80	1925	66	0525	73	0.13	
7	-12	-28	-20	79	0225	67	0725	73	T	
8	15	-24	-5	91	2325	46	0225	69	0	
9	38	15	27	91	1725	68	1525	80	0	
10	19	7	13	90	0725	80	1300	85	0	
11	13	4	9	87	2025	75	0325	81	0	
12	15	2	9	85	0325	73	1725	79	0	
13	16	-4	6	87	2225	74	0425	81	0	
14	14	-3	6	88	2325	74	1225	81	0.01	
15	9	-14	-3	100	1425	69	1725	85	T	
16	-5	-18	-12	100	0625	74	1400	87	T	
17	3	-14	-6	80	0400	69	1125	75	0.02	
18	1	-15	-7	78	0600	67	2025	73	0	
19	15	-8	4	87	1225	70	0025	79	0	
20	10	-11	-1	85	0025	74	1025	80	0	
21	25	-13	6	88	1725	60	1625	74	0	
22	23	3	13	90	0400	68	2225	79	T	
23	18	1	10	83	1700	76	2225	80	0	
24	17	1	9	84	1825	74	0725	79	0	
25	8	-6	1	100	0800	69	1625	85	T	
26	11	-3	4	79	1500	69	2325	74	0	
27	4	-12	-4	78	1500	69	0125	74	0	
28	6	-14	-4	100	2100	66	0925	83	T	
29	9	-15	-3	100	0425	71	1025	86	T	
30	5	-17	-6	82	1325	65	2325	74	0	
31	9	-22	-7	80	1300	64	2300	72	0	
										Total 0.49
<u>Avrg.</u> 8.2 -10.0 -1.2				86.4		69.2		78.0		

All precipitation in January was snow. January 7, 23, 29, 30 were almost clear days. The relative humidity and precipitation were obtained from records of the U. S. Weather Bureau Station at the International Airport.

Table 6 -- TEMPERATURE, HUMIDITY, AND PRECIPITATION DATA

College, Alaska

AF 18(600)-40

February 1955

Date	Temperature (°F)			Relative Humidity (%)				Precipitation	
	Max	Min	Mean	Max	Time	Min	Time	Mean	(inches-rain)
1	5	-17	-6	79	1825	65	0100	72	0.02
2	5	-15	-5	79	1325	61	2325	70	0
3	9	-14	-3	70	1500	57	2025	64	0
4	-3	-15	-9	81	2325	62	0400	72	0.03
5	-2	-30	-16	81	0325	52	2325	67	0.01
6	-20	-34	-27	64	1925	47	0925	56	T
7	-14	-42	-28	(70)	0025	(26)	1825	48	T
8	-20	-47	-34	M(56)	1125	M(37)	1425	47	O
9	-12	-46	-29	M(69)	2325	M(30)	1125	50	T
10	0	-11	-5	76	2325	49	1525	63	T
11	0	-4	-2	100	1025	72	1625	86	0.14
12	-2	-15	-9	80	0100	65	2225	73	0.06
13	-14	-40	-27	71	0500	43	2325	57	0.01
14	-1	-34	-18	70	2125	46	0100	58	0.02
15	-12	-28	-20	67	0200	51	1625	59	T
16	0	-24	-12	73	2325	52	0025	63	0.02
17	20	-4	8	80	1725	68	1425	74	0.02
18	-2	-8	-5	75	1025	57	1225	66	0.07
19	-4	-40	-22	68	0500	39	1025	54	0
20	-10	-41	-26	M		M		M	0
21	-5	-41	-23	M		M		M	0
22	-20	-30	-5	69	1725	37	1025	53	0
23	8	-33	-13	61	1825	46	1225	54	0
24	3	-19	-8	74	2300	38	0025	56	0.03
25	17	-2	-8	87	2025	64	0225	76	0.01
26	24	6	15	86	0725	60	2225	73	0.16
27	14	-2	6	78	2125	58	1200	68	0
28	5	-26	-11	64	1825	46	1025	55	0
								Total 0.60	
<u>Avrg.</u> 0.3 -23.3 -11.5 74.2 51.1 62.7									

All precipitation in February was snow. February 23 and 28 were clear days, February 8 and 21 were almost clear days.

Table 7 -- TEMPERATURE, HUMIDITY AND PRECIPITATION DATA

College, Alaska

AF 18(600)-40

March 1955

Date	Temperature (°F)			Relative Humidity (%)				Precipitation (inches-rain)		
	Max	Min	Mean	Max	Time	Min	Time	Mean		
1	4	-35	-16	70	1125	36	1325	53	0	
2	8	-34	-13	51	0025	26	1325	39	0	
3	11	-27	-8	73	2325	30	0525	52	T	
4	31	5	18	88	1725	73	1125	81	.01	
5	50	27	39	87	0725	59	1225	73	0	
6	50	24	37	98	2300	64	1325	81	.01	
7	35	20	28	99	0225	76	1125	88	.10	
8	31	20	26	97	2329	84	1025	91	.13	
9	38	15	27	98	0400	80	1400	89	.06	
10	16	-10	3	88	0025	62	1225	75	.06	
11	13	-23	-5	80	0100	51	1725	66	T	
12	8	-30	-11	69	1925	40	0525	55	0	
13	21	-30	-5	69	2125	41	1125	55	0	
14	27	2	15	78	2325	41	1425	60	T	
15	20	-4	8	86	2125	68	1425	77	.01	
16	27	2	15	92	1500	61	1225	77	.06	
17	20	0	10	93	1925	64	1125	80	.05	
18	28	-2	13	100	0425	56	1300	78	.03	
19	26	-15	6	100	0400	64	2100	82	T	
20	23	4	14	74	0725	35	2325	55	0	
21	30	0	15	84	1525	40	1125	62	0	
22	20	-17	2	75	2025	46	1425	61	0	
23	28	-16	6	80	2225	48	1025	64	0	
24	40	-8	16	79	0825	38	1725	59	0	
25	34	11	23	68	2325	38	1125	53	0	
26	43	2	23	71	2225	45	1025	58	0	
27	47	13	30	84	2325	40	1125	62	0	
28	50	11	31	85	2325	47	1525	66	0	
29	47	7	27	84	0025	50	1325	67	T	
30	43	18	31	83	0925	55	1725	69	T	
31	30	6	18	73	0825	43	2325	58	0	
										Total 0.52
<u>Avrg.</u> 29.0 -2.1 13.6										
82.5										67.3

All precipitation during March was snow. March 11 and 21 were clear days; March 1, 12, 20, 24 were almost clear days.

