UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU
Washington 25, D. C.

January 18, 1956 A-3.7

CIRCULAR LETTER NO. 1-56

Subject: Retention of Circular Letters

Attached to this letter is a list of Circular Letters in effect on January 1, 1956. All Circular Letters not listed in the attachment to this letter should be removed from files and destroyed.

F. W. Reichelderfer
Chief of Bureau

Attachment

National Oceanic and Atmospheric Administration
Weather Bureau Circular Letters

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Attachment to Circular Letter 1-56

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU
Washington 25, D. C.

A-3.7

January 3, 1956

Circular Letters for Years 1940-55
in effect on January 1, 1956

Serial Number	Date of Issue	Issued by	Subject	File Number
11-40	7/17/40	SR&F-wi	Credit for weather forecasts & data published in newspapers	
71-41	6/17/41	Chief-ms	Official visits by representatives of Government Departments & Bureaus	070.1 (030.6)
96-41	8/6/41	Adm-Er	Tentative instructions for the operation, identification, etc., of government motor vehicles	490
9-42	1/20/42	Chief-Ka	Handling of secret & confidential information	000 (080)
48-43	5/18/43	Pers-Gr	Effective dates of personnel actions	100
83-43	8/25/43	SR&F-Ke	Approval required for new codes	610.3
26-45	3/26/45	SR&F-Jm	Amendments to "Preparation of Weather Maps"	730.4
45-45	5/10/45	Asst Ch Adm-Hi	Regional authority to issue letters of authority for employment of emergency assistance	103
21-46	3/27/46	Asst Ch Adm-McC	Discontinuance of WB Forms 2022 & 2023, reports on employment of emergency assistance	103 (750)
36-46	5/13/46	Pers-Ma	Citizenship	100
39-46	5/14/46	Pers-CO	Duty status - new employees	102.4 (202)
70-46	8/21/46	Chf-Wd	Interdepartmental policy on publication of weather forecasts	(622.2) 620.1 (621.5) (622.1)

Serial Number	Date of Issue	Issued by	Subject	File Number
73-46	9/18/46	SR&F-Ev	Broadcast of local terminal forecasts over CAA range stations	622.5 (620.11)
95-46	11/22/46	Asst Ch Adm-He	Use of automotive equipment	080.1 (480)
18-47	3/18/47	Pers-Fo	Interview of applicants for appointment	110
19-47	3/19/47	SR&F-Be	Reply to inquiries ragarding air carrier operations	620.11 603.51 070.2
35-47	5/12/47	MPO-lmb	Registration of field-personnel visiting the Central Office	030.6
46-47	6/9/47	Instr-Br	Raob, Rason, and Ceilometer programs	080 451.1 451.2 031.1 601.4
55-47	7/7/47	SS-in	Artificial inducement of precipitation	045
65-47	8/4/47	SR&F-cjc	Code for transmission of Microseismic data	040 610.3 621.6
70-47	8/18/47	Pers-Fo	Appointment of sub-professionals directly to stations in Alaska	110 080.1
75-47	8/26/47	Chf's Off	Artificial inducement of precipitation	045
91-47	10/16/47	Pers-Fo	Restoration or re-employment after military service	130.4 110.3
22-48	3/9/48	Chf's Off Oc	Policy with respect to private practice of meteorology and instructions regarding cooperation with private meteorologists	070.2 000 420.3 620.8
28-48	3/19/48	SR&F-Al	2-hour terminal forecast program	620.11
58-48	6/30/48	Chf'sOff Wd	Cooperation with Amateur Weathermen of America	070.2
100-48	11/18/48	O-5.23	Teletype identifications for locations in Mexico	610.4

Serial Number	Date of Issue	Issued by	Subject	File Number
115-48	12/27/48	O-2.13	Conversion of dewpoint and relative humidity records to an "Over-Water" basis for comparative data	601 903
1-49	1/5/49	O-5.21	Digest of Pan American Airways Synoptic and Aero Code Forms, 1949 Ed.	610.3
6-49	1/12/49	R-3	Preparation of form for individual listing of scientific papers	750 700.1 150.9
8-49	1/17/49	O-5.32	Identification of local forecasts	620.2
17-49	2/9/49	O-5.1	Three-hourly analyses	600.00
20-49	2/21/49	O-5.32	Radiosonde Code - 1949 Ed. Amendments	601.4
37-49	4/11/49	CWB	Policy development of general public service wherever practicable in lieu of replies to individual inquiries	622.1 600.8
46-49	4/27/49	O-5.31	Minimum ceiling and visibility requirements for VFR flight and use of the term VFR in pilot briefing	600.21
54-49	5/25/49	O-5.31	Responsibility in giving out forecasts and in pilot briefing	600.21
67-49	6/20/49	O-5.21	Terminal forecast group being used by USAF, Air Weather Service Stations, corrections to	610 610.3 620.11
78-49	7/27/49	A-3.53	Transfer of property	750 400.3
80-49	8/1/49	CWB	Reports of inadequacies in airways weather service	600.21 070.2
84-49	8/12/49	O-4.1	Policy concerning establishment of cooperative climatological substations at Radio Stations, newspapers and public agencies	531.2
87-49	8/15/49	O-5.31	Weather Bureau liaison with state aviation officials	070.2 080 600.21
103-49	9/13/49	O-5.1	Transmission of Canadian analysis on Service C	610 600.00

Serial Number	Date of Issue	Issued by	Subject	File number
106-49	9/27/49	A-3.5	Property regulations	400 400.3 400.4
137-49	11/28/49	O-3	Instrumental equipment	450 401.5
143-49	12/8/49	O-5.21	Radiosonde & Rawinsonde Code 1949 Ed.; Amendment 2	610.3
146-49	12/21/49	O-5.21	Reporting Height of 700mb Surface Leadville, Colorado	610
148-49	12/22/49	O-4.2	On-Station maintenance program	450 350.1 750
4-50	1/10/50	O-5.21	Weather Analysis Symbols	730.4
8-50	1/18/50	O-4.1	Administration of Hydroclimatic Network	532.21 080
5-50	1/13/50	A-3.5	Excess property	401.4 750
10-50	1/25/50	O-4.3	Geostrophic wind scales designed to give wind velocities in knots	410.2
17-50	2/17/50	A-3.5	Sale of surplus property	401.5
28-50	3/28/50	O-5.21	Radiosonde & Rawinsonde Code, 1949 Edition; Amendment No. 3	610.3
33-50	4/6/50	A-3.5	Unserviceable and obsolete instrumental equipment	401
40-50	5/11/50	O-4.1	First amendment to Circular Letter 8-50	532.21 080
55-50	8/11/50	CWB	Release of Weather Bureau/Reserve Personnel to the military service	153.2
61-50	8/29/50	A-3	New Weather Bureau Form - receipts for cash received	750
73-50	10/11/50	A-4	Policy and procedures in requesting delay in call to active duty of members of reserve components of the Armed Forces and interim policy governing requests for deferment under the Selective Service Act of 1948	130.4

Serial Number	Date of Issue	Issued by	Subject	File Number
75-50	10/16/50	A-4.4	Administering oaths in connection with Federal employment	111
78-50	11/2/50	O-2.13	Adjustment of monthly average station pressure data	601 903
83-50	11/14/50	A-4.3	Acquisition of competitive status under EO-10157, dated August 28, 1950	110.3 010.8
93-50	12/15/50	O-5.21	Manuscript map supply	730.4 610.4
95-50	12/22/50	O-4.2	Artificial rain making	045
97-50	12/26/50	A-4.3	Acquisition of competitive status under EO-10157 dated August 28, 1950	110.3 010.8
98-50	12/26/50	O-5.21	Reporting of 700mb and freezing level data	610.3 610.2
9-51	3/1/51	O-5.23	Encoding correction messages for 6-hourly, 3-hourly, & upper wind reports	630
10-51	3/6/51	CWB	Statement on artificial rainmaking	814.1
18-51	6/13/51	R-3.1	Fees for station publications	038,1
19-51	6/26/51	AO-1	Choice of principal assistant	114 051.1
31-51	9/11/51	AO-1	Announcements regarding legislative and budget proposals	030 014 210
36-51	10/3/51	A-4	Types of actions for which Fanfold SF-50 will be discontinued	780 100
37-51	10/3/51	A-4.5	Inauguration of training course Wx briefers	131
8-52	2/26/52	O-2.13	Normals for February 29th	920
11-52	3/17/52	A-4.2	Appraisal of performance, conduct, and general character traits during probationary or trial period	100
14-52	4/2/52	CWB	Tornado warnings	656.6

Serial Number	Date of Issue	Issued by	Subject	File Number
18-52	4/23/52	0-4.1	Participation of WB in Tower-INSAC consolidations	041 520 630
19-52	5/19/52	0-5.23	Instructions for service & transmission of precipitation & extreme temperature data from selected stations on reduced hours of operation	630.1
22-52	5/29/52	0-5.32	Television	657.1
24-52	6/12/52	0-2.13	Entry of date of occurrence of maximum precipitation values on Forms 5332 A-D Climatological Record, 1951-1970	733
31-52	8/25/52	A-4	Delegation of authority to Regional Directors to administer personnel activities	100
34-52	9/16/52	A-3.5	US Government bills of lading	271
35-52	10/14/52	0-5.23	Earlier transmission of continental US Raob reports on Service C	630.1
38-52	11/10/52	A-4.1	Classification appeals	102
39-52	11/13/52	A-3.54	Reclassification of property	401
40-52	11/14/52	0-4.11	Substation activities at SAWRS	520
44-52	12/18/52	A-3.3	Disposition of money received in connection with the location of vending machines in government offices	250
2-53	1/19/53	0-4.1	Subrenting of government housing	310
3-53	1/26/53	0-5.22	Reporting wind, weather, wave, and ice data from substations on the Great Lakes, 1953 season	761
4-53	1/26/53	0-5.32	Utilization of pressure jump data	813.5 x630.1
5-53	1/29/53	0-5.23	Transmission of extra reports on Service "A"	630.1
6-53	2/10/53	0-4.11	Use of station information and report on substation forms (WB Forms 1144A, 1144B, & 531-1)	530 520

Serial Number	Date of Issue	Issued by	Subject	File Number
7-53	2/12/53	A-4	Executive training and development	130
8-53	2/12/53	A-4.2	Performance ratings	143
9-53	2/16/53	CWB	Review of operating programs	000
10-53	2/20/53	A-4.1	Revision of annual salary authorization for part-time employees	253
11-53	3/2/53	O-5.32	Transmission of stability index values	630
12-53	4/14/53	A-4.3	Placement follow-up plan	110
14-53	6/1/53	O-5.31	Newspaper publication of aviation weather outlooks	652.1 x657
15-53	6/16/53	O-5.31	Transmission of Message NOTAMS by stations performing communications duties	630
21-53	8/31/53	O-4.1	Local distribution of weather information by weather telautograph circuit	657 x430.0
25-53	9/29/53	O-5.32	Transmission of a guidance forecast on Service "C" (FPI)	630.1
29-53	12/8/53	A-4.2	Prohibition against acceptance of gratuities	144
30-53	12/10/53	O-5.21	Furnishing copies of synoptic charts to other agencies	770
3-54	2/11/54	O-5.21	Furnishing copies of synoptic charts to other agencies	770 x038.1
5-54	3/10/54	O-5.32	Localized Forecasts and Advices for Agriculture	653.1 x630.1
6-54	3/11/54	O-5	Specialized forecasts for Agriculture	653.1
7-54	3/16/54	O-5.31	Use of Winds Aloft Forecasts	652.1
10-54	3/25/54	O-5.23	Serv. A transmission of aviation weather forecasts	630.1
11-54	4/7/54	A-3.5	Delegation of administrative authority under PL-600 - 79th Congress, as amended	401.3
12-54	4/15/54	A-3.5	Procedures to insure nondiscrimination in fulfilling contracts	403

Serial Number	Date of Issue	Issued by	Subject	File Number
13-54	4/20/54	CWB	Cooperation with meteorologists in industry	042.1
14-54	4/30/54	A-4.2	Jury service	144.2
15-54	5/10/54	AO-1	Choice of Principal Asst.	051 x051.1
16-54	5/27/54	R-3	Fallout of Radioactive Debris from atomic bombs	813.71 041
17-54	6/9/54	O-5.31	Recognition of outstanding pilot weather reporting	611 x 037
19-54	6/21/54	A-4.1	Distribution of CSC reports of classification post audits	101 x102
21-54	7/19/54	O-2.13	Forwarding Weekly Means Data	612.3 x630.1
22-54	7/20/54	O-2.13	Section Center consolidation	051
22-54	8/10/54	O-2.13	Section Center consolidation	(Addendum)
22-54	8/13/54	O-2.13	List of St. Climatologist Offices	(Addendum)
22-54	10/20/54	A-3.5	Section Center consolidation	(Addendum)
22-54	11/4/54	O-2.13	Section Center consolidation	(Addendum)
23-54	8/16/54	O-5.32	Newspaper clippings & data in local press	033
25-54	8/20/54	O-2.13	Requests for climatological information	038.5
26-54	8/23/54	O-5.32	Participation in TV weather programs	657.1
28-54	10/5/54	O-5.32	State forecasts for New Mexico	652.3
29-54	10/19/54	O-5.32	Emergency action during periods of severe weather or flood conditions	051
30-54	10/21/54	O-5.23	Serv. A transmission of aviation weather forecasts	630.1
31-54	11/3/54	O-2.13	Recording wind data	921
33-54	12/6/54	CWB	Fallout of radioactive debris from atomic bombs	813.71 x041
34-54	12/15/54	O-5.32	Local public service weather circuits	432