*Centrafile*  
Table 8 -- TEMPERATURE, HUMIDITY AND PRECIPITATION DATA

College, Alaska

AF 18(600)-40

April 1955

Date	Temperature (°F)			Relative Humidity (%)			Precipitation		
	Max	Min	Mean	Max	Time	Min	Time	Mean	(inches-rain)
1	23	-2	11	72	0425	41	2125	57	0
2	17	-2	8	85	0125	53	1625	69	0.04
3	25	-17	4	83	0025	45	2025	64	T
4	26	-8	9	83	0125	48	1525	70	T
5	32	5	19	90	0025	49	2125	70	T
6	32	-4	14	84	0200	41	1625	63	0
7	34	-2	16	86	0025	50	1225	68	0
8	31	-8	12	87	0825	52	1825	68	0
9	24	4	14	84	0825	52	1825	68	0.01
10	25	-14	6	84	0025	45	1025	65	0
11	34	-13	11	83	0525	33	1925	58	0
12	33	0	17	69	0725	39	1625	54	0
13	40	-10	15	73	1625	41	1425	57	0
14	45	18	32	68	0325	44	0725	56	0
15	40	18	29	76	0925	50	1125	63	T
16	46	8	27	90	0325	39	1425	65	0
17	41	31	36	100	2000	43	0025	72	.02
18	45	32	39	100	0025	58	1625	79	.13
19	47	25	36	94	0525	33	1625	64	T
20	54	29	42	67	0225	34	1425	51	0
21	38	24	31	93	0925	66	1425	80	T
22	32	25	29	84	0325	53	1925	69	T
23	32	20	26	87	0025	55	1325	71	T
24	32	19	26	82	0025	49	1725	66	0
25	42	15	29	71	0425	31	1525	51	0
26	47	14	31	63	2225	29	1425	46	0
27	48	26	27	70	0325	36	1500	53	0
28	50	15	33	78	0525	24	1725	51	0
29	51	17	34	73	0200	31	1725	52	0
30	54	24	39	66	0725	36	1425	51	0
									Total 0.20
<u>Avrg.</u> 37.3 9.6 23.4 80.8 43.2 62.2									

All precipitation during April was snow. April 10, 11, 26, 27 were clear days; April 3 was almost a clear day.

*Centrafile*  
Table 9 -- TEMPERATURE, HUMIDITY AND PRECIPITATION DATA

College, Alaska				AF 18(600)-40				May 1955		
Date	Temperature (°F)			Relative Humidity (%)			Precipitation (inches-rain)			
	Max	Min	Mean	Max	Time	Min	Time	Mean		
1	54	32	43	72	0025	44	1325	58	0	
2	52	30	41	88	2325	42	1225	65	T	
3	54	26	40	89	0025	33	1625	61	O	
4	56	30	43	69	2225	30	1425	50	T	
5	53	33	43	75	0125	41	1125	58	T	
6	57	30	44	78	0425	33	1625	56	0	
7	56	31	44	88	2325	42	1200	65	.10T*	
8	57	27	42	92	0225	39	1600	66	T	
9	54	34	44	72	0125	41	1300	57	O	
10	52	31	42	73	0325	37	1625	55	0	
11	57	25	41	72	0225	28	1725	50	O	
12	59	26	43	88	0325	28	1625	58	T	
13	54	30	42	83	2325	39	1700	61	O	
14	59	27	43	88	0225	28	1225	58	O	
15	63	31	47	96	1625	21	0300	59	O	
16	69	35	52	73	0325	29	1425	51	T	
17	58	33	46	95	0525	45	1425	70	.25	
18	60	31	46	97	0100	30	1625	64	T	
19	54	37	46	87	2125	52	1525	70	.08	
20	56	36	46	96	0400	52	1725	74	.12*T	
21	57	31	44	91	2325	42	1525	67	.02	
22	64	28	46	91	0225	30	1500	61	O	
23	71	33	52	82	0225	20	2025	51	O	
24	70	39	55	60	2325	23	1125	42	O	
25	59	43	51	70	2325	45	1625	58	T	
26	48	43	46	98	1225	86	0200	92	.28	
27	47	42	46	100	0200	89	1500	95	.77	
28	60	41	51	100	0100	45	1925	73	T	
29	59	44	52	95	0525	47	1425	71	.05	
30	60	41	51	95	0200	33	1825	64	O	
31	59	43	51	77	0525	35	1325	56	T	
									Total 1.67	
<u>Avg.</u> 57.7 33.6 45.7 84.8 39.6 62.4										

\*A trace of hail all other precipitation was rain. There were no clear days during May, 1955.

Table 10 -- TEMPERATURE, HUMIDITY AND PRECIPITATION DATA

College, Alaska

AF 18(600)-40

June 1955

Date	Temperature (°F)			Relative Humidity (%)			Precipitation		
	Max	Min	Mean	Max	Time	Min	Time	Mean	(inches-rain)
1	61	45	53	68	0125	36	1225	52	0
2	62	35	49	80	0325	31	1725	56	0
3	66	30	48	94	0025	30	1225	62	0
4	63	42	53	94	2325	48	1100	71	0.32
5	63	43	53	100	0525	64	1325	82	0.15
6	70	38	54	93	0100	37	1725	65	0
7	73	35	54	84	0225	30	1425	57	.T
8	75	40	58	71	2125	34	0925	53	.T
9	71	43	57	92	0200	39	1525	66	.T
10	74	44	59	96	2325	44	1625	70	0.04
11	56	44	50	100	2025	63	1125	82	0.29
12	52	39	46	96	0425	61	1525	79	1.38
13	58	36	46	97	0225	57	1625	77	0.02
14	60	35	48	93	0225	52	1625	73	.T
15	61	42	52	93	0325	54	1925	74	.T
16	68	37	53	95	0325	41	1525	68	T
17	63	43	53	67	0025	37	1523	52	0
18	72	43	58	62	0825	32	1925	47	T
19	72	43	58	94	2200	45	0725	70	0.19
20	62	45	54	99	0425	57	1325	78	0.02
21	69	43	56	93	0225	36	1725	65	0.02
22	71	44	58	88	0125	39	1325	64	0
23	76	42	59	91	0125	22	1425	57	0
24	75	43	59	94	0225	31	1425	63	0
25	75	47	61	86	2325	38	1225	62	0.02
26	66	47	57	94	0200	46	1625	70	0.06
27	69	42	56	93	0325	34	2025	64	.T
28	74	48	61	74	0325	28	1625	51	.T
29	58	54	56	96	0925	70	0425	83	0.68
30	64	47	56	97	0225	53	2025	75	0.33
									Total 3.52
<u>Avrg.</u> 66.6 42.0 54.5 89.1 43.0 66.2									