Serial Number	Date of Issue	Issued by	Subject	File Number
35-54	12/15/54	O-5.32	State forecasts (FP) for NY, Md., and Delaware	652.3
36-54	12/21/54	O-5	Practice Forecast Prog.	650 x131
2-55	1/18/55	O-5.23	Use of contraction "DO" in 24-hour terminal forecasts	630.1
3-55	1/19/55	R-3	Travel to scientific meetings at government expense	270
4-55	2/7/55	O-5	Need for continued close liaison between field stations & forecast cen.	000 x650
5-55	2/9/55	O-5.23	Use of Slant (/) and (-)	630
6-55	2/21/55	CWB	Policy in relation to private business	000 x042
7-55	2/16/55	R-3.7	Fallout of radioactive debris	813.71 x041
9-55	3/2/55	O-5.32	Furnishing weather forecasts to newspapers, radio and TV stations	657 x657.1 x432
10-55	3/2/55	O-5.32	State forecasts (FP) for Penna. and Southern New Jersey	652.3
11-55	3/3/55	O-5	Practice forecast prog.	650 x131
12-55	3/3/55	O-2.31	Instruction for collecting information concerning severe storms	614 x780
13-55	3/3/55	O-5.32	Mapped forecast experiment - Kansas City	652.3 x651
15-55	3/14/55	A-4.2	Employee discount purchasing activities	100 x051
17-55	3/30/55	O-5.32	Mapped forecast experiment - Wash. District	652.3
18-55	3/30/55	O-5.32	Transmission of convective outlooks on Serv. A	630.1
20-55	4/6/55	O-5	Training course for pilot briefers	131 x652.11
21-55	4/12/55	O-2.41	Mailing of LCD formats directly to MURC	733

Serial Number	Date of Issue	Issued by	Subject	File Number
22-55	4/20/55	O-5.32	Severe local storm fcst. and warning reports	614
23-55	4/25/55	O-5.31	Form and content of winds aloft forecast amendments	652.1
24-55	4/29/55	O-4.23	Computation of Civil Defense Fallout winds	610.2
25-55	5/4/55	O-5.31	Briefing Air Force Pilots	652.11
26-55	5/5/55	O-5.32	Hurricane emergency operating procedures	656.4
27-55	5/12/55	O-5.32	Hurricane educational program	656.4
28-55	5/19/55	O-5	Practice forecast program	650 x131
29-55	5/24/55	A-4.4	Differentials and allowances	253.2 x253.1
30-55	5/31/55	O-3.4	Recovered radiosondes	458.0
31-55	6/8/55	R-3	Instructions for decoding & plotting Civil Defense fallout winds	610.2 x631
32-55	6/13/55	O-5.32	The Facsimile Chart Program of the National Weather Analysis Center	770 x630
33-55	6/14/55	O-5.32	Liaison with Federal Civil Defense Regional Offices	041
34-55	6/24/55	O-5.32	Hurricane emergency operating procedures	656.4
35-55	7/19/55	O-2.33	Preliminary reports of hurricanes and severe wind storms	614
36-55	7/20/55	O-5	Inclusion of High Water Information in hurricane advisories and warnings and in local bulletins	656.4
37-55	7/26/55	A-3.32	Forwarding of vouchers and certified bills covering telegraph & TWX services	255
38-55	7/26/55	O-5.32	Local Public Weather Teletypewriter Circuits	432
39-55	8/10/55	O-5.32	Use of "Downtown Data"	630

Serial Number	Date of Issue	Issued by	Subject	File Number
40-55	8/15/55	O-5.2	Precedence systems for communications	630
41-55	8/22/55	O-5.34	Liaison with state and local Civil Defense Agencies	041
42-55	10/3/55	O-2.4	Shipment of card punches for repair	411
44-55	11/3/55	O-5	Transmission of JNWP prognostic Charts on Service "C"	630.1 x770
45-55	11/4/55	O-4.22	Weather reports transmitted by automatic teletypewriter weather stations	610 x630.1 x540
46-55	12/12/55	A-4.4	Exchange of information in connection with Inter-Regional and/or Overseas Stations	120
47-55	12/27/55	O-5.32	State forecasts (FP)for Connecticut	652.3

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU
Washington 25, D. C.

January 16, 1956 0-4.23

CIRCULAR LETTER NO. 2-56
(To All First-Order Stations)

Subject: Computation of Civil Defense Fallout Winds

Effective with the 0300 GCT rawinsonde of February 1, 1956, observers at the stations listed below will compute and transmit civil defense fallout winds twice daily based on their 0300 and 1500 GCT rawinsondes, except for the 1500 GCT observation on Tuesdays. Since transmission time is not available at that time, fallout winds will not be computed unless required for local use.

Albany, New York
Albuquerque, New Mexico
Athens, Georgia
Bismarck, North Dakota
Boise, Idaho
Buffalo (Niagara Falls), N.Y.
Burrwood, Louisiana
Caribou, Maine
Charleston, South Carolina
Columbia, Missouri
Dodge City, Kansas
El Paso, Texas
Fort Worth, Texas
Great Falls, Montana
Green Bay, Wisconsin
Greensboro, North Carolina
International Falls, Minn.
Lake Charles, Louisiana
Lander, Wyoming
Las Vegas, Nevada
Little Rock, Arkansas
Medford, Oregon
Midland, Texas
Nashville, Tennessee
Norfolk, Virginia
Oakland, California
Oklahoma City, Oklahoma
Omaha, Nebraska
Pittsburgh, Penna.
Portland, Maine
Rapid City, South Dakota
St. Cloud, Minnesota
San Antonio, Texas
Sault Ste. Marie, Mich.
Shreveport, Louisiana
Spokane, Washington
Tampa, Florida
Topeka, Kansas
Washington, D.C. (Silver Hill)

Effective at the same time, observers at the following stations will compute and transmit fallout winds at the times indicated above, for the military rawinsonde stations (which will supply the basic data) indicated in parentheses:

File: 610.2 CL No. 2-56 (Computation of Civil Defense Fallout Winds(Washington, D.C. 1-16-56

Chicago, Illinois (La Grange, Illinois)
Dayton, Ohio (Wright-Patterson AFB)
Denver, Colorado (Lowry AFB)
Detroit, Michigan (Selfridge AFB)
Los Angeles, Calif. (Long Beach, Calif.)
Montgomery, Alabama (Maxwell AFB)
New York, New York (Mitchel AFB)
Philadelphia, Penna. (Philadelphia, Penna.)
Portland, Oregon (Portland, Oregon)
Salt Lake City, Utah (Hill AFB)
Tucson, Arizona (Davis-Monthan AFB)

Military personnel will telephone to the Weather Bureau the azimuth angle, horizontal distance, and elapsed time since release of each of the required fallout levels. Where such an arrangement is not already in effect, arrangements will be made locally with the appropriate military officer. Weather Bureau observers will then complete the computations.

The following Navy stations will compute and transmit fallout data:

San Diego, California
Sand Point, Washington

Data will be computed in accordance with the attached instructions, and transmitted in accordance with the Upper Air Fallout Data Code, dated January 1956. The necessary forms, charts, and templates will be furnished to those stations requiring them. Form 610-11 will be laminated in plastic and supplied to each station. The data will be entered on this form in ink or pencil and erased after each observation. The plastic form may be cleaned with soap and water; commercial window cleaners will not be used for this purpose.

F. W. Reichelderfer

F. W. Reichelderfer
Chief of Bureau

Attachment

INSTRUCTIONS FOR COMPUTING CIVIL DEFENSE FALLOUT WINDS

1.0 Civil Defense fallout winds will be computed at designated stations from data obtained from the 03 and 15 GCT rawinsonde observations. The data computed will be the bearing and distance, in statute miles, from the station of the points on the earth's surface where fallout from specified levels would occur in three hours after a detonation. Heights as used throughout these instructions refer to heights above the rawin surface elevation. All computations are based on the position of the balloon in space, since the rising balloon in reaching any given level integrates the same winds which act on a particle falling from that level.

1.1 The standard levels for which data will be computed and transmitted are the 1.5-, 3-, 6-, 12-, 18-, and 24-km. levels (5,000-, 10,000-, 20,000-, 40,000-, 60,000-, and 80,000-foot levels).

2.0 The following computation procedures will be used, depending upon the terminating level and the ascensional rate of the balloon:

2.1 Case 1. When the rawinsonde terminates below 9 km.

In this case fallout winds will not be computed.

2.2 Case 2. When the rawinsonde terminates between 9 and 12 km., and rawin data are available to 12 km. or higher from an observation taken during the preceding 12 hours.

2.21 Use Case 8 to the terminating level of the sounding. Above that level data from the most recent observation which was taken within the preceding 12 hours, and which reached a 12-km. height, will be used to determine the wind for the 12-km. level and all higher levels reached on the earlier observation.

2.22 Note the height at which the current observation terminates. On the earlier observation, referred to above, note the minute most nearly corresponding to this height and plot the balloon's distance for that minute on the plotting board, using a convenient scale. For the earlier observation, plot the balloon's distance at the 12-km. level, and the 18- and 24-km. levels, if reached. If the elapsed times for

the terminating level and the corresponding height on the earlier observation differ by more than 3 minutes, adjust the balloon distance at the terminating level of the current observation for the difference in the ascensional rates of the two soundings. This will be done by multiplying the terminating distance by a factor t_e/t_c where t_e is the number of minutes of elapsed time on the earlier observation, as specified above, and t_c is the number of minutes of elapsed time on the current observation. Rotate the protractor until the adjusted terminating distance of the current observation and the corresponding point on the earlier observation are on an imaginary line parallel to the vertical lines on the plotting board. Determine the displacement of the current point from the corresponding point of the earlier sounding. Displace the point corresponding to the 12-km. level, and those points corresponding to the 18- and 24-km. levels if plotted, in a line parallel to the imaginary line between the points referred to above, and by an amount equal to this displacement. Read the azimuth and distance of the displaced points. With Weather Bureau observations, 180° will be added to, or subtracted from, the azimuth angle as determined above (this is necessary because the Weather Bureau orients its equipment South = 360°). With military observations, the azimuth as read on the board will be used. The azimuth and distance of these points will be entered on Form 610-11, together with the appropriate minute as observed on the earlier sounding. If the 18- or 24-km. levels were not reached on the earlier observation, use Case 5 to determine the fallout winds for that level.

2.3 Case 3. When the rawinsonde terminates between 9 and 12 km., and rawinsonde data are not available to 12 km. on an observation taken during the preceding 12 hours.

2.31 Use Case 8 to the terminating level of the sounding.

2.32 On the plotting board, estimate the azimuth and distance of the balloon if it had reached the 12-km. level. This will be done by linear extrapolation of the last two minutes of the observation. For example, assume that the observation terminated at the 29th minute at a height of 9,420 meters, and the average ascensional rate was 325 mpm. It would require a balloon 7.9 minutes to ascend from the 9,420-meter level to the 12-km. level. Therefore, multiply the distance between the last two minutes by a factor of 7.9 and plot a point at the resultant distance from the last point and in a line with the last two points. Then use Case 5 to determine the fallout winds for the 18- and 24-km. levels.

2.4 Case 4. When the rawinsonde terminates between 12 and 24 km., and rawinsonde data are available to 24 km. from an observation taken during the preceding 24 hours.

2.41 Use case 2 except that the earlier observation may have been taken during the preceding 24 hours.

2.5 Case 5. When the rawinsonde terminates between 12 and 24 km., and rawinsonde data are not available to 24 km. on an observation taken during the preceding 24 hours.

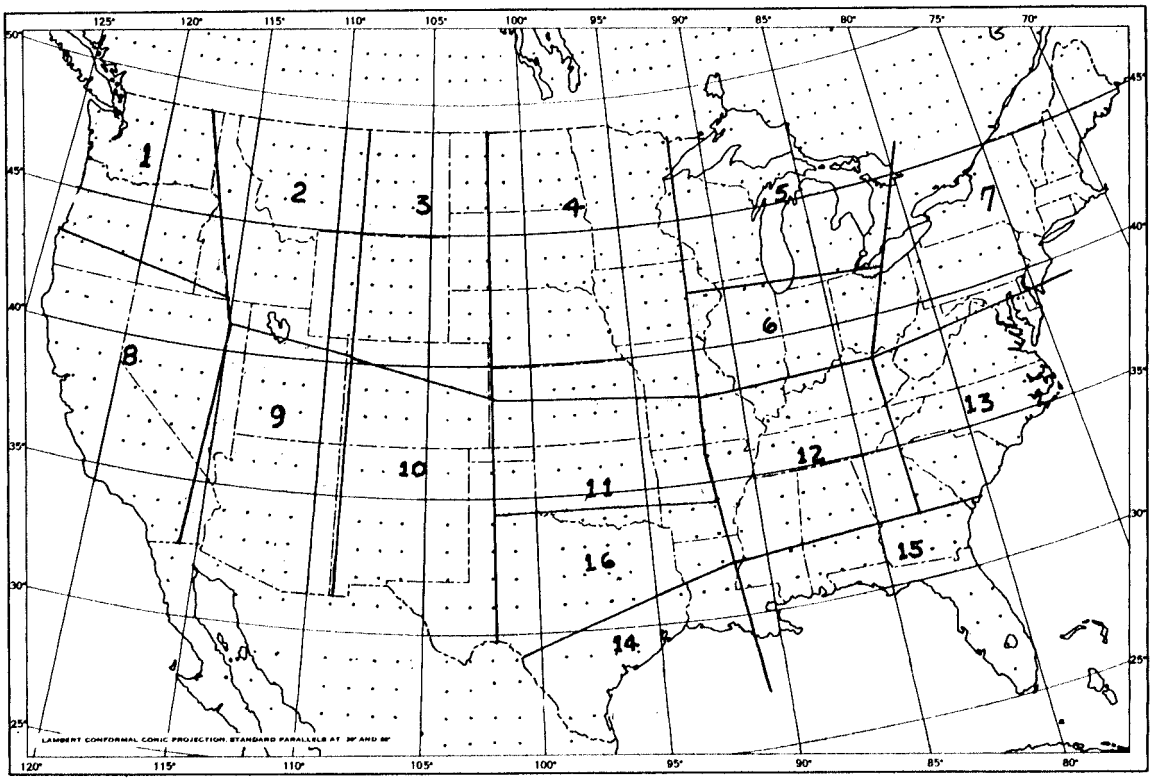
2.51 Use Case 8 to the terminating level of the observation.

2.52 Above the terminating level a climatological average wind, corrected for current conditions, will be used. This will be accomplished by means of fallout-wind templates. Templates, TA-610-11-1, based on a scale of 1 cm. = 4,000 meters will be furnished each station for the four seasons of the year. These will be used when the horizontal distance is less than 160,000 meters. Templates based on a scale of 1 cm. = 8,000 meters will be provided later for use when the horizontal distance is greater than 160,000 meters. The templates provided heretofore were for individual stations. Those provided hereafter will be on an area basis as indicated in Chart 1. The templates show the average (climatological) movement of the balloon between the 12- and 24-km. levels for the various seasons of the year; also, the average time required for a balloon to reach the various levels.

2.53 Note the whole minute of elapsed time most nearly corresponding to the last whole km. of observed data. If this is within three minutes of the "normal" time (normal time in minutes = ht. in km. multiplied by 3) for a balloon to reach that height, plot the balloon's position on the plotting board, using a scale of 1 cm. = 4,000 meters (left black scale multiplied by a factor of 10, full range 160,000 meters). If the time is not within 3 minutes of the "normal" time, the horizontal distance of the balloon must be multiplied by a factor t_n/t_o, where t_n is the "normal" time required to reach a given height, and t_o is the actual observed time. For example: Assume a balloon reached 15 km. in 50 minutes, the horizontal distance of balloon is 138,420 m., and the "normal" time is 45 minutes (15 x 3). Then, the adjusted horizontal distance is 138,420 x 45/50 = 124,580 meters.

2.54 On the plotting board, plot the azimuth and horizontal distance (adjusted if necessary) of the balloon for the minute referred to in ¶2.53. Rotate the protractor so that 360° (180° for military observations) falls on the initial line (bottom of plotting board). Place the appropriate fallout-wind template on the plotting board so that the corresponding km. point of the template coincides with the point plotted in accordance with the above, and so that the arrow shaft is aligned parallel to the lines on the plotting board with the arrow pointing toward the bottom of the board. Tape the template in this position with masking tape. Rotate the protractor until the points for each of the fallout levels, for which observed data are not available, fall on the initial line. Read the azimuth angle plus or minus 180° (directly for military observations), and the horizontal distance for each of these levels and enter the data in columns 3 and 4, respectively, of Form 610-11. Then proceed as in Case 8.

Chart 1. Areas for which Fallout-Wind Templates (TA-610-11-1) are issued.



2.6 Case 6. When the raob terminates above 24 km., but the rawin terminates between 12 and 24 km. for reasons other than limiting angles.

2.61 Use Case 8 to the terminating level of the rawin.

2.62 Use Case 4 or 5 for all levels above the terminating level of the rawin.

2.7 Case 7. When the raob reaches 24 km., but the rawin terminates between 9 and 24 km. because of limiting angles.

2.71 Use Case 8 for all levels preceding and following the stratum of limiting angles.

2.72 When the elevation angle of the GMD-1( ) nears the limiting value, set the control recorder to print 10 times per minute. Since the elevation angle is likely to be erratic below limiting values, note the elevation angles printed for five consecutive six-second intervals before and after the minute for which fallout is being computed. Then, by inspection or arithmetical averaging, determine an average elevation angle, to the nearest tenth of a degree, which can be assigned to the minute in question. Refer to Table 2 (attached) and obtain the distance of the balloon (corrected for the curvature of the earth) for the height and elevation angle observed for each level in the limiting-angle stratum. Below-limiting-value elevation angles will be used only for fallout wind purposes, not for punched card or regular transmission purposes. The average elevation angle obtained in accordance with the above, and the corresponding distance, will be entered in parentheses in the respective columns on WBAN-20. Note that these data are entered only for the minutes specified in column 2 of Form 610-11.

2.73 Azimuth angles of the SCR-658 are valuable for fallout-wind purposes, even though the elevation or azimuth angles are below limiting values. Since the observer normally does not remain at the SCR-658 after limiting angles are reached, and does not know beforehand at what minutes the balloon will reach the 18- and 24-km. levels, the azimuth angles for the 54th and 72nd minutes, respectively, will be obtained, if possible, and entered in column 3 on Form 610-11. The coded direction, without a corresponding distance, will be used in the transmitted message for the levels concerned.

2.8 Case 8. When rawinsonde terminates at 24 km. or higher.

2.81 On WBAN-20, note the minute of elapsed time, and the corresponding azimuth angle and distance of the balloon (as projected on curved earth), nearest each of the levels at 1.5, 3, 6, 12, 18, and 24 km. Enter these data in columns 2, 3, and 4, respectively, of Form 610-11. Since the azimuth angles for Weather Bureau observations are with respect to 360° = South, whereas the true azimuth is required in column 3 of Form 610-11, 180° will be added to, or subtracted from, the observed azimuth angles and the sum or difference entered in column 3 of Form 610-11. Since military rawinsonde equipment is oriented 360° = North, the observed azimuth angles for these stations will be entered directly in column 3.

2.82 Determine the distance to the nearest 10 statute miles that fallout will occur from each level at three hours after a bomb burst. Fallout Wind Computation Chart No. 1 will be used for this purpose, using the elapsed time (column 2 of Form 610-11) and the balloon distance (column 4) as arguments.

2.83 When the horizontal distance for three-hour fallout exceeds 200 statute miles, the sloping areas represent 20-mile intervals. That is, the area labeled 240 extends from 230 to 250 miles. Therefore, as read to the nearest 10 miles, a point on the line between two areas would be intermediate between the two labeled values; a point in the center of the area would represent the labeled value.

2.84 Enter the fallout distance to the nearest 10 statute miles in column 5 on Form 610-11.

2.9 Case 9. When the ascensional rate is erratic owing to turbulence, icing, leaking balloon, etc.

2.91 If an inspection of the radiosonde recorder record or the time-altitude curve indicates an unusual departure from the normal ascensional rate of a raob balloon, the following instructions will be observed. Note the number of minutes of elapsed time from release to the 24-km. level (or the 12- or 18-km. levels if the sounding does not extend to 24 km.). Find this value in the appropriate column of Table 1 (attached). Opposite this value note the range of minutes in which the balloon should reach each of the other levels. If the elapsed time falls outside the limits of any of these levels, fallout data for the entire sounding will be considered missing except as indicated in ¶2.92. For example: If the balloon reaches 24 km. in

73 minutes it should reach the 18-km. level in 54 minutes plus or minus 5 minutes, the 12-km. level in 39 minutes plus or minus 5 minutes, etc.

2.92 If the departure from the normal ascensional rate is caused by the balloon's floating in the upper levels, the portion of the sounding below the floating level should be used (provided it is 9 km. or higher), and should be extended to 24 km., in accordance with the methods outlined above.

Table 1.

Elapsed time balloon should reach various fallout levels.

Fallout levels, km.					
24	18	12	6	3	1.5
50	37 ±5	26 ±5	13 ±4	7 ±3	3 ±3
51	38	27	13	8	3
52	38	27	13	8	3
53	39	28	14	8	4
54	40	28	14	8	4
55	41	29	14	8	4
56	41	30	15	9	4
57	42	30	15	9	4
58	43	31	15	9	4
59	44	31	16	9	4
60	45	32	16	9	4
61	45	32	16	9	4
62	46	33	17	10	4
63	47	33	17	10	5
64	48	34	17	10	5
65	48	35	18	10	5
66	49	35	18	10	5
67	50	36	18	10	5
68	51	36	19	11	5
69	51	37	19	11	5
70	52	37	19	11	5
71	53	38	20	11	5
72	54	39	20	11	5
73	54	39	20	12	5
74	55	40	21	12	6
75	56	40	21	12	6
76	57	41	21	12	6
77	58	41	21	12	6
78	58	42	22	12	6
79	59	43	22	13	6
80	60	43	22	13	6
81	61	44	23	13	6
82	61	45	23	13	6
83	62	45	23	13	6
84	63	46	24	13	6
85	64	46	24	14	7
86	65	47	24	14	7
87	65	48	25	14	7
88	66	48	25	14	7
89	67	49	25	14	7
90	68	49	26	14	7

Table 2. Balloon Distance Projected on Curved Earth
(Distance in meters)

Elevation Angle, Degrees	Height, km.					
	1.5	3.0	6.0	12.0	18.0	24.0
2.0	39,450	73,670	132,320	227,120	305,040	372,750
2.1	37,830	70,990	128,270	221,600	298,700	365,860
2.2	36,340	68,480	124,420	216,280	292,540	359,150
2.3	34,950	66,120	120,760	211,150	286,570	352,610
2.4	33,660	63,900	117,280	206,200	280,770	346,240
2.5	32,450	61,810	113,960	201,440	275,140	340,020
2.6	31,330	59,850	110,800	196,840	269,680	333,970
2.7	30,270	57,990	107,780	192,410	264,390	328,080
2.8	29,290	56,240	104,910	188,130	259,240	322,330
2.9	28,360	54,580	102,170	184,010	254,260	316,740
3.0	27,480	53,010	99,540	180,030	249,420	311,280
3.1	26,660	51,520	97,040	176,200	244,720	305,970
3.2	25,880	50,110	94,650	172,490	240,160	300,790
3.3	25,150	48,770	92,360	168,910	235,730	295,750
3.4	24,450	47,490	90,160	165,460	231,430	290,840
3.5	23,790	46,280	88,060	162,120	227,260	286,050
3.6	23,170	45,120	86,040	158,900	223,200	281,380
3.7	22,570	44,020	84,110	155,780	219,270	276,840
3.8	22,010	42,960	82,260	152,770	215,440	272,400
3.9	21,470	41,960	80,480	149,860	211,730	268,080
4.0	20,950	41,000	78,760	147,040	208,120	263,870
4.1	20,460	40,070	77,120	144,310	204,610	259,770
4.2	19,990	39,190	75,530	141,670	201,200	255,760
4.3	19,550	38,350	74,010	139,110	197,880	251,860
4.4	19,120	37,530	72,540	136,630	194,660	248,050
4.5	18,710	36,750	71,120	134,230	191,520	244,340
4.6	18,310	36,000	69,760	131,900	188,470	240,720
4.7	17,930	35,280	68,440	129,650	185,500	237,180
4.8	17,570	34,590	67,170	127,460	182,610	233,740
4.9	17,220	33,920	65,940	125,340	179,800	230,370
5.0	16,890	33,280	64,760	123,280	177,060	227,090
5.1	16,560	32,660	63,610	121,280	174,400	223,880
5.2	16,250	32,060	62,500	119,340	171,800	220,750
5.3	15,950	31,490	61,430	117,450	169,270	217,700
5.4	15,660	30,930	60,390	115,620	166,800	214,710
5.5	15,380	30,390	59,380	113,840	164,400	211,800
5.6	15,110	29,870	58,410	112,100	162,060	208,950
5.7	14,850	29,360	57,460	110,420	159,770	206,170
5.8	14,600	28,800	56,540	108,780	157,550	203,450
5.9	14,360	28,400	55,650	107,180	155,370	200,790
6.0	14,120	27,950	54,790	105,630	153,250	198,190

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU
WASHINGTON

January 16, 1956 0-2.41

CIRCULAR LETTER NO. 3-56
(To All First Order Stations)

Subject: Change of Instructions for Entry of Hail on Weather Bureau Forms and Formats.

Effective January 1, 1956, amounts of hail will no longer be included with amounts of "Snow, Sleet" and "Snow, Sleet, or Ice on Ground" in Weather Bureau publications. Instructions for the elimination of hail values from amounts of snowfall and from snow depth on W. B. Forms 733-1, 5335, 5335a, and 5336; and W. B. Formats 721-3 and 733-1a, and for a change in these entries on WBAN-10B and W. B. Form 1001B, are also effective on that date. The revised instructions are given below for each Weather Bureau form or format, prepared by first-order stations, that are affected by the changes.

a. Form WBAN-10B. In columns 69 and 70, if an entry is entirely derived from hail, it will be followed by an asterisk (*). If the entry is made up of a combination of hail and some other form of frozen precipitation the asterisk should not be entered. Thus, when a value in either of these columns is marked by an asterisk, it will not be carried over into columns 8 and 9 of W. B. Form 733-1 (formerly 1001C). No other changes in entries on WBAN forms will be made as the result of this memorandum. When punching WBAN Nos. 1, 2 and 3 cards disregard frozen precipitation entries marked by an asterisk. Stations are reminded, however, to continue to punch a "1" in column 44 of the WBAN No. 3 card to show the occurrence of hail.

b. W. B. Form 1001B (Daily Record of Surface Weather Observations). In columns 24, 25, 32, and 33, all entries resulting entirely from the fall of hail should be followed by an asterisk (*), and "*Hail" will be entered in column 61. If the amount is made up of a combination of hail and some other form of frozen precipitation, the asterisk should not be entered. When an asterisk marks entries in columns 32 and 33, they will not be carried over into columns 8 and 9 of W. B. Form 733-1.

c. W. B. Form 733-1 (formerly 1001C, Local Climatological Data). In columns 8 and 9 do not include values derived solely from the fall of hail marked by an asterisk in the equivalent columns of WBAN-10B and W. B. Form 1001B. Until such time that Form 733-1 is reprinted, delete the word "hail" in the headings of columns 8 and 9, and from the caption "Snowfall, Sleet, Hail" in the summary at the bottom of the form; hail values will not be included in this latter summary. Dates of the fall of hail will, however, continue to be entered.

d. W. B. Forms 5335, 5335a and 5336 (Climatological Record). The footnote beneath the 20-year table should be expanded to read "Includes sleet and hail through 1955, snow and sleet only 1956-1970".

e. W. B. Format 733-1a (Local Climatological Data, Monthly). In columns 8 and 9, do not include values derived solely from the fall of hail. Paste-on heading strips bearing the caption "Snow, Sleet (In.)" and "Snow, Sleet, or Ice on ground at" are attached for those stations preparing this format. These should be pasted over the present headings of columns 8 and 9 respectively. The words "and Hail" should be deleted from the caption "Snow, Sleet, and Hail" in the summary in the center of the format. This can be accomplished by cutting off small strips from the unprinted parts of the sheets of paste-ons mentioned above and sticking them over the words "and Hail". On this format, too, the dates on which hail falls will continue to be entered.

f. W. B. Format 721-3 (formerly 5150a. Work Sheet for Preparation of LCD Annual). This format will be reprinted in time for the preparation of the 1956 LCD annual, and will not include hail in the columns now headed "Snow, Sleet, Hail" and "Number of Days Snow, Sleet, hail 1.0 inch or more". When preparing this format for 1956 the entries in all columns having the word "hail" in the headings of the means and extremes table should be reworked to exclude hail values.