All precipitation during June was rain. There were no clear days in June

Table 11 -- TEMPERATURE, HUMIDITY AND PRECIPITATION DATA

*Centrafile*

College, Alaska				AF 18(600)-40				July 1955		
Date	Temperature (°F)			Relative Humidity (%)			Precipitation			
	Max	Min	Mean	Max	Time	Min	Time	Mean	(inches-rain)	
1	68	44	56	90	0225	37	1425	64	0	
2	79	41	60	85	0325	26	1625	56	0	
3	76	50	63	82	0425	39	1200	61	0	
4	67	43	55	89	0225	64	1225	77	0.23	
5	74	44	59	100	0328	38	1425	69	0	
6	75	41	58	87	2300	47	1725	67	0.01	
7	79	52	66	96	0125	44	1200	70	0	
8	78	46	62	86	0025	32	1425	59	T	
9	84	46	65	87	0425	32	1725	60	O	
10	84	55	70	89	2325	32	1325	61	T	
11	67	52	60	97	2300	50	0725	74	0.65	
12	63	44	54	98	0425	63	1825	81	0.91	
13	68	43	56	97	2325	50	1725	74	0.01	
14	68	44	56	96	0225	49	1400	73	T	
15	69	51	60	94	0325	44	1625	69	0.12	
16	58	49	54	97	0525	73	1625	85	0.32	
17	68	44	56	97	0325	46	1725	72	O	
18	74	40	57	94	0300	35	1700	65	O	
19	75	48	62	81	0225	42	1725	62	T	
20	76	47	62	93	0225	32	1700	63	O	
21	80	43	62	96	0325	37	1400	67	O	
22	85	46	66	91	0325	26	1625	59	O	
23	85	49	67	89	0325	31	1600	60	O	
24	88	50	69	89	0300	27	1725	58	O	
25	93	52	73	83	0225	25	1600	54	O	
26	84	54	69	83	0325	46	1225	65	O	
27	63	55	59	97	2325	70	1125	84	0.17	
28	56	53	55	100	0025	83	1625	92	0.09	
29	68	53	61	100	0400	60	1625	80	T	
30	67	48	58	83	2325	42	0725	63	O	
31	75	43	59	97	0225	39	1425	68	O	
										Total 2.51
<u>Avrg.</u> 74.0 47.4 60.9 91.7 43.9 68.1										

All precipitation during July was rain. July 23 and 24 were clear days, July 22 and 25 were almost clear days.

Table 12 -- TEMPERATURE, HUMIDITY AND PRECIPITATION DATA

College, Alaska

AF 18(600)-40

August 1955

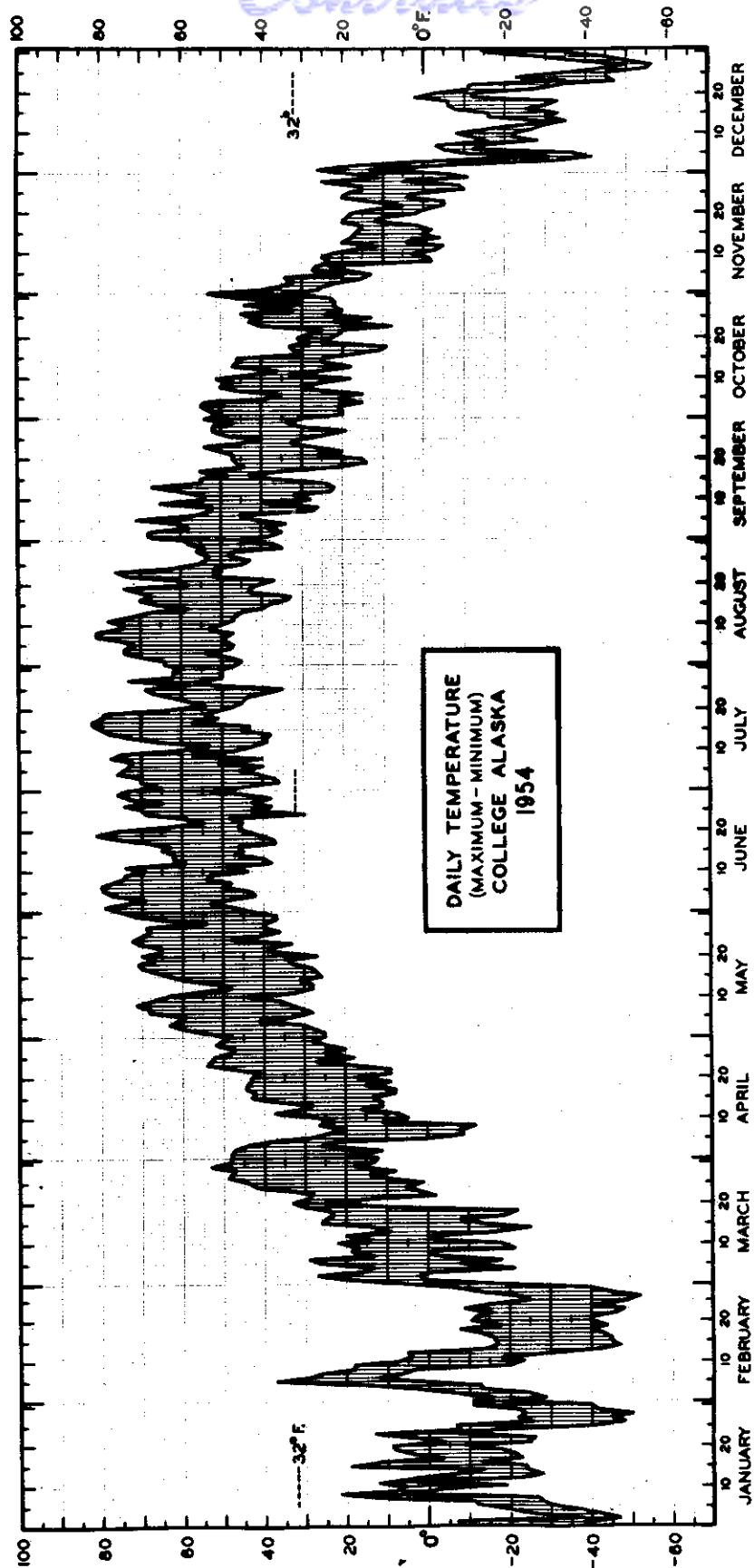
Date	Temperature (°F)			Relative Humidity (%)				Precipitation (inches-rain)		
	Max	Min	Mean	Max	Time	Min	Time	Mean		
1	77	44	61	99	0325	37	1525	68	0	
2	76	46	61	92	0225	50	1325	71	0.09	
3	65	44	55	95	0325	59	1625	77	0.01	
4	73	55	64	100	1725	56	1625	78	0.25	
5	74	43	59	96	0225	44	1425	70	T	
6	74	43	59	92	0525	47	1525	70	0	
7	74	43	59	100	0425	48	1525	74	0.02	
8	70	43	57	100	0500	41	1425	71	T	
9	70	38	54	95	2325	43	1425	69	0	
10	68	43	56	98	0325	44	1325	71	0.02	
11	60	52	56	99	2300	78	0925	89	0.24	
12	64	36	50	99	0125	49	1625	74	0.04	
13	61	35	48	83	0125	33	1725	58	0	
14	62	35	49	76	0400	40	0400	58	0	
15	68	35	52	70	0225	39	1625	55	0	
16	68	32	50	80	2200	31	1425	56	0	
17	64	34	49	93	2225	52	1128	73	0.01	
18	57	52	55	96	0125	84	1623	90	0.12	
19	53	49	51	99	0625	83	1025	91	0.16	
20	63	47	55	98	0325	61	1425	80	T	
21	62	54	58	94	0525	73	1400	84	0.04	
22	62	52	57	95	0825	70	1725	83	0.03	
23	70	49	60	96	0125	46	1325	71	0	
24	62	50	56	98	0525	65	1525	82	0.24	
25	51	39	45	97	0825	67	1700	82	0.02	
26	56	36	46	99	0525	55	1225	77	T	
27	54	45	50	94	0825	78	2025	86	0.51	
28	57	43	50	87	2325	48	1626	68	T	
29	47	35	41	98	2225	70	1625	84	0.12	
30	57	32	45	100	0226	40	1625	70	0	
31	68	38	53	84	0423	41	1626	63	0	
										Total 1.9
<u>Avrg.</u>										74.0

All precipitation during August was rain. August 14 was a clear day.

*Contrails*

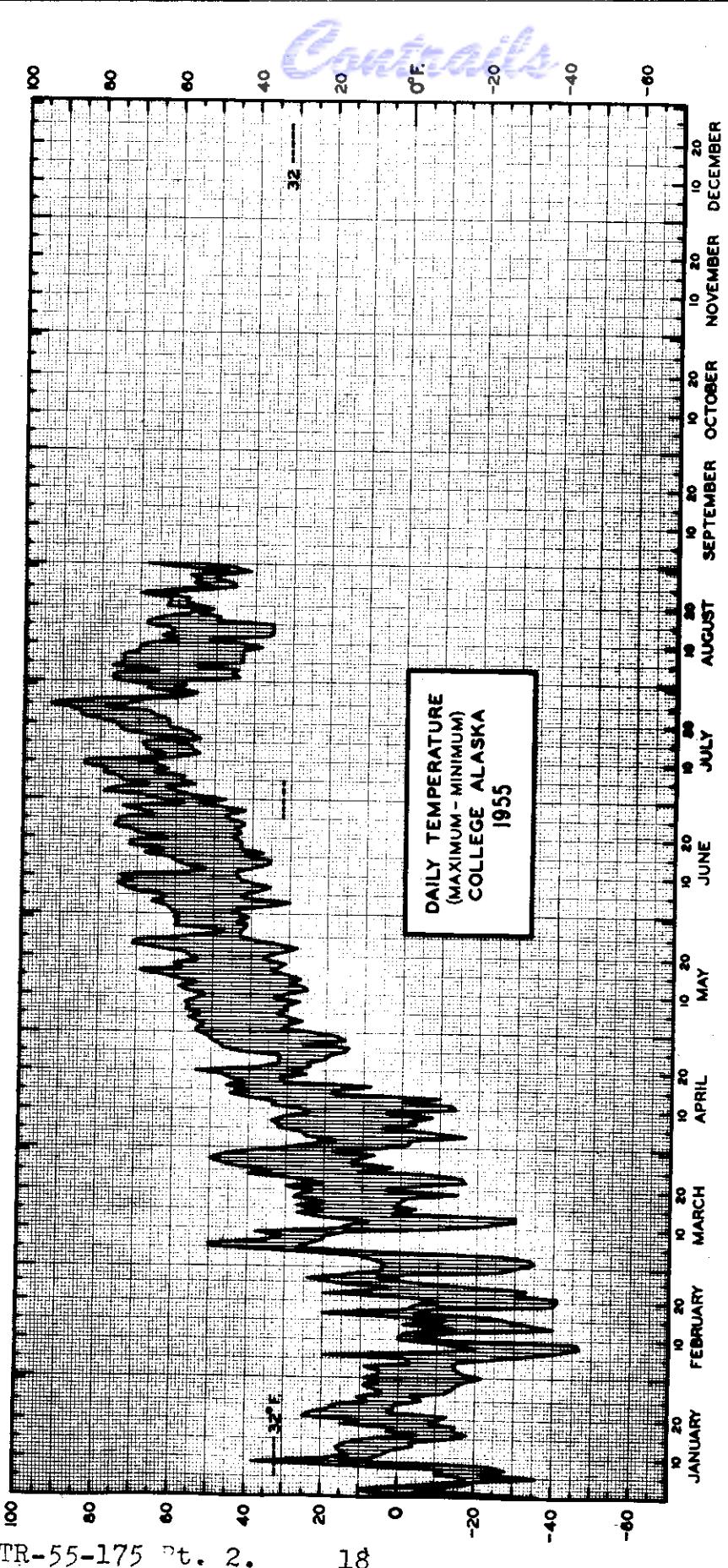
Table 13 -- MONTHLY AVERAGES of the Maximum, Minimum, and Mean Values of the Temperature and Relative Humidity and Monthly Totals of the Precipitation at College, Alaska, for the period September 1954 through August 1955.

Month	Temperature (°F)			Relative Humidity			Total Precipi- tation Rainfall inches
	Max	Min	Mean	Max.	Min.	Mean	
<b>1954</b>							
September	54.3	29.7	41.9	94.3	49.3	72.0	1.82
October	41.4	21.0	31.2	89.5	55.4	72.8	0.08
November	20.3	4.2	12.4	87.7	71.0	77.4	0.42
December	-15.2	-30.7	-23.8	79.3	59.1	69.4	0.49
<b>1955</b>							
January	8.2	-10.0	-1.2	86.4	69.2	78.0	0.49
February	0.3	-23.3	-11.5	74.2	51.1	62.7	0.60
March	29.0	-2.1	13.6	82.5	51.6	67.3	0.52
April	37.3	9.6	23.4	80.8	43.2	62.2	0.20
May	57.7	33.6	45.7	84.8	39.6	62.4	1.67
June	66.6	42.0	54.5	89.1	43.0	66.2	3.52
July	74.0	47.4	60.9	91.7	43.9	68.1	2.51
August	64.09	42.6	53.6	93.6	53.9	74.0	1.9
Total -year							
14.22							



WADC-TR-55-175 Pt. 2. 17

Figure I - Daily Temperature (Maximum-Minimum) at College, Alaska, 1954.



NADC-TR-55-175 Pt. 2.