F. W. Reichelderfer
Chief of Bureau

Attachments

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU
Washington 25, D. C.

February 7, 1956

0-5.23

CIRCULAR LETTER NO. 4-56.
(To All First Order Stations)

Subject: Teletypewriter Identifications for Locations in Mexico.

Attached is an up-to-date list of teletypewriter identifications for weather reporting stations in Mexico.

These identifiers have recently been given to us by the Director of Meteorology, Mexico, and should be of value in the continued identification of Mexican reports and/or forecasts you may be receiving on Services A, C or O.

Circular Letter No. 100-48 of November 18, 1948, and Memorandum of March 20, 1953; 0-5.23 should be destroyed on receipt of this Circular Letter.

F. W. Reichelderfer
Chief of Bureau

STATIONS	3-LETTER IDENTIFIERS
Acapulco, Gro.	ACA
Actopan, Hgo.	ATO
Aguadulce, Ver.	ADU
Aguascalientes, Ags.	AGS
Altar, Son.	ALO
Apatzingan, Mich.	AZG
Arteaga, Mich.	ATG
Ayutla, Gro.	AYU
Badiraguato, Sin.	BAS
Bahia Magdalena, B. C.	BMB
Cacahuatepec, Oax.	CAZ
Campeche, Camp.	CPE
Cananea, Son.	CNA
Carmen, Camp.	CME
Carrillo Puerto, Q. R.	AYO
Champoton, Camp.	CHC
Charcas, S. L. P.	CHP
Chetumal, Q. R.	CTM
Chihuahua, Chi.	CUU
Chilpancingo, Gro.	CHG
Choix, Sin.	CXS
Cintalapa, Chis.	CTA
Ciudad Camargo, Chih.	CCC
Ciudad Camargo, Tamps.	CCS
Ciudad del Carmen, Camp.	CME
Ciudad Guzman, Jal.	CGJ
Ciudad Juarez, Chih.	CJS
Ciudad las Casas, Chis.	CLC
Ciudad Lerdo, Dgo.	CLO
Ciudad Obregon, Gto.	COB
Ciudad Obregon, Son.	CEN
Ciudad Obregon, Tab.	OBG
Ciudad Victoria, Tamps.	CVM
Coatzacoalcos, Ver.	CTZ
Colima, Col.	IMA
Comitan, Chis.	COM
Cordoba, Ver.	CRM
Cozumel, Q. R.	CZM
Cuatro Cienegas, Coah.	CCM
Cuernavaca, Mor.	CUM
Culiacan, Sin.	CUL
Durango, Dgo.	DGO
Ensenada, B. C.	ENS
Esmeralda, Coah.	ESE

Guadalajara, Jal.	GDL
Guanajuato, Gto.	GUJ
Guasave, Sin.	GUV
Guaymas, Son.	GYM
Hermosillo, Son.	HMO
Hidalgo del Parral, Chih.	HDP
Huajuapan de Leon, Oax.	HJN
Huauchinango, Pue.	HUC
Huejucar, Jal.	HUJ
Huetamo, Mich.	HUE
Icaiche, Q. R.	ICA
Iguala, Gro.	IGA
Isla Cedros, B. C.	ICB
Isla Guadalupe, B. C.	GUD
Isla Margarita, B. C.	IMB
Isla Maria Madre, Nay.	ISM
Isla Mujeres, Q. R.	IMO
Irapuato, Gto.	IPO
Ixtepec, Oax.	IZT
Jalapa, Ver.	JAL
Jamiltepec, Oax.	JAM
Jimenez, Chih.	XIM
Juxtlahuaca, Oax.	JUL
La Colorada, Zac.	RDA
Lagos, Jal.	LAJ
La Paz, B. C.	LAP
Las Choapas, Ver.	LHS
La Union, Gro.	LAU
Leon, Gto.	LEG
Linares, N. L.	LIN
Loma Bonita, Ver.	LBM
Los Mochis, Sin.	LMM
Mamulique, N. L.	MML
Manzanillo, Col.	MZL
Mascota, Jal.	MAJ
Matamoros, Tamps.	MAM
Matias Romero, Oax.	MAO
Mazatlan, Sin.	MZT
Merida, Yucatan.	MID
Mexicali, B. C.	MXL
Mexico, D. F.	MEX
Manatitlan, Ver.	MTT
Monclova, Coah.	MOV
Monterrey, N. L.	MTY
Morelia, Mich.	MLM
Mulege, B. C.	MLG

Nautla, Ver.	NAU
Navojoa, Son.	NVJ
Nazas, Dgo.	NZO
Nogales, Son.	NOG
Nuevo Casas Grandes, Chih.	NCG
Nuevo Laredo, Tamps.	NLD
Nueva Rosita, Coah.	NRA
Oaxaca, Oax.	OAX
Ojinaga, Chih.	OAC
Ometepec, Gro.	OMT
Orizaba, Ver.	OZA
Pachuca, Hgo.	PAC
Pochutla, Oax.	POC
Parral, Coah.	PAL
Parras, Coah.	PAR
Petatlan, Gro.	PEL
Piaxtla, Pue.	PIU
Piedras Negras, Coah.	PNG
Pilares de Nacozari, Son.	PNA
Pinotepa, Oax.	PNO
Pochutla, Oax.	PTL
Progreso, Yucatan.	PGS
Puebla, Pue.	PEB
Puerto Angel, Oax.	PTO
Puerto Penasco, Son.	PPE
Puerto Vallarta, Jal.	PVA
Putla, Oax.	PLO
Queretaro, Qro.	QET
Reynosa, Tamps.	RYN
Rio Verde, S. L. P.	RVS
Salina Cruz, Oax.	SAL
Saltillo, Coah.	SOC
San Blas, Nay.	SAB
San Ignacio, Sin.	SIS
San Jose del Cabo, B. C.	SJB
San Luis Acatlan, Gro.	SLT
San Luis Potosi, S. L. P.	SLP
Santa Rosalia, B. C.	SRL
Santiago Papasquiaro, Dgo.	SPD
Sombrerete, Zac.	SOZ
Soto la Marina, Tamps.	SOM
Tacubaya, D. F.	TAC
Tampico, Tamps.	TAM
Tamuin, S. L. P.	TMN

Tapachula, Chis.	TAP
Tayoltita, Dgo.	TAY
Teapa, Tab.	TET
Tecpan, Gro.	TEC
Tehuacan, Pue.	THE
Tehuantepec, Oax.	TEH
Temosachic, Chih.	TEM
Tenosique, Tab.	TEQ
Tepehuanes, Dgo.	TES
Tepic, Nay.	TEP
Tijuana, B. C.	TIJ
Tlaxcala, Tlax.	TLT
Toluca, Mex.	TCA
Tonala, Chis.	TON
Topologampo, Sin.	TLO
Torreon, Coah.	TRC
Tula, Hgo.	TUH
Tulancingo, Hgo.	TUL
Tutotepec, Oax.	TPC
Tuxpan, Ver.	TUX
Tuxtla Gutierrez, Chis.	TGZ
Ures, Chis.	URS
Uruapan, Mich.	UPN
Valladolid, Yuc.	VAY
Veracruz, Ver.	VER
Villahermosa, Tab.	VSA
Villa Ahumada, Chih.	VAC
Zacatecas, Zac.	ZAC
Zamora, Mich.	ZAM
Zihuatanejo, Gro.	ZIH
Zitacuaro, Mich.	ZIM

UNITED STATES DEPARTMENT OF COMMERCE
Weather Bureau
Washington 25, D. C.

February 17, 1956 0-5.34

FILE: 656.4

CIRCULAR LETTER NO. 5-56
(To All First Order Stations)

Subject: Hurricane Watches

Reference: Weather Bureau Manual III-B-5007-C

C.L. 5-56 (HURRICANE WATCHES)

The referenced paragraph of the Manual issued April 1, 1955, contains instructions governing the issue of hurricane alerts. As a result of experience gained during the 1955 hurricane season the term HURRICANE WATCH will be substituted for HURRICANE ALERT during the 1956 hurricane season. Studies have revealed that many people mistook the word ALERT as synonomous with WARNING whereas the Bureau intended it only as a preliminary notice. This change in terminology will also reduce misinterpretations which came from different usages of the term ALERT in storm advices and in civil defense and military practices. Detailed instructions covering the use of this new term will be included in Manual Chapter III-B-50. In the meantime the following criteria should be used in announcing hurricane watches.

A HURRICANE WATCH is an announcement issued by the Weather Bureau to cover areas where all interests should make every effort to keep advised regarding progress of a hurricane (or incipiert hurricane) but where conditions do not yet justify hurricane warnings. It serves as advance notice that the area under watch is vulnerable, that warnings may be issued later, but that, in the meantime, the normal routine of the community need not be disrupted pending more definite indications.

In the above definition we have not limited the issue of a HURRICANE WATCH to a specific period in advance of expected hurricane conditions. It is intended that a HURRICANE WATCH be issued when there is:

1. An incipient hurricane condition in existence and a 50-50 or better chance that hurricane conditions will occur within the next 24-36 hours in the area for which the watch is announced, or
2. A hurricane located so as to pose a definite threat to the area but future path and movement are not yet sufficiently certain to justify the issuance of hurricane warnings.

Announcement of a HURRICANE WATCH does not replace the issuance of coastal warnings or displays but rather the WATCH is intended to advise the public that some danger from the hurricane exists even though conditions do not as yet justify definite hurricane warnings.

Once a HURRICANE WATCH has been announced it should be continued until all danger that hurricane conditions will occur has passed.

Examples showing the use of the term HURRICANE WATCH are attached.

F. W. Reichelderfer
Chief of Bureau

2-17-56

1. Example of a hurricane advisory containing an initial hurricane watch announcement:

NEW ORLEANS WEATHER BUREAU ADVISORY NO. 19 ESTHER 4 PM CST SEPT. 16, 1956

A HURRICANE WATCH IS ADVISED* FOR ALL INTERESTS ALONG THE TEXAS COAST.

SMALL CRAFT FROM BROWNSVILLE, TEXAS TO BURRWOOD, LOUISIANA SHOULD REMAIN IN PORT.

AT 4 PM HURRICANE ESTHER . . . .

2. Example of a hurricane advisory containing a hurricane watch and storm warnings:

MIAMI WEATHER BUREAU ADVISORY NO. 12 HURRICANE DOLLY 5 PM EST SEPT. 12, 195X

A HURRICANE WATCH IS STILL IN EFFECT FOR THE NORTH AND SOUTH CAROLINA COASTS. ALL INTERESTS IN THIS AREA ARE ADVISED TO KEEP IN CLOSE TOUCH WITH LATER BULLETINS ON THIS STORM.

STORM WARNINGS ARE DISPLAYED FROM BRUNSWICK, GEORGIA TO CAPE LOOKOUT, NORTH CAROLINA. SMALL CRAFT FROM JACKSONVILLE, FLORIDA TO NORFOLK, VA. SHOULD REMAIN IN PORT.

AT 5 PM HURRICANE DOLLY . . . . .

3. Example of extension of a hurricane watch in conjunction with issuance of hurricane warnings:

WASHINGTON WEATHER BUREAU ADVISORY NO. 22 BARBARA 11 AM EST SEPT. 5, 1956

HURRICANE WARNINGS ARE DISPLAYED FROM WILMINGTON, NORTH CAROLINA TO DELAWARE BREAKWATER AND STORM WARNINGS FROM DELAWARE BREAKWATER TO BLOCK ISLAND, R. I.

THE HURRICANE WATCH HAS BEEN EXTENDED AS FAR NORTH AS MANASQUAN, N. J. AND RESIDENTS FROM DELAWARE BREAKWATER TO MANASQUAN SHOULD KEEP IN TOUCH WITH BULLETINS ON HURRICANE BARBARA THROUGHOUT THE AFTERNOON AND EVENING.

AT 11 AM HURRICANE BARBARA WAS . . . .

* Other appropriate terms, in addition to "advised," would be "announced," "effective," "issued," etc.

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU
Washington 25, D. C.

February 20, 1956 0-5.34

CIRCULAR LETTER NO. 6-56
(To All First Order Stations)

Subject: Tornado Educational and Community Warning Network Program

A new motion picture entitled "Tornado" will be distributed by March 1 which includes exciting scenes of an approaching tornado as part of a drama about the Weather Bureau's tornado forecast and warning service. The film is 16 mm. black and white with sound track and has a running time of 14-1/2 minutes. A copy of the film will be furnished each Weather Bureau office and Regional Office in Regions 1, 2 and 3. Copies of the film will also be available on a loan basis from the Regional Office, Salt Lake City to Weather Bureau Offices in Region 4. In addition, copies of the film will be deposited with the state film libraries for loan to private organizations.

The film is a high quality production and every effort should be made to have it seen by as many people as possible. It is important that you secure advance publicity for showings by the television stations, etc., in your area of county responsibility. One way to do this is to invite newspaper reporters, television station and municipal officials to preview the film a day or two before it is to be shown on TV.

You will probably receive requests for information about developing community warning networks as a result of the film. Travel to assist local officials in planning a network will be authorized by the Regional Office concerned. If requests from communities for assistance in organizing networks reach the point where staff is inadequate to handle the demand a limited amount of paid overtime will be authorized by the Regional Offices concerned to permit the Weather Bureau Offices concerned to lend all practical assistance to the communities involved. If the demand becomes too great, you may have to provide the information by telephone or by correspondence. A suggested reply to a request for information is attached.

Three fifty-second spot films (16 mm., black and white, sound) will also be distributed to selected offices in the next three weeks. These films are entitled "Tornado Forecast," "Tornado Warning" and "Tornado Warning System." These fifty-second spot films are to be deposited with all television stations in the selected offices' areas of county responsibility for frequent showing by the television stations during station breaks.

The back of this page lists the material available for use in the tornado educational program. Radio and television stations, as well as newspapers in your area of county responsibility, should be furnished appropriate items from this list.

F. W. Reichelderfer
Chief of Bureau

Attachment.

Material available on request to Regional Offices for use in the Tornado Educational and Community Warning Network Program:

Community Tornado Warning Networks (2-page leaflet - copy attached)
It Looks Like a Tornado (11-page booklet, illustrated)
Average Monthly Variation in Tornado Frequency (U.S. map with chart for each state and an attached set of figures for each state)
Notes Bearing on the Value of Tornado Forecasts and Warnings (2-pages, mimeo)
Severe Storm Reporting Handbook (8-pages, illustrated)
Tornado Safety Rules (2 sizes: 8"x 10 1/2" and 11"x17")
Tornado Information (on the back of Tornado Safety Rules)
Letter Supplement 5515 (Tornado Facts" on one side and "Number of Tornadoes and Losses, 1916-1954" on the back)
Letter Supplement 5602 (Notes on Severe Local Storm Warning Service with Tornado Cellar Suggestions on the back)
Letter Supplement 5607 "Some Outstanding Tornadoes since 1900" (2-pages)
Tornadoes - What They Are and What to do About Them (4-page leaflet, Illustrated - copy attached)
Tornadoes (mapback)*
Severe Local Storm Warning Networks (mapback)*
These are Tornadoes (mapback)
Newspaper mats of Tornado Safety Rules, Tornado Information and Tornado Photos. z

* Also available as a double mapback on one sheet.

z To be available by March 1 , or sooner. Initial distribution of the maps will be made direct from Central Office to local offices that have previously requested them.

ATTACHMENT

(Suggested reply when it is impracticable for a Weather Bureau representative to visit a community.)

Dear Mr._____:

In reply to your request for information about establishing a tornado warning system, we are glad to furnish the enclosed "Community Tornado Warning Networks" leaflet It is important that each community take action itself to set up a system that will give a few minutes warning to the people when a tornado is approaching.

We suggest that you discuss the attached leaflet with officials of your community. Two important parts of a warning system are: (1) Everyone should know where to telephone a report of any tornado that is seen; and (2) Everyone should be well acquainted with the signal which will warn of an approaching tornado.

Your warning center should also telephone us collect (telephone _____) when a tornado is reported. We can then warn other communities in the path of the storm.

We are also enclosing sample copies of "It Looks Like a Tornado" and "Tornado Safety Rules." Additional copies may be ordered from the U. S Government Printing Office, Washington 25, D. C The booklets are 10¢ each and the Safety Rules are $1.25 per hundred for the 8x10-1/2" size ($3.25 per hundred for the cardboard 11x17" size). If you prefer, you may feel free to reproduce the Safety Rules locally.

If you need additional information, we would be pleased to have you come in and talk with us at any time.

Very truly yours,

Meteorologist in Charge

Enclosures

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU

COMMUNITY TORNADO WARNING NETWORKS

INTRODUCTION

The Weather Bureau issues forecasts when weather conditions indicate that a tornado may develop. It is not yet possible to determine the exact time and place that a tornado will strike. The forecasts are issued for the purpose of alerting local warning networks as well as the public. It is not intended that everyone should immediately take cover when a tornado forecast is issued. Instead, people can be prepared to take safety precautions when a tornado is seen, or when a warning is issued that a tornado is approaching.

PURPOSE OF A COMMUNITY NETWORK

A community network makes it possible for people in a town or county to be warned that a tornado is approaching. Safety measures can then be taken to prevent loss of life and to help reduce property damage. Communities having warning networks not only have greater protection, but there is a minimum interruption of routine activities during threatening weather.

HOW A NETWORK OPERATES

(1) In small towns and rural areas -- everyone living near the town, or in the county, is asked to quickly report to a warning center, (such as the police station or telephone office) any tornado that is seen. Warnings are then issued from this center to everyone in the tornado's path by means of prearranged signals, or phone calls.

(2) In cities and densely populated areas -- volunteer observers located about two to four miles apart are requested to furnish prompt reports to a warning center. The center issues warnings through radio and television stations.

HOW TO ORGANIZE A WARNING NETWORK

The aid of civic officials, community organizations, and other interested citizens should be secured to help plan the network. The more people who become enthusiastic about establishing a warning system, the more successful it will be in saving lives.

Decide how the network will operate, how large an area it will cover, where the warning center will be located, the type of public warning signal to be used, and similar details. Proposals on warning signals should be discussed with local police, fire and Civil Defense groups to avoid confusion with existing public alarm systems in local use.

PUBLICITY AND FOLLOW-UP

After details about the reporting and warning system have been completed, the information should be furnished all residents, along with a copy of Tornado Safety Rules (available from Government Printing Office, Washington, D. C.) Better public understanding can avoid confusion and possible panic when tornadoes threaten.

It is important that all concerned, including the public, be reminded of the network at intervals to prevent interest from lagging. In some communities a civic organization sponsors the publicity and the follow-up as a public service. Civic and private groups can also provide for reproduction and widespread distribution of the Tornado Safety Rules. (Sample copies are available at all Weather Bureau offices.)

TRIAL RUNS

Local officials can arrange for tests to be conducted at intervals to help detect and correct any weaknesses in the system.

SPECIAL NOTE TO OBSERVERS

All observers should be alert for tornadoes when their localities are included in tornado forecasts issued by the Weather Bureau; also when the sky has an unusually threatening appearance. The inclusion of a community in a general forecast area is a reminder for the local observers to keep vigilant watch until the threat has ended. In some towns, members of a civic group take turns observing from hilltops or high buildings while other residents continue normal activities. Factories, schools, and hospitals can also post lookouts to provide warning of any approaching tornado. The importance of promptly reporting any tornado that is seen cannot be overemphasized. Delay can be fatal, especially when telephone lines are blown down suddenly, making it impossible to notify the warning center.

HOW TO RECOGNIZE A TORNADO

A tornado is usually seen as a dark funnel-shaped cloud, spinning rapidly and extending toward the earth from the base of a thundercloud. When nearby, a tornado sounds like the roar from hundreds of airplanes. Even though a cloud may be funnel-shaped, as occasionally happens when the sky is threatening, it is not a tornado unless it has the rapidly-rotating motion.

THE END OF A TORNADO THREAT

The danger of tornadoes usually has ended as soon as the clouds have cleared, and the wind shifts to the west, with the air feeling cooler and drier. In areas where tornadoes have been forecast, the Weather Bureau issues "all-clear" broadcasts when the threat of further tornadoes has passed.

PROTECTION FOR OTHER COMMUNITIES

A community network not only helps protect lives in its own locality but also makes it possible for lives to be saved in adjacent areas. After local warnings of an approaching tornado have been issued, the warning center notifies nearby network centers if the tornado is moving in their direction. The nearest office of the Weather Bureau is also notified so further warnings can be issued to all localities in the path of the storm.

A FEW STATEMENTS FROM TORNADO SAFETY RULES

Safety precautions to be taken when a tornado is approaching include:

1. Take shelter in a storm cellar, cave, or underground excavation.

2. When underground protection is not available, take shelter along the inside walls on the lower floors of a strongly reinforced building, or in the southwest basement corner of a house.

3. In open country, move away at right angles to the path of the approaching tornado. If there is no time to escape, lie flat in the nearest ditch or depression in order to avoid flying debris.

Commerce-Weather Bureau, Washington, D. C. 7-24-55

TORNADOES

what they are and what to do about them

U. S. DEPARTMENT OF COMMERCE
SINCLAIR WEEKS, *Secretary*

WEATHER BUREAU
F. W. REICHELDERFER, *Chief*

WASHINGTON, D. C. FEBRUARY 1956

The tornado is a violent local storm with whirling winds of tremendous speed. It is usually recognized as a rotating funnel-shaped cloud which extends toward the ground from the base of a thundercloud. Its color varies from gray to black. All tornadoes have one common characteristic—the rapidly rotating winds that cause them to spin like a top. When nearby, a tornado usually sounds like the roaring of hundreds of airplanes. It is one of the smallest and most dangerous of all storms.

An average of slightly over 200 deaths result from tornadoes each year in the United States. However, the chance of a tornado striking any particular spot is extremely small. The reason for this is that the average tornado path is but 16 miles long and less than one-fourth mile wide.

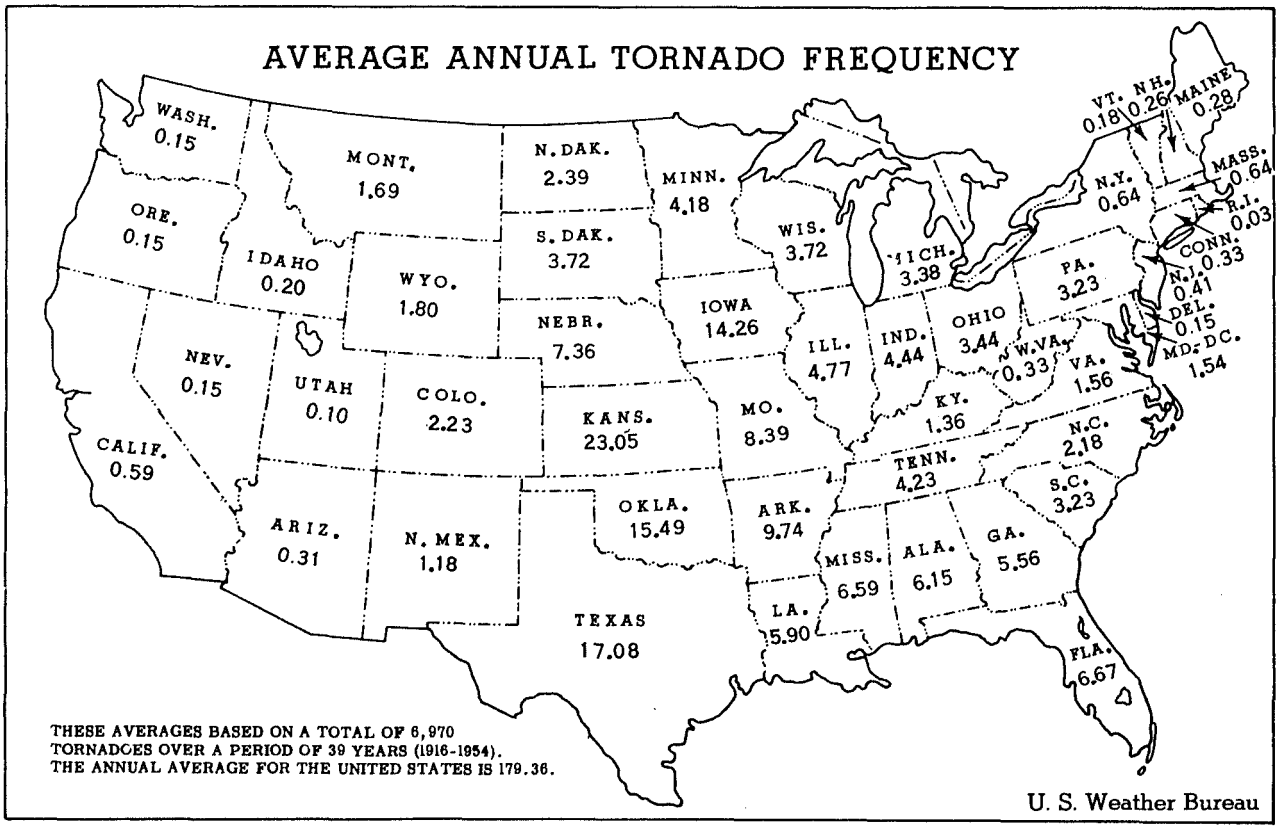
TORNADO MOVING ALONG GROUND

Tornadoes start to form several thousand feet above the earth's surface and some never reach the ground, or they may touch the ground and rise again. Tornadoes usually occur in connection with thunderstorms, especially those from which hailstones fall to the ground. Tornadoes may form in a series of two or more, in which case there is a large primary tornado and one or more secondary or lesser storms.

Tornado formation requires the presence of layers of air of contrasting temperature, moisture, density and windflow characteristics. Cool dry air from the west or northwest moves over warm, moist surface air. When this occurs and is accompanied by a narrow band of strong winds at intermediate levels, there are complicated energy transformations which can produce a vortex or whirl. It seems probable that a tornado occurs only when there is a precise combination of several rather common but highly variable weather conditions.

Tornadoes occur in many parts of the world and in all of our states, but no place is more favorable for their formation than the central part of the United States. The number of tornadoes normally starts to increase in February

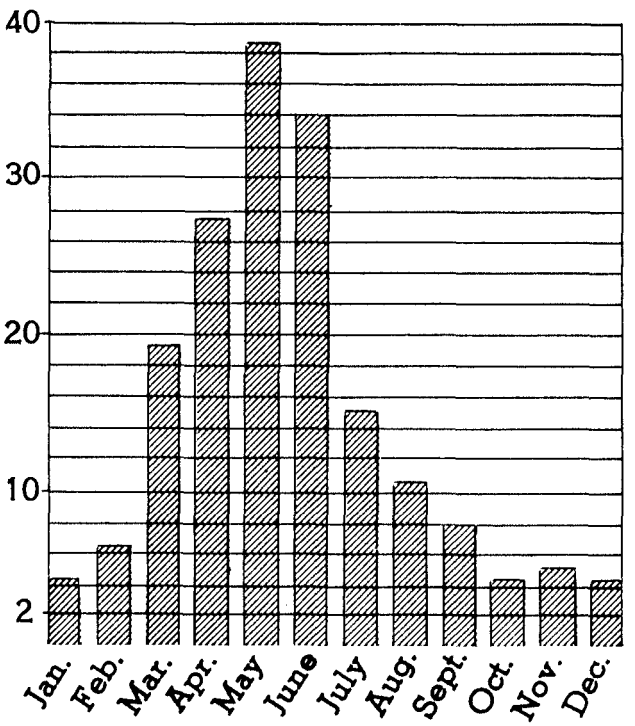
For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., in lots of 100 copies $3.75
Single copies 5 cents



through the eastern Gulf States and reaches a peak in March over this area. This increase spreads northwestward to reach a peak in Iowa and Kansas during May and June. From July until January there is a rapid decline in the number of tornadoes over the country as a whole.