18

Figure II- Daily Temperature (Maximum-Minimum) at College, Alaska, 1955

*Contracts*  
SECTION V

SOLAR RADIATION

The following 12 tables (tables 14-25 inclusive, pages 20-31) include a tabulation of the daily values of the weekly and monthly averages, and of the monthly totals of the solar radiation data as measured on a horizontal surface and on a surface slanted 45° to the south gathered in connection with the operation of Contract AF 18(600)-40. The period covered is September 1954 through August 1955. The values were recorded at the test site except those in parenthesis for the horizontal surface, which were obtained from the data of the U. S. Weather Bureau at the Fairbanks International Airport rather than estimated. Though differences do occur between the values obtained at the test site and at the International Airport, the values actually measured should be more significant than values entered by judgement or an estimated procedure. The maximum on the horizontal surface entered in parenthesis are the highest hourly average rather than the peak values entered from the data at the test site. The estimated values for the radiation quantities on the slant surface were estimated in general by careful comparison of similar curves. These values fit closely those estimated using the curves developed by Nagel.(2)

In table 26 (page 32) the values of the monthly averages of the maximum and daily solar radiation and monthly totals on a horizontal surface and on a 45° slant (south) surface at College, Alaska, during the period September 1954 through August 1955 are summarized. In table 27 (page 33) the clear and nearly clear days are listed.

Table 14 -- SOLAR RADIATION (LANGLEYS) for September 1954

College, Alaska

AF 18(600)-40

Date	Horizontal Pyrheliometer		45° Slant Pyrheliometer	
	Maximum gm cal/cm <sup>2</sup>	Total gm cal/cm <sup>2</sup>	Maximum gm cal/cm <sup>2</sup>	Total gm cal/cm <sup>2</sup>
Sept. 1	(1.250)	(380)	1.440	519
2	0.886	379	1.311	509
Average	(1.105)	239	1.214	280
3	0.764	176	1.152	177
4	0.880	363	1.823	460
5	0.972	401	1.550	537
6	1.028	155	1.470	140
7	1.304	376	1.888	520
8	0.428	104	0.462	75
9	0.775	189	1.132	200
Average	0.879	252	1.354	301
10	1.061	188	1.677	160
11	1.021	178	1.677	184
12	0.876	406	1.489	642
13	0.866	398	1.489	650
14	0.839	156	1.341	175
15	0.569	128	(0.720)	(135)
16	0.338	64	(0.250)	(45)
Average	0.796	217	(1.235)	(284)
17	1.123	143	(1.700)	(145)
18	0.822	373	(1.340)	(525)
19	0.861	372	(1.490)	(520)
20	0.805	344	(1.400)	(490)
21	0.788	325	(1.300)	(470)
22	0.761	251	1.353	(386)
23	0.875	224	1.459	319
Average	0.862	290	(1.435)	(408)
24	0.303	69	0.242	52
25	0.339	95	0.262	64
26	0.909	202	1.471	296
27	0.726	269	1.325	464
28	0.501	106	0.706	107
29	0.236	66	0.211	49
30	0.940	144	1.618	238
Average	0.564	136	0.838	181
Monthly Total	23.848	7019	36.748	9253
Monthly Avrg.	0.795	234.0	1.228	308.4

WADC-TR-55-175 Pt. 2.

20

Table 15 -- SOLAR RADIATION (LANGLEYS) for October 1954

College, Alaska

AF 18(600)-40

Date	Horizontal Surface		$45^{\circ}$ Slant - South	
	Maximum, gm cal/cm <sup>2</sup>	Total min gm cal/cm <sup>2</sup>	Maximum gm cal/cm <sup>2</sup>	Total min gm cal/cm <sup>2</sup>
Oct. 1	(0.650)	(225)	1.302	504
2	0.645	247	1.317	523
3	0.635	243	1.310	516
4	0.680	176	1.312	317
5	0.545	222	1.292	452
6	0.424	94	0.550	95
7	0.666	152	1.317	282
Average	(0.606)	(194)	1.200	384
8	0.513	96	0.968	126
9	0.532	160	1.343	372
10	0.599	149	1.292	290
11	0.505	149	(1.250)	(310)
12	0.126	36	0.994	29
13	0.501	182	1.174	447
14	0.483	146	1.179	446
Average	0.466	131	(1.171)	289
15	0.531	108	1.117	239
16	0.495	102	0.932	171
17	(0.230)	(66)	0.733	112
18	(0.230)	(77)	1.093	129
19	(0.110)	(33)	(0.130)	(30)
20	(0.160)	(50)	(0.200)	(55)
21	(0.200)	(49)	(0.225)	(50)
Average	(0.279)	(69)	(0.633)	(112)
22	(0.060)	(22)	(0.060)	(25)
23	(0.085)	(30)	(0.090)	(35)
24	(0.082)	(29)	(0.090)	(30)
25	0.449	80	1.100	(95)
26	0.331	100	1.012	208
27	0.281	32	0.364	38
28	0.354	52	0.926	87
Average	(0.234)	(49)	(0.520)	(74)
29	0.161	36	0.454	53
30	0.399	64	1.108	210
31	0.320	52	1.087	114
Monthly Total	11.982	3249	27.321	6346
Monthly Avrg.	0.387	105.0	0.881	206.1

Table 16 -- SOLAR RADIATION (LANGLEYS) for November 1954

College, Alaska

AF 18(600)-40

Date	Horizontal Surface			45° Slant Surface		
	Maximum gm cal/cm <sup>2</sup>	Total min gm cal/cm <sup>2</sup>	Total gm cal/cm <sup>2</sup>	Maximum gm cal/cm <sup>2</sup>	Total min gm cal/cm <sup>2</sup>	Total gm cal/cm <sup>2</sup>
Nov. 1	0.348	55		1.040		183
2	0.095	20		0.122		21
3	0.087	21		0.181		29
4	0.392	51		0.983		171
<u>Average</u>	<u>0.257</u>	<u>43</u>		<u>0.854</u>		<u>112</u>
5	0.292	19		0.510		26
6	0.052	6		0.061		10
7	0.065	4		0.059		5
8	0.321	41		0.556		63
9	(0.300)	75		0.644		167
10	(0.150)	35		0.861		234
11	(0.140)	30		0.850		137
<u>Average</u>	<u>(0.188)</u>	<u>30</u>		<u>0.506</u>		<u>92</u>
12	(0.160)	35		0.850		232
13	(0.120)	16		0.827		84
14	(0.120)	32		0.769		184
15	0.252	57		0.708		164
16	0.252	63		0.610		150
17	0.042	7		0.038		6
18	0.207	9		0.546		26
<u>Average</u>	<u>0.165</u>	<u>31</u>		<u>0.621</u>		<u>121</u>
19	0.050	6		0.046		6
20	0.105	10		0.203		17
21	0.052	7		0.093		11
22	0.158	19		0.370		44
23	0.215	45		0.510		105
24	0.111	10		0.222		15
25	0.023	4		0.024		3
<u>Average</u>	<u>0.102</u>	<u>14</u>		<u>0.210</u>		<u>29</u>
26	0.182	19		0.357		41
27	0.213	25		0.451		57
28	0.045	3		0.046		6
29	0.125	12		0.458		40
30	0.042	5		0.114		8
Monthly Totals	4.716	741		13.109		2245
Monthly Avrg.	0.157	24.7		0.437		74.8

WADC-TR-55-175 Pt. 2.