The average number of tornadoes ranges from over 20 per year in one of the Mid-Western states to less than one per year in each of the Northeastern and far Western States. The national average is around 200 a year, over half of which occur in three months—April, May, and June.

Tornadoes can occur at any hour of the day or night, but they appear to form most readily in the hours closely following the warmest parts of the day. 43% of these storms have occurred between the hours of 3 to 7 p.m; 82% have occurred between noon and midnight. The individual hours of 4 to 5 p.m. and 5 to 6 p.m. are those during which the greatest number have been reported. These two hours account for 23% of the storms.



OCCURRENCE OF TORNADOES BY MONTH

Destructive effects of the tornado are terrifying and result from both the violent winds and the strong pressure differences over small areas. Buildings can be torn apart and the pieces driven through the air in a dangerous barrage. Walls may collapse or topple outward. The sudden reduction of pressure may have an explosive effect which can cause machinery and other heavy objects to be lifted out of buildings, sometimes being moved for considerable distances.

It is not possible to predict the exact spot where a tornado will develop, just as it is not possible to determine where a bolt of lightning will strike. It is possible, however, to locate areas approximately 20,000 square miles in size where there is a reasonable possibility that tornadoes will occur. Radar is also helpful for this purpose.

Tornado forecasts for the entire United States are prepared at the Weather Bureau's Severe Local Storm Forecasting Center in Kansas City. Specialists there analyze and interpret a large number of weather charts and diagrams to identify general areas throughout the country where tornadoes can be expected to develop. The forecasts are coordinated with district forecast offices

TORNADO DAMAGE IN SMALL COMMUNITY

STORE DESTROYED BY TORNADO

and are distributed to the public by radio and television stations in and near threatened areas up to six hours in advance. In addition, Civil Defense, Red Cross, State Police, sheriffs and other cooperators relay the forecasts to reach people in threatened areas.

TORNADO FORECASTS are issued to alert volunteer storm reporters, police, and the public to watch for tornadoes if the sky becomes threatening. People should take any necessary preliminary action so that a place of safety can be reached quickly if a tornado is sighted, or if a warning is issued that a tornado is approaching.

TORNADO WARNINGS are announcements that a tornado has been sighted. The warnings are made possible through the cooperation of many public-spirited people who promptly notify the nearest Weather Bureau office when a tornado is seen. Warnings are then issued which include the storm's location and direction of movement so that safe shelter can be taken by those in the path of the tornado. Communities are also encouraged to organize their own reporting and warning systems.

TORNADO
SAFETY RULES

TO KNOW WHAT TO DO WHEN A WARNING IS RECEIVED, OR A TORNADO IS OBSERVED, MAY MEAN THE DIFFERENCE BETWEEN LIFE AND DEATH ! !

I. There is no universal protection against tornadoes except caves or underground excavations. When time permits, go to a tornado cellar, cave, or underground excavation which should have an air outlet to help equalize the air pressure. It should be kept fit for use, free from water, gas, or debris; and preferably equipped with pick and shovel.

II. If you are in open country :

1. Move at right angles to the tornado's path. Tornadoes usually move ahead at about 25 to 40 miles per hour.
2. If there is no time to escape, lie flat in the nearest depression such as a ditch or ravine.

III. If in a city or town :

1. Seek inside shelter, preferably in a strongly reinforced building. STAY AWAY FROM WINDOWS!
2. In homes: The southwest corner of the basement usually offers greatest safety, particularly in frame houses. People in houses without basements should find other shelter, preferably in a storm cellar, although a depression, such as a ditch or ravine, can offer some protection. If time permits, electricity and fuel lines should be shut off. Doors and windows on the north and east sides of the house may be opened to help reduce damage to the building.
3. Standing against the inside wall on a lower floor of an office building offers some protection.

IV. If in schools :

1. In city areas: If school building is of strongly reinforced construction, stay inside, away from windows, remain near an inside wall on the lower floors when possible. AVOID AUDITORIUMS AND GYMNASIUMS with large, poorly-supported roofs!
2. In rural schools that do not have strongly reinforced construction, remove children and teachers to a ravine or ditch if storm shelter is not available.

V. If in factories and industrial plants :

On receiving a tornado warning, a lookout should be posted to keep safety officials advised of the tornado's approach. Advance preparation should be made for shutting off electrical circuits and fuel lines if the tornado approaches the plant. Workers should be moved to sections of the plant offering the greatest protection.

VI. Keep calm! It will not help to get excited. People have been killed by running out into streets and by turning back into the path of a tornado. Even though a warning is issued, chances of a tornado striking one's home or location are very slight. Tornadoes cover such a small zone, as a rule, that relatively only a few places in a warned area are directly affected. You should know about tornadoes though, "just in case".

VII. Keep tuned to your radio or television station for latest tornado advisory information. Do not call the Weather Bureau, except to report a tornado, as your individual request may tie up telephone lines urgently needed to receive special reports or to relay advisories to radio and television stations for dissemination to thousands in the critical area.

UNITED STATES DEPARTMENT OF COMMERCE

Weather Bureau

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU
Washington 25, D. C.
February 28, 1956 0-4.4

FILE: 610 CL 7-56

CIRCULAR LETTER NO. 7-56
(To All First-Order Stations)

Subject: Runway Visual Range Program - Newark, N. J.

As soon as the necessary equipment modifications can be accomplished the appropriate hourly and special observations from Newark Airport, Newark, N. J., will contain runway visual range. Reporting of runway visibility will cease at that time.

Runway visual range is the distance a pilot about to land can expect to see the high intensity runway lights. This is in contrast to runway visibility which is the distance a stationary observer near the end of the runway is able to see a 25 candle power light at night or a dark object against the horizon sky in the daytime. In practice a transmissometer is used to determine both runway visual range and runway visibility, the desired element being determined by using appropriate constants in the equations relating transmissivity to visibility. In determining the relation between transmissivity and runway visual range at Newark Airport the light source was taken as 10,000 candle power. Illuminance thresholds of 2 miles candles for night and 1000 mile candles for day were used.

(RUNWAY VISUAL RANGE PROGRAM - NEWARK, N.J.)

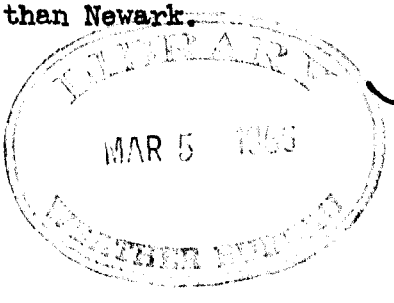
Runway visual range will be reported to the nearest hundred feet from 2000 ft. to 3000 ft., to the nearest 200 ft. from 3000 ft. to 4200 ft. and to the nearest 500 ft. from 4500 ft. to 6000 ft. Because of inherent limitations in the equipment being used determinations of visual ranges below 2000 feet are not feasible. Hence when such conditions prevail the runway visual range will be reported as "LESS THAN 2000 FT." When runway visual range exceeds 6000 ft. no entry will be made. Whenever equipment failure precludes determination of runway visual range during visibility conditions such that runway visual range is likely to be near or below 6000 ft. "RNWY VISUAL RNG MISG" will be reported. Runway visual range will appear in the remarks portion of the observation.

Examples: RNWY 4 VISUAL RANGE 32 (runway 4 visual range, 3200 ft.)

RNWY 4 VISUAL RANGE 20- (runway 4 visual range, less than 2000 ft.)

RNWY VISUAL RANGE MISG (runway visual range missing, transmissometer inoperative)

There are no plans at present for inaugurating runway visual range at any location other than Newark.



F. W. Reichelderfer
Chief of Bureau

WASHINGTON, D.C.
2-28-56

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU
Washington 25, D.C.

February 28, 1956 0-4.22

FILE: 610 x 630.1 x 540 CL 8-56 (WEATHER REPORTS TRANSMITTED BY AUTOMATIC TELETYPEWRITER FROM ONTARIO, CALIF.) WASHINGTON, D.C. 2-28-56

CIRCULAR LETTER NO. 8-56
(To All First-Order and CAA Stations)

Subject: Weather Reports Transmitted by Automatic Teletypewriter from Ontario, Calif.

Reference: Circular Letter No. 45-55.

In order to provide the complete observational data required for aircraft operations, the automatic teletypewriter weather reports from Ontario, Calif., are being supplemented, as indicated in the referenced Circular Letter, with groups containing information that cannot now be observed and coded by robot means. It is necessary that these data be appended following the entire automatic weather observation because mechanical characteristics of the equipment preclude insertions at any other position in the message.

Accordingly, the plan has been adopted whereby at Ontario, Calif., the elements of ceiling, sky, weather and/or obstructions to vision are observed by CAA tower personnel and together with any appropriate remarks added to the weather report immediately following the last group (RRR-amount of precipitation) of the automatic observation. The prevailing visibility is also included whenever it differs from the runway visibility (V_rV_r) value contained in the earlier portion of the report. All data added by the observer are coded in the aviation sequence code except that the terms "SKY" and "TWR VSBY" are used to identify groups of symbols.

Reports from Ontario therefore appear in the service A teletypewriter sequence as follows:

ONT --/24/ 62/45/2318/996/ --/000 SKY M25⊕ TWR VSBY 5H
(Automatic teletypewriter report) (Groups added by observer)

In the example, the groups added by the observer indicate a measured ceiling of 2500 feet with an overcast sky and a prevailing visibility of five miles restricted by haze. The prevailing visibility was included because it differs from the runway visibility of 2.4 miles appearing in the second group of the message. (The code used for automatic teletypewriter weather reports is outlined in detail in the referenced Circular Letter No. 45-55.) The first group of the automatic report now being transmitted as dashes (--) will be replaced by cloud height values as soon as the technical details are worked out to adapt the ceilometer to the automatic system.

It should be noted that the report contains, with the exception of sea-level pressure, all of the elements, as specified in Par. 9120 of Circular N, regularly included in an aviation weather observation, plus runway visibility. As the differences are only in the method of coding and order of entering the elements in the teletypewriter message, aviation weather observations transmitted from Ontario, Calif., or from any future stations with similar observational arrangements, may be used for the same purposes and with the same degree of confidence as those from conventional weather stations.

F. W. Reichelderfer
Chief of Bureau

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU
Washington 25, D. C.

February 28, 1956 0-4.22

CIRCULAR LETTER NO. 9-56
(To All First-Order and CAA Stations)

Subject: Runway Visibility Observations

At the twenty airports listed below transmissometers with indicators in both the control tower and the Weather Bureau office, are being installed to measure runway visibility near the touchdown point on the instrument runway. Effective upon activation of the equipment, these stations are authorized to include runway visibility data in their aviation observations in accordance with the following instructions:

1. Other than for air traffic control purposes, observations of runway visibility will be prepared and disseminated by the Weather Bureau. However, before dissemination, the Weather Bureau will coordinate its observations with the control tower to insure that identical values are being reported by both offices.

2. Observations of runway visibility made by control tower personnel may be used for air traffic control purposes without record or coordination with the Weather Bureau Office, except that the control tower shall notify the Weather Bureau of the current runway visibility whenever it

   a. Changes sufficiently to require a special observation in accordance with Par. 9132.3 of Circular N, or

   b. decreases to a value less than 1-1/2 miles or increases to a value of 1-1/2 miles or more.

3. Prevailing visibility with respect to the usual point of observation, or the control tower when appropriate, will always be entered in the coded portion of the report (Col. 4 of WBAN-10).

4. Runway visibility, as determined from the transmissometer will be appended as a remark to all observations (record, check, special or local extra) and entered in Col. 13 of WBAN-10, whenever it is less than 1-1/2 miles. This datum will follow any remarks concerning the prevailing visibility and will be in this form: "VSBY 3/4 RNWY 36" or, when variable conditions exist: "VSBY 3/4 VRBL 1/2 to 1 RNWY 36".

5. Special and local extra observations of runway visibility will be required in accordance with criteria outlined in Pars. 9132.3 and 9141 of Circular N. If no other elements are involved, such

FILE: 610 CL 9-56 (RUNWAY VISIBILITY OBSERVATIONS)

WASHINGTON, D.C.
2-28-56

observations will be entered on WBAN-10 as a single item and given local distribution as indicated in Par. 10320 of Circular N. Special observations containing only runway visibility datum will not be transmitted over long-line teletypewriter circuits.

6. If the transmissometer is inoperative and the prevailing visibility is 2 miles or less, the contraction "RNVNO" will be entered in the remarks portion of the report and in Col. 13 of WBAN-10.

RNVNO = Runway Visibility Not Available.

After sufficient experience with these installations has been gained, the foregoing instructions, as may be modified, will be incorporated into Circular N.

F. W. Reichelderfer
Chief of Bureau

Transmissometer Installations

	City	Airport	Station Identifier
1.	Anchorage, Alaska	Anchorage International AP	ANC
2.	Boston, Mass.	Logan Airport	BOS
3.	Chicago, Ill.	Chicago Midway Airport	CHI
4.	Cleveland, Ohio	Cleveland-Hopkins Airport	CLE
5.	Detroit, Mich.	Willow Run Airport	YIP
6.	Fort Worth, Texas	Carter Field	ACF
7.	Houston, Texas	Houston Airport	HOU
8.	Kansas City, Mo.	Kansas City Airport	MKC
9.	Los Angeles, Calif.	Los Angelos International AP.	LAX
10.	Minneapolis, Minn.	Minneapolis-St.Paul Int. AP.	MSP
11.	Newark, N.J.	Newark Airport	EWR
12.	New York, N.Y.	LaGuardia Airport	LGA
13.	New York, N.Y.	N.Y. International AP (Idlewild)	IDL
14.	Oakland, Calif	Oakland Airport	OAK
15.	Philadelphia, Pa.	Philadelphia International AP.	PHL
16.	Pittsburgh, Pa.	Greater Pittsburgh Airport	PIT
17.	Portland, Oregon	Portland International Airport	PDX
18.	San Francisco, Calif.	San Francisco Airport	SFO
19.	Seattle, Wash.	Seattle-Tacoma International AP.	SEA
20.	Washington, D.C.	Washington National Airport	DCA

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU
Washington

March 1, 1956

AO-1

FILE: 000 x 051 CL 10-56 (ORGANIZATION AND FUNCTIONS OF THE WEATHER BUREAU) WASHINGTON, D.C. 3-1-56

CIRCULAR LETTER NO. 10-56
(To All First Order Stations)

Subject: Organization and Functions of the Weather Bureau

Reference: Department of Commerce Order No. 91 (Amended)

The above reference, dated February 3, 1956, carries the authorization of the Secretary of Commerce for the following major organizational units.