22

Table 17 -- SOLAR RADIATION (LANGLEYS) for December 1954

College, Alaska

AF 18(600)-40

Date	Horizontal Surface		45° Slant Surface	
	Maximum gm cal/cm <sup>2</sup>	Total gm cal/cm <sup>2</sup>	Maximum gm cal/cm <sup>2</sup>	Total gm cal/cm <sup>2</sup>
Dec. 1	0.035	1	0.380	13
2	0.100	5	0.184	12
Average	0.106	10	0.284	25
3	0.031	3	0.070	9
4	0.187	24	0.449	69
5	0.029	2	0.054	3
6	0.016	2	0.040	4
7	0.066	4	0.282	18
8	0.107	15	0.402	53
9	0.155	17	0.412	54
Average	0.084	10	0.244	30
10	0.178	19	0.399	46
11	0.100	7	0.213	13
12	0.130	9	0.288	22
13	0.016	3	0.026	6
14	0.015	1	0.029	2
15	0.140	12	0.311	23
16	0.058	4	0.112	6
Average	0.091	8	0.197	19
17	0.129	8	0.295	18
18	0.026	3	0.145	10
19	0.034	3	0.029	6
20	(0.020)	(1)	(0.030)	(2)
21	0.005	0	0.015	3
22	0.015	1	0.037	5
23	0.079	7	0.266	24
Average	(0.044)	13	(0.117)	(10)
24	0.019	2	0.029	4
25	0.013	2	0.021	4
26	0.045	3	0.117	9
27	0.100	7	0.266	16
28	0.163	14	0.370	37
29	0.119	11	0.253	19
30	0.157	16	(0.410)	(50)
Average	0.088	8	(0.209)	(20)
31	0.034	2	0.075	7
Monthly Total	2.321	208	6.009	567
Monthly Avrg.	0.075	6.7	0.194	18.3

Table 18 -- SOLAR RADIATION (LANGLEYs) for January 1955

College, Alaska

AF 18(600)-40

Date	Horizontal Surface		45° Slant Surface	
	Maximum gm cal/cm <sup>2</sup>	Total min gm cal/cm <sup>2</sup>	Maximum gm cal/cm <sup>2</sup>	Total min gm cal/cm <sup>2</sup>
Jan. 1	0.010	1	0.008	1
2	0.013	2	0.010	1
3	0.019	3	0.021	1
4	0.011	2	0.016	2
5	0.073	4	0.282	19
6	0.006	0	0.006	0
7	0.129	11	0.354	30
Average	0.037	3	0.099	8
8	0.136	12	0.391	27
9	0.084	7	0.455	40
10	0.166	14	0.335	33
11	0.027	3	0.027	4
12	0.191	24	0.349	40
13	0.055	6	0.070	8
14	0.037	3	0.213	11
Average	0.099	10	0.263	23
15	0.202	33	0.646	117
16	0.210	20	0.536	54
17	0.260	47	0.701	123
18	0.189	22	0.461	38
19	0.034	5	0.082	6
20	0.205	17	0.458	23
21	0.053	6	0.066	9
Average	0.165	21	0.421	53
22	0.315	42	0.619	80
23	0.242	42	0.477	88
24	0.066	9	0.075	13
25	0.171	19	0.314	28
26	0.282	31	0.498	55
27	0.297	37	0.463	52
28	0.299	41	0.490	62
Average	0.239	32	0.419	55
29	0.352	77	0.589	126
30	0.334	83	0.559	136
31	0.404	87	0.651	125
Monthly Total	4.872	700	10.222	1352
Monthly Avrg.	0.157	22.5	0.330	43.6

Table 19 -- SOLAR RADIATION (LANGLEYS) For February 1955

College, Alaska

AF 18(600)-40

Date	Horizontal Surface		45° Slant Surface	
	Maximum gm cal/cm <sup>2</sup>	Total min gm cal/cm <sup>2</sup>	Maximum gm cal/cm <sup>2</sup>	Total min gm cal/cm <sup>2</sup>
Feb. 1	0.105	17	0.159	16
2	0.420	60	0.681	88
3	0.279	72	0.654	171
4	0.102	23	0.107	24
Average	0.285	58	0.485	997
5	0.212	30	0.383	42
6	0.231	31	0.446	48
7	(0.640)	(125)	0.981	202
8	(0.640)	(150)	0.981	270
9	(0.720)	(100)	1.031	172
10	0.127	26	0.138	32
11	(0.075)	(18)	0.125	29
Average	(0.378)	(69)	0.584	114
12	0.150	27	0.164	34
13	0.324	67	0.910	160
14	0.468	95	1.043	183
15	0.484	121	(0.700)	(195)
16	0.240	46	0.328	55
17	0.119	26	0.141	30
18	0.274	44	0.383	43
Average	0.294	61	(0.524)	(100)
19	0.471	61	1.231	160
20	0.569	188	1.200	396
21	0.573	188	1.269	420
22	0.357	92	0.718	238
23	0.456	199	1.180	397
24	0.602	80	1.272	122
25	0.210	58	0.222	67
Average	0.462	124	1.013	257
26	0.700	84	1.445	153
27	0.504	143	1.243	368
28	0.593	210	1.132	403
Monthly Total	10.647	2382	20.267	4518
Monthly Avrg.	0.380	85.1	0.724	161