Chief of Bureau

Deputy Chief of Bureau

Assistant Chief for Technical Services
- Forecasts and Synoptic Reports Division
- Observations and Station Facilities Division
- Hydrologic Services Division
- Instrumental Engineering Division
- International and Special Projects
- District Meteorological Offices

Assistant Chief for Administration
- Budget and Management Division
- Personnel Management Division
- Administrative Operations Division
- Public Information Coordinator
- Regional Administrative Offices

Assistant Chief for Program Planning

Director, Office of Climatology

Director, Office of Meteorological Research

Director, Physical Science Laboratory

Field Offices

The general functions of the principal units are defined in paragraphs in the body of the referenced Order. In general, they are ~~similar~~ to the functions of the respective offices published in previous organizational charts. The diagram accompanying the order is a simplified model of the major organizational units designed to show the principal functions at a glance.

In order to make best use of individual experience and the individual technical qualifications of leading officials, the following general working arrangements will be continued:

The Directors of Climatology, Meteorological Research and Physical Science Research will in general report directly to the Chief of Bureau. The Assistant Chief for Administration will consult with the Chief of Bureau as well as with the Deputy Chief in matters pertaining to budget policy, personnel policy, and professional personnel procedures.

The Deputy Chief of Bureau will be responsible through the Assistant Chief for Administration for supervision of the functions of administrative operations, budget and management, personnel management, public information coordination, and regional administrative offices (except as noted above); also through the respective Division Heads, for the functions of observations and station facilities, instrument engineering and international and special projects.

With the Assistant Chief for Technical Services or if this position is vacant, with an Assistant to the Chief for Forecasting Services, the Chiefs of the Forecasts and Synoptic Reports Division and the Hydrologic Services Division will work directly with the Chief of Bureau, with the Deputy Chief being informed as fully as practicable in these technical matters. The district meteorological offices also will work in direct relationship to the Chief of Bureau.

F. W. Reichelderfer

F. W. Reichelderfer
Chief of Bureau

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU
Washington 25, D.C.

March 6, 1956 O-5.32

CIRCULAR LETTER NO. 11-56
(To All First-Order Stations)

Subject: Changes in State Forecast (FP) Responsibility for Minnesota, Ohio, Kentucky and Tennessee.

Reference: Circular Letter No. 47-55 and 35-54.

Circular Letter No. 47-55 contained instructions for the decentralization of state forecasting for Connecticut. Arrangements have now been completed to extend this program to Minnesota with WBAS Minneapolis issuing state forecasts.

Guidance material, in mapped and written form, will be furnished from the District Forecast Center at WBFC Kansas City in their guidance forecasts (FP-1) for the use of Minneapolis in issuing forecasts. Responsibility at Minneapolis for the issuance of warnings will follow the same instructions given in Circular Letter No. 35-54. Action is also being taken to transfer to Minneapolis the responsibility for issuance of the Shipper's Temperature Forecast Bulletin (FM) for Minneapolis and Duluth.

Arrangements have also been completed to transfer Ohio, Kentucky and Tennessee from the Washington to the Chicago forecast district. WBFC Chicago will issue state forecasts (FP), Shipper's Temperature Forecast Bulletins (FM), and appropriate warnings for these three states.

No change will be made in quantitative precipitation forecasting (QPF) responsibility at this time. The five-day forecasts (FE) will be prepared by WBFC Kansas City and WBFC Chicago for the area covered by their forecast districts.

The target date for these changes is March 15, 1956. The effective date for these changes will be announced by GENOT.

F. W. Reichelderfer
Chief of Bureau

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU
Washington 25, D. C.

March 19, 1956 O-5.31

CIRCULAR LETTER NO. 12-56
(To All First Order Stations)

Subject: Policy with Respect to Pilot Weather Briefing and Use of Standard Briefing Displays

We believe some field personnel may not fully understand the intent of the Bureau's program of installing self-help briefing displays at airport stations. This letter is to clarify any misunderstandings on this matter and to explain why the self-help briefing service was developed.

The Weather Bureau is charged by law with responsibility for providing service to aviation. The Bureau has long operated on the basis of providing personal briefing service to pilots to the fullest extent possible whenever they visit or telephone the weather station for such service. Due to the increasing volume of requests for weather information and the increase in station duties, it has not been possible to provide personal briefing in all cases. Continuous transcribed broadcasts and automatic telephone answering services are being implemented as rapidly as possible to provide the more essential types of information on a mass scale in order to cut down on the need for individual requests for service.

The self-help briefing display was developed so that pilots stopping at the various Weather Bureau stations would find uniform displays, complete with full explanatory information, available. It was hoped this uniformity of display, with special emphasis on ease of locating desired reports and forecasts, would make it easier for pilots who prefer to personally study the weather to make full use of the information. Also, it was hoped the displays would encourage other pilots to learn to interpret the reports and forecasts and become more self-reliant in obtaining weather information when it was not possible for duty personnel to give prompt assistance.

Apparently, the self-help briefing principle has been interpreted by some to mean that the Weather Bureau no longer intends to provide personal briefings and that pilots will have to learn to use the displays. This is not the case. Briefing personnel have a responsibility to offer assistance to all pilots visiting the office unless a pilot obviously can and wishes to help himself, or the briefer is occupied with immediate deadline duties that preclude his giving personal assistance.

F. W. Reichelderfer
Chief of Bureau

FILE: 652.11 CL 12-56 (Policy with Respect to Pilot Weather Briefing and Use of Standard Briefing Displays)

WASHINGTON, D.C.
3-19-56

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU
Washington 25, D. C.

March 19, 1956 0-2.41

CIRCULAR LETTER NO. 13-56
(To All First-Order Stations)

Subject: Normals for February 29th, and Instructions in their use in Leap Years

Ref: Circular Letter No. 8-52, file 0-2.13, dated 2/26/52

A change of instructions in the use of seasonal and annual normal values of degree days in leap years, as furnished in the referenced circular letter, makes it necessary that we restate completely the applicable instructions in the use of normals for temperature, precipitation and degree days. These follow:

The February 28th normal values of temperature and precipitation should be used as the normal values for February 29th during leap years by all stations having daily normals for these elements. The February and annual normals for precipitation will be increased by this amount. No change will be made in the February and annual normal temperatures in leap years.

In a leap year, the normal degree-day total for February must be increased by the February 29 value in computing February departures from normal. On the other hand the length of the winter season (in number of days) is not affected by the extra day in leap year even though, in a manner of speaking, winter can be considered as ending one day earlier according to the leap year calendar. Consequently, the seasonal or annual normal degree days will be the same as for any other year.

Strictly speaking, normal values of degree days for months subsequent to February should be revised downward slightly in a leap year in order to keep the seasonal normal the same after the February 29 value is added. In practice, however, the difference is again insignificant and has no practical value. Therefore, we do not change the normals for months subsequent to February.

Example:

Burbank, Cal.	Feb. Normals	Annual Normals	Leap Year February Normals	Leap Year Annual Normals
Max. Temp.	66.0	75.8	66.0	75.8
Min. Temp.	41.9	49.7	41.9	49.7
Mean Temp.	54.0	62.8	54.0	62.8
Precipitation	3.06	13.88	*3.17	*13.99
Degree days	308	1808	#318	1808

*Leap year precipitation normals for month of February and for the annual are increased by the normal precipitation for the 28th of Feb.

#Leap Year Degree Day normal for month of Feb. has been increased but the annual normal has not been increased.

FILE: 920 CL 13-56 (Normals for February 29th, and Instructions in their use in Leap Years) WASHINGTON, D.C. 3-19-56

Circular Letter No. 8-52 is superseded by these instructions and should be considered obsolete.

F. W. Reichelderfer
Chief of Bureau

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU
Washington 25, D. C.

March 26, 1956 0-4.23

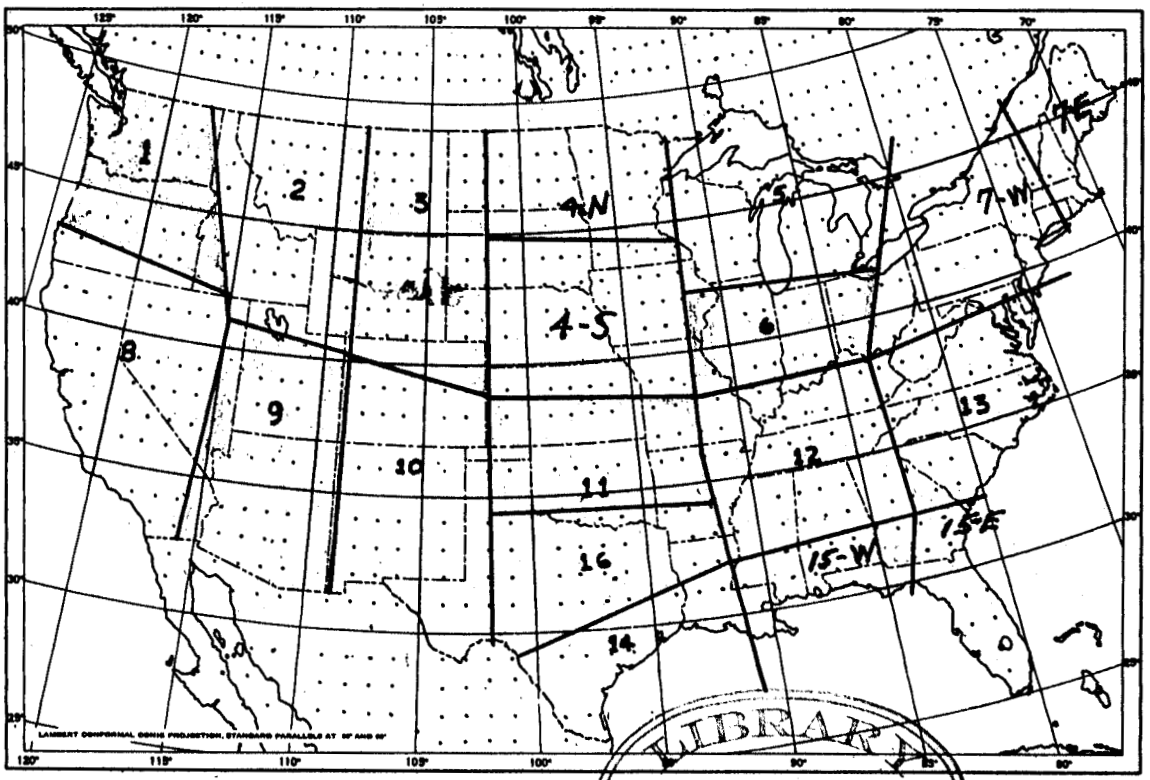
CIRCULAR LETTER NO. 14-56
(To all First-Order Stations)

Subject: Computation of Civil Defense Fallout Winds

Reference: Circular Letter No. 2-56, dated January 16, 1956

Areas 4, 7, and 15, in Chart 1 of the reference Circular Letter have been divided for purposes of the spring, summer, and autumn fallout templates. Area 4 will be divided into north and south (4-N and 4-S, respectively), and areas 7 and 15 will be divided into east and west (7-E, 7-W, 15-E, and 15-W). The new areas are indicated in the chart below. The winter areas will continue to be those shown in the reference letter. The spring templates will be supplied immediately, while those for summer and autumn will be supplied later.

Areas to Which the Spring, Summer, and Autumn Templates (TA-610-11-1) Pertain



FILE: 610.2 CL 14-56 (Computation of Civil Defense Fallout Winds)

WASHINGTON, D.C.
3-26-56

The instructions contained in the reference Circular Letter are necessarily lengthy and involved, and do not cover all the possible cases. In many instances a combination of two cases must be used. In order to simplify the procedure, the following general guide lines are provided:

(1) First priority will be given to the current observation, and all possible data will be derived from it.

(2) Between heights of 9 and 12 km., second priority will be given to the most recent observation taken within the preceding 12-hour period (approximately).

(3) Between heights of 12 and 24 km., second priority will be given to the most recent observation taken within the preceding 24-hour period (approximately).

(4) Lowest priority will be given to the template procedure, since this is based on climatological information.

With these general guide lines in mind, the observer will decide which combination of cases will provide the most satisfactory fall-out data.

F. W. Reichelderfer
Chief of Bureau

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU
Washington

April 16, 1956 AO-1

FILE : 000 x 051

CL 10-56 Addendum

ADDENDUM TO
CIRCULAR LETTER NO. 10-56
(To All First Order Stations)

Subject: Organization and Functions of the Weather Bureau

Reference: Department of Commerce Order No. 91 (Amended)

Circular Letter No. 10-56 listed Dr. Gunn's office as Physical Science Laboratory. This title does not properly reflect the basic research performed by Dr. Gunn and his staff. Accordingly the previous title of Physical Research will be used and Circular Letter No. 10-56 is amended to show Director, Office of Physical Research, in place of Director, Physical Science Laboratory.

F. W. Reichelderfer

F. W. Reichelderfer
Chief of Bureau

(Organization and Functions of the Weather Bureau)

WASHINGTON, D.C.
4-16-56

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU
Washington 25, D. C.

April 19, 1956

CIRCULAR LETTER NO. 15-56
(To All First-Order Stations)

Subject: Keeping Local Forecasts Current

At a recent conference of radio and television weather broadcasters, the suggestion was made that the Weather Bureau's service could be much improved by giving more attention to keeping the local forecasts up to date.