*Controls*

Table 20 -- SOLAR RADIATION (LANGLEYS) for March 1955

College, Alaska

AF 18(600)-40

Date	Horizontal Surface		45° Slant Surface	
	Maximum gm cal/cm <sup>2</sup>	Total min gm cal/cm <sup>2</sup>	Maximum gm cal/cm <sup>2</sup>	Total min gm cal/cm <sup>2</sup>
March 1	0.611	213	1.244	421
2	0.690	222	(1.230)	(320)
3	0.305	93	0.345	104
4	0.161	42	0.154	40
<u>Average</u>	<u>0.509</u>	<u>144</u>	<u>0.970</u>	<u>258</u>
5	0.666	110	1.140	162
6	0.695	110	1.409	156
7	0.755	132	1.596	233
8	0.528	86	0.919	96
9	0.610	109	1.381	152
10	0.786	148	1.265	177
11	0.790	284	1.593	587
<u>Average</u>	<u>0.690</u>	<u>140</u>	<u>1.325</u>	<u>223</u>
12	0.733	272	1.523	575
13	0.726	247	1.487	457
14	0.357	108	0.387	113
15	0.789	269	1.523	479
16	(0.256)	(96)	0.311	97
17	(0.555)	(189)	1.761	355
18	(0.630)	(238)	1.761	429
<u>Average</u>	<u>0.578</u>	<u>203</u>	<u>1.250</u>	<u>358</u>
19	(0.636)	(244)	1.535	526
20	(0.658)	(273)	1.510	616
21	(0.675)	(286)	1.551	651
22	(0.653)	(281)	1.524	589
23	(0.633)	(252)	1.359	443
24	(0.700)	(308)	1.564	669
25	(0.482)	(214)	0.789	342
<u>Average</u>	<u>0.634</u>	<u>265</u>	<u>1.405</u>	<u>548</u>
26	(0.723)	(260)	(1.500)	(470)
27	(0.700)	(278)	(1.510)	(490)
28	(0.743)	(323)	1.536	577
29	(0.771)	(303)	1.571	577
30	(0.774)	(355)	1.769	671
31	(0.778)	(366)	(1.800)	(680)
Monthly Total	19.569	6711	40.520	12254
Monthly Avrg.	0.631	216.5	1.307	395.3

Table 21 -- SOLAR RADIATION (LANGLEYS) for April 1955

College, Alaska

AF 18(600)-40

Date	Horizontal Surface		45° Slant Surface	
	Maximum gm cal/cm <sup>2</sup>	Total gm cal/cm <sup>2</sup>	Maximum gm cal/cm <sup>2</sup>	Total gm cal/cm <sup>2</sup>
April 1	(0.700)	(309)	1.738	696
Average	(0.741)	313	1.632	594
2	(0.537)	(225)	1.988	655
3	(0.833)	(394)	0.778	310
4	(0.759)	(336)	1.908	704
5	(0.725)	(286)	1.321	382
6	(0.891)	(428)	1.654	582
7	(0.853)	(411)	1.675	757
8	(0.896)	(399)	1.216	251
Average	(0.785)	354	1.506	520
9	(0.630)	(295)	1.710	533
10	(0.900)	(465)	1.801	729
11	(0.913)	(463)	1.693	745
12	(0.930)	(463)	(1.700)	(750)
13	(1.100)	(420)	1.731	544
14	(0.870)	(350)	1.807	558
15	(0.530)	(387)	0.206	343
Average	(0.839)	406	1.778	600
16	(0.870)	(550)	1.665	736
17	(0.330)	(152)	0.379	138
18	(1.000)	(410)	2.013	441
19	(0.970)	(468)	1.738	735
20	(0.980)	(408)	1.762	626
21	(0.808)	(283)	1.100	305
22	0.699	241	0.799	256
Average	0.808	359	1.351	462
23	1.514	402	2.311	502
24	0.888	287	1.199	305
25	1.130	585	1.790	813
26	1.180	607	1.877	877
27	1.135	608	1.790	826
28	1.160	609	1.814	851
29	1.140	552	1.752	757
Average	1.164	521	1.790	704
30	1.333	425	1.867	546
Monthly Total	27.204	12218	48.582	17248
Monthly Avrg.	0.907	407.3	1.619	574.9

WADC-TR-55-175 Pt. 2.

27

Table 22 -- SOLAR RADIATION (LANGLEYS) for May 1954

College, Alaska

AF 18(600)-40

Date	Horizontal Surface			45° Slant Surface		
	Maximum gm cal/cm <sup>2</sup>	min	Total gm cal/cm <sup>2</sup>	Maximum gm cal/cm <sup>2</sup>	min	Total gm cal/cm <sup>2</sup>
May 1	1.511		387	2.061		503
2	1.079		378	1.474		483
3	1.387		601	1.922		751
4	1.259		446	1.755		591
5	1.251		486	1.835		605
6	1.371		553	1.859		658
Average	1.313		468	1.825		591
7	1.451		396	2.020		474
8	1.474		475	1.894		563
9	1.180		634	1.738		802
10	1.235		630	1.825		856
11	1.291		626	1.814		728
12	1.363		494	1.689		598
13	0.518		160	0.789		201
Average	1.216		488	1.681		603
14	1.398		477	1.939		626
15	1.355		515	1.814		641
16	1.258		450	1.637		528
17	1.328		454	1.814		560
18	1.299		457	1.637		526
19	1.052		192	1.286		244
20	1.355		330	1.728		420
Average	1.292		411	1.694		506
21	1.655		328	2.221		442
22	1.215		642	1.696		751
23	1.215		557	1.668		694
24	1.466		505	1.794		645
25	1.360		291	1.564		182
26	0.386		98	0.379		151
27	0.418		108	0.414		144
Average	1.102		361	1.391		430
28	1.484		537	1.901		663
29	1.307		276	1.525		336
30	1.731		441	1.999		471
31	1.742		400	2.225		638
Monthly Total	39.394		13324	51.916		16475
Monthly Avrg.	1.271		429.8	1.675		531.5

Table 23 -- SOLAR RADIATION (ANGLEYS) for June 1954

College, Alaska

AF 18(600)-40

Date	Horizontal Surface		45° Slant Surface	
	Maximum gm/cm <sup>2</sup>	Total gm cal/cm <sup>2</sup> min	Maximum gm/cm <sup>2</sup>	Total gm cal/cm <sup>2</sup>
June 1	1.744	621	2.221	684
2	1.733	612	2.113	732
3	1.674	514	2.099	563
Average	1.630	487	2.012	568
4	1.651	399	1.950	383
5	1.462	181	1.755	216
6	1.741	459	2.155	619
7	1.245	747	1.703	838
8	1.460	476	1.940	534
9	1.240	618	1.675	746
10	1.473	357	1.825	415
Average	1.467	462	1.858	536
11	0.858	261	0.932	223
12	0.358	168	(0.375)	(175)
13	1.200	505	(1.700)	(565)
14	1.240	571	(1.800)	(625)
15	1.200	589	(1.750)	(650)
16	1.717	312	(2.200)	(350)
17	1.661	632	(2.210)	(700)
Average	1.176	434	(1.567)	(470)
18	1.709	412	(2.160)	(560)
19	1.305	358	(1.750)	(415)
20	0.725	199	(0.900)	(230)
21	1.707	536	(2.100)	(600)
22	1.166	461	(1.650)	(505)
23	1.234	744	(1.700)	(835)
24	1.535	515	(1.900)	(570)
Average	1.340	461	(1.737)	(531)
25	1.579	364	(2.000)	(420)
26	1.753	338	(2.200)	(390)
27	1.545	589	(2.100)	(560)
28	1.470	587	(2.100)	(560)
29	0.186	46	(0.190)	(50)
30	1.734	426	(2.100)	(475)
Monthly Total	41.304	13597	(53.253)	(15188)
Monthly Avrg.	1.377	453.2	(1.775)	(506.3)

Table 24 -- SOLAR RADIATION (LANGLEYS) for July 1955

College, Alaska

AF 18(600)-40

Date	Horizontal Surface			45° Slant Surface		
	Maximum gm cal/cm <sup>2</sup>	Total min gm cal/cm <sup>2</sup>	gm cal/cm <sup>2</sup>	Maximum gm cal/cm <sup>2</sup>	Total min gm cal/cm <sup>2</sup>	gm cal/cm <sup>2</sup>
July 1	(1.130)	(626)		(1.500)	(700)	
Average	1.342	425		1.741	751	
2	1.219	701		(1.600)	(760)	
3	1.270	417		(1.660)	435	
4	1.741	408		2.416	421	
5	1.298	670		1.668	741	
6	1.634	437		2.113	475	
7	1.334	529		1.687	584	
8	1.290	662		1.710	694	
Average	1.398	546		1.836	587	
9	1.514	724		1.849	766	
10	1.270	(590)		1.554	650	
11	1.323	(241)		1.561	282	
12	(1.116)	(247)		1.390	309	
13	(1.737)	(358)		2.155	402	
14	1.406	361		1.755	390	
15	(1.250)	(563)		(1.600)	(625)	
Average	1.374	441		1.695	489	
16	1.328	152		1.667	163	
17	1.642	350		2.173	401	
18	1.451	675		1.947	769	
19	1.396	557		1.874	639	
20	1.164	662		1.641	778	
21	1.213	542		1.641	630	
22	1.140	645		1.606	756	
Average	1.333	512		1.793	591	
23	1.101	641		1.564	753	
24	1.129	626		1.634	748	
25	1.063	617		1.522	736	
26	1.374	538		1.755	624	
27	0.655	123		0.737	167	
28	0.148	39		0.191	69	
29	1.447	280		1.898	361	
Average	0.988	409		1.329	494	
30	1.459	453		1.916	534	
31	1.443	524		1.891	638	
Monthly Total	39.685	14958		51.875	17000	
Monthly Avrg.	1.280	483		1.673	548	

WADC-TR-55-175 Pt. 2.

30

Table 25 -- SOLAR RADIATION (LANGLEYS) for August 1955

College, Alaska

AF 18(600)-40

Date	Horizontal Surface		45° Slant Surface	
	Maximum gm cal/cm <sup>2</sup> min	Total gm cal/cm <sup>2</sup>	Maximum gm cal/cm <sup>2</sup> min	Total gm cal/cm <sup>2</sup>
Aug. 1	1.275	515	1.703	697
2	1.201	428	1.706	575
3	0.893	193	1.042	250
4	1.227	(340)	1.668	429
5	1.404	437	2.009	599
Average	1.271	413	1.705	532
6	1.290	380	1.859	516
7	1.231	412	1.696	592
8	1.358	386	1.807	551
9	1.215	458	1.703	602
10	1.363	332	(1.800)	(450)
11	1.076	99	1.282	113
12	1.412	360	1.866	443
Average	1.278	347	1.716	467
13	1.140	486	1.686	664
14	1.057	554	1.630	758
15	1.199	508	1.675	677
16	1.036	539	1.609	721
17	1.129	433	1.637	549
18	1.210	72	1.335	88
19	0.137	36	0.139	39
Average	0.987	375	1.387	499
20	1.401	201	2.078	235
21	0.378	76	0.377	84
22	0.883	166	1.108	187
23	1.116	280	1.633	454
24	0.298	92	0.319	122
25	0.624	169	0.688	194
26	1.149	294	1.751	418
Average	0.836	183	1.136	242
27	0.781	93	1.067	127
28	1.366	334	2.012	504
29	0.553	132	0.681	158
30	1.366	361	2.085	527
31	1.050	264	1.473	353
Monthly Total	32.818	9430	45.124	12676
Monthly Avrg.	1.059	304.2	1.456	408.9

*Conrails*

Table 26 -- MONTHLY AVERAGES of the Daily Maximum and Daily Solar Radiation and Monthly Totals on a Horizontal Surface and on a 45° slant (South) Surface at College, Alaska, for the period September 1954 through August 1955.\*

Month	Maximum		Daily Average		Monthly Total	
	Horizontal Surface	45° Slant South	Horizontal Surface	45° Slant South	Horizontal Surface	45° Slant South
1954						
September	0.795	1.228	234.0	308.4	7,019	9,253
October	0.387	0.881	105.0	206.1	3,249	8,346
November	0.157	0.437	24.7	74.8	741	2,245
December	0.075	0.194	6.7	18.3	208	567
1955						
January	0.157	0.330	22.5	43.6	700	1,352
February	0.380	0.724	85.1	43.6	2,382	4,518
March	0.631	1.307	216.5	395.3	6,711	12,254
April	0.907	1.619	407.2	574.9	12,218	17,248
May	1.271	1.675	427.8	531.5	13,324	16,475
June	1.377	1.775	453.2	506.3	13,597	15,188
July	1.280	1.673	483.0	548.0	14,958	17,000
August	1.059	1.456	304.2	408.9	9,430	12,676
Total for year					84,537	117,122

(\*) All results are in Langleyes

# *Contrails*

Table 27 -- CLEAR DAYS during the period 1 September 1954 through 31 August 1955.

<u>Month</u>	<u>Clear Days</u>
1954	
September	12*, 13*, 18, 19*, 20, 25*
October	2*, 3, 13*
November	9, 10, 12, 14*, 15, 16, 23
December	4, 8, 9, 23, 28*, 30
1955	
January	7*, 23*, 29*, 30*
February	8*, 21*, 23, 28
March	1*, 11, 12*, 20*, 21, 24*
April	3*, 10, 11, 26, 27
May	none
June	none
July	23, 24, 22*, 25*
August	14

(\*) Almost clear

# *Controls*

## SECTION VI

### SUMMARY

The content of this report is limited to tabulations, averages, and graphs of the maximum and minimum temperatures, maximum, minimum and mean values of the relative humidity, the rainfall, and the daily maximum and total values of the solar radiation on a horizontal surface and a slant surface of 45° to the south as gathered during the periods of exposures at a test site situated near College, Alaska in a Sub-Arctic, Semi-Arid region.

### LITERATURE

- (1) W. S. Wilson, Meteorological and Solar Radiation Data, College, Alaska, WADC Technical Report 55-175, June 1955.
- (2) M. R. Nagel, On the Irradiation on Inclined Surfaces as Related to Photographic and Technological Exposure Problems, Technical Note WCLF 54-4, March 1954.