It has long been a part of the Weather Bureau program to issue revised forecasts as often as changing conditions warrant but decision on "when conditions warrant" is often complicated by the differing standards that must apply to the more advanced portions of the forecast period as compared to that part of the forecast applying to the immediate future. New forecasts are of course issued for all areas every six hours and it is not often that the forecaster has interim information to justify changing the more advanced portions (e.g. 24, 36, or 48-hour periods) of these forecasts. However, it not infrequently occurs that information at hand clearly indicates that the latest local forecast is out of step with either (1) the weather of the moment or (2) the changes which may reasonably be expected during the next one to six hours. The possible need for revising the local forecasts for these shorter periods should receive due attention and it is with this problem that this Circular Letter is primarily concerned.

The public impression regarding forecast accuracy is often strongly influenced by how adequately the <u>local</u> forecast describes the current weather and that which immediately follows. In other words, the man-in-the-street has a higher regard for the forecast that is consistent with what he can see is going on weatherwise at the time he hears the forecast.

Partly because of the importance of keeping the local forecast in step with the weather of the moment, offices having automatic telephone weather forecast service (WE 6-1212) should issue new local forecasts every hour, or even more frequently during rapidly changing conditions. With many radio stations now making hourly weather broadcasts, more effort should be directed toward furnishing these outlets with up-to-the-minute forecasts as often as may be necessary to give reasonable assurance that local forecasts will reflect the latest thinking of the forecaster at the time they are broadcast.

Offices having local public service weather loops to which radio stations subscribe have an excellent means of distributing forecasts and it is suggested that such offices consider transmitting on these circuits a new local forecast each hour, along with the latest local temperature and humidity. Any action taken on this suggestion should of course take into consideration the local work load and priorities.

All offices, including those without local teletypewriter loops, should periodically review the main weather broadcast times in their immediate service areas and make every effort to insure that forecasts available to the radio stations are in step with the weather at the time of broadcast. So far as possible, distribution of revised local forecasts to radio stations should be accomplished collectively, i.e., through local loops or radio wire services, but direct telephone may be warranted at times.

The traditional "look out the window" should be both an actual look at local conditions and a look out of the much bigger window which is now available through the facilities of radar and hourly reports from nearby points. By making flexible and intelligent use of such information, noting or anticipating short-range changes or trends, local forecasters can stay on top of the weather and give an increasingly valuable local forecast service.

For F. W. Reichelderfer
Chief of Bureau

D M Little

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU
Washington 25, D. C.

April 24, 1956 O-5

CIRCULAR LETTER NO. 16-56
(To All First Order Stations)

Subject: Information on Barotropic Forecasts prepared by the Joint Numerical Weather Prediction Unit

Reference: Circular Letter No. 44-55, November 3, 1955
O-5, File 630.1

Attached is a discussion, prepared by the JNWP Unit, of the preparation and use of 72-hour barotropic prognostic charts for the 500 millibar level.

F. W. Reichelderfer
Chief of Bureau

Attachment

FILE: 630.1 CL 16-56 (Information on Barotropic Forecasts prepared by the Joint Numerical Weather Prediction Unit)
x 811.4

WASHINGTON, D.C.
4-24-56

ATTACHMENT

1. Introduction

The 72-hour barotropic forecasts for 500 mb for a large section of the Northern Hemisphere are scheduled for regular facsimile transmission beginning 20 April 1956.

2. The Model

The barotropic model is well-known and is described, for example, in (1). The model used for these particular forecasts assumes no mountains. Features of the computations are:

(a) A stream function, which is derived from the initial 500-mb height field, is used for calculations of wind and vorticity. This allows for the inclusion of gradient wind and other acceleration effects.

(b) The grid mesh length used is double the mesh length used for the baroclinic model (described in Circular Letter No. 44-55, November 3, 1955). There are approximately 550 to 600 kilometers between grid points, varying somewhat with latitude.

(c) The Laplacian of the stream function is smoothed each time step by a smoothing function which almost completely suppresses features having a wave length of two grid intervals, leaving practically unaltered features having wave lengths of more than five grid intervals.

(d) A time step of two hours is used.

(e) The height of the 500-mb surface is rescaled internally (in the program) by multiplying by 1.3. This rescaling has the effect of increasing the winds by 30% and is done to counteract some effects of truncation errors. This rescaling is effective only internally and does not appear in the prognostic chart.

3. Data

The data used for the initial time consist of the heights of the 500 mb surface read from the 0300Z 500-mb analysis.

4. Output Information

The 500-mb prognostic charts are printed at 24 hour intervals. The forecast is usually stopped after the 72-hour print. Only the 72-hour prognostics are being transmitted on the national facsimile circuit.

5. Suggestions for Use

The following specific recommendations can be made:

(a) Absolute values of height are influenced by arbitrarily specified boundary conditions, and cannot be relied upon. The height gradients, however, are more reliable.

(b) The smoothing process, mentioned above, eliminates small-scale patterns, which therefore do not appear in the prognostic charts.

(c) It should be remembered that the barotropic model is not capable of predicting the sudden increases in energy observed in cases of strong cyclogenesis.

(1) J. G. Charney and N. A. Phillips:

Numerical integration of the quasi-geostropic equations for barotropic and simple baroclinic flows. (Journal of Meteorology. vol. 10, no. 2, pp. 71-99).

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU
Washington 25, D. C.

May 4, 1956

CIRCULAR LETTER NO. 17-56
(To All First Order Stations)

Subject: Special Emphasis on Pilot Weather Reporting

A careful review of the pilot weather reporting program reveals that despite past efforts considerably more information on in-flight weather conditions is needed now to adequately serve the requirements of the various classes of aircraft operations. The need is particularly great in the case of military jet aircraft.

Obviously, surface reports alone can provide only a part of the weather information that is essential to maximum safety and efficiency of flight operations. There are many weather conditions observable only in flight which, if reported, can be very useful in serving the needs of civil and military jet aircraft, and General Aviation. Some of the reasons why cloud base and top information is needed are listed in the attachment.

The Weather Bureau has expended considerable effort to let pilots know that reports of in-flight conditions are needed. However, with few exceptions emphasis so far has been in the direction of seeking pilot cooperation in initiating reports. We have not taken the initiative on a broad scale for seeking out pilot reports.

The matter is of such importance that we must not only re-emphasize it here but must stress that seeking out useful pilot reports must inevitably become an integral part of the observing program of airport stations. The need for in-flight reports on cloud tops, locations of icing and turbulence zones, and areas of thunderstorm activity is continually increasing. Pilot organizations claim they can go to airline meteorological offices and get better weather information for their flights than they can from the Weather Bureau. It is hard for them to understand why we do not get ample information on in-flight conditions between two major cities, where there may be a hundred or more flights over the route each day. Something must be done that will yield cnntinuing results. Toward that end, it is requested that the following procedures be implemented immediately to the fullest extent possible.

1. Renew contacts with local airline offices in person; express our interest in, and need for, obtaining pilot weather reports -- particularly on tops, zones of icing or turbulence, areas of thunderstorms. Seek a standing arrangement to make calls to these offices during important situations to obtain needed information from critical areas.

2. Query pilots on the conditions they encountered en route. Let them know you are interested in learning of anything that will help you to do a better job for aviation.

3. When briefing, if you have pertinent information obtained through a pilot report, refer to it as a "pilot report". This emphasizes its value to us , and encourages the recipient to report on unusual and potentially hazardous conditions.

4. If there is some doubt about what the conditions are in a certain area, tell the pilot you have no definite information. Ask him to report on the condition when he reaches the point, and to file his report with the nearest CAA facility.

5. Seek cooperation of local CAA facilities in forwarding pireps. When other local sources do not yield needed information initiate requests, as necessary, to CAA to obtain reports of in-flight conditions when contacting en route aircraft.

6. Post at the observing position the local sources of pilot weather reports that the duty observer should contact regularly or at a specified time and by what method to reach them. Have observer keep a check list of times and places to which inquiries were made. When several reports are available, summarize and consolidate by routes or areas.

No doubt study will reveal other ways in which action can be taken locally to establish workable and lasting arrangements for collecting pilot reports. Please keep in mind that the objective is to obtain the in-flight reports needed to fill in the gaps of information on important conditions not visible from our usual observing locations, and that we must therefore stress content of reports rather than quantity of reports.

No portion of the foregoing is intended to contravene in any way existing agreements with respect to in-flight reporting on international air routes.

This letter has been coordinated with the Civil Aeronautics Administration and that Agency is issuing parallel instructions.

For F. W. Reichelderfer
Chief of Bureau

Attachment

SOME REASONS WHY CURRENT CLOUD TOP INFORMATION IS NEEDED BY PILOTS

1. The pilot's problems are greatly simplified when flights are made "between layers" or "on-top" rather than under continuous instrument flight conditions.

2. For General Aviation, where many aircraft are equipped only for VFR or limited instrument flying, do not have de-icing equipment and are limited to comparatively low cruising altitudes, availability of current "useable top" information may make the difference between completing a flight and cancelling plans.

3. Many flights can be completed under limited instrument conditions. For example, actual piloting by instruments is often confined to climbing to and descending from the cruising altitude, with the major part of the flight conducted on top or between layers.

4. The Civil Air Regulations permit VFR flight above broken or overcast clouds, the only requirement being that the climb and descent through the clouds be made in accordance with visual flight rules concerning clearance from clouds, or be made on an instrument flight plan, as appropriate. Adequate cloud top information will help non-instrument pilots obtain much more use of their airplanes.

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU
Washington 25, D. C.

C-4.1

May 8, 1956

CIRCULAR LETTER NO. 18-56
(To All First-Order Stations)

Subject: Definition of Climatic Means

Use of the word "NORMAL" in the Weather Bureau will conform to that adopted by the World Meteorological Organization. NORMAL may conveniently be defined as: A mean based upon the 30-year period of record 1921-1950, revised each decade by dropping the first 10 years of data and adding the 10 most recent years. In the case of a first-order Station which has been relocated during or after the NORMAL period, the NORMAL will usually be a value adjusted to refer to the more recent location. As soon after 1960 as practicable, Weather Bureau NORMALS will be revised to refer to the period 1931-1960.

Terminology in connection with averages for any other periods of record will be governed by the following definitions:

1. An average for the full length of station record, unadjusted for changes in station location, will be designated as "RECORD MEAN". Where data are adjusted for changes in location, the average will be designated as "ADJUSTED RECORD MEAN."

2. An average for a period of years other than (a) the NORMAL period or (b) the RECORD MEAN period will be called "(Beginning Year - Ending Year) MEAN", as, for example, 1926-1950 MEAN. Where data are adjusted for changes in station location, the average will be designated "ADJUSTED (Beginning Year - Ending Year) MEAN." Where the period of (Beginning Year - Ending Year) MEAN is not known, the designation "LONG-TERM MEAN" may be used.

The use of LONG-TERM MEAN in the headings in Climatological Data is a special usage defined in footnotes of those publications, and will be discontinued after Bulletin W Supplement has been completed for every State.

In the interest of avoiding confusion within the Weather Bureau, the above definitions will apply to all climatic elements, as, for example, solar radiation and evaporation.

The above definitions supersede all previous definitions of NORMALS, MEANS AND AVERAGES.

F. W. Reichelderfer

F. W. Reichelderfer
Chief of Bureau

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU
Washington 25, D. C.

May 8, 1956 O-5.32

CIRCULAR LETTER NO. 19-56
(To All First-Order Stations)

Subject: Third-Day Outlook in Guidance Forecasts (FP-1)

Reference: Circular Letter 5-54

There is an increasing demand for field offices to furnish an outlook for the third day to agricultural interests, as well as to others who can profitably use information of this nature. During the past, arrangements have been made to include a third-day outlook in the 0939Z guidance forecasts (FP-1) during the normal growing season whenever the forecaster felt such an extension was warranted. This has been very useful and comments from field officials have indicated that it would be even more helpful if a third-day outlook were included in one of the guidance forecasts on a daily basis during the entire year.

The forecast centers which prepare the guidance forecasts have agreed to include a third-day outlook in the 0939Z FP-1 on a daily basis throughout the entire year. In view of this, all forecast centers which prepare an FP-1 at 0939Z are requested to follow this practice in the future. Many forecast centers also include a third-day outlook in FP-1's issued at other times. Since this has been quite helpful, forecast centers are encouraged to continue this practice if they wish.

It is recognized that there may be times when it is very difficult to forecast the weather for the third day ahead. At such times it is suggested that the forecast centers indicate this fact by mentioning that the outlook for the third day is "uncertain." Since there may be times when other expressions will more clearly depict the forecaster's thinking concerning the weather for the third day, other suitable expressions may be used.

F. W. Reichelderfer

F. W. Reichelderfer
Chief of Bureau

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU
Washington 25, D. C.

May 10, 1956

0-5.32

CIRCULAR LETTER NO. 20-56
(To All First-Order Stations)

Subject: Five-Day Forecast

Beginning Monday, June 4, (GMT) the 5-Day Forecasts will be issued by District Forecast Centers on a three times weekly basis. The Extended Forecast Section will transmit the 5-Day Forecast material on Service "C" beginning at 0242Z and on the facsimile circuit at 0530Z, 0600Z and 0644Z each Monday, Wednesday and Friday.

District Forecast Centers will continue to transmit the 5-Day District Forecasts at 1212Z as at present but on the days shown above.

The information given above may be released to local press, radio and television stations and other interested parties for morning publication or dissemination on May 21.

F. W. Reichelderfer

F. W. Reichelderfer
Chief of Bureau

FILE: 655 CL 20-56 (Five-Day Forecast)

WASHINGTON, D.C.
5-10-56

UNITED STATES DEPARTMENT OF COMMERCE
Weather Bureau
Washington 25, D.C.

May 22, 1956 O-5.32

FILE: 657.2 x 431

CL-21-56 (Use of Automatic Telephone Answering Devices)

CIRCULAR LETTER NO. 21-56
(To All First-Order Stations)

Subject: Use of Automatic Telephone Answering Devices

Automatic telephone answering devices have now been installed in more than 20 Weather Bureau offices. The size of the community and the program at the office are sufficiently varied in this number of installations to permit a good cross section of experience. The purpose of this Circular Letter is to summarize this experience and to establish a general policy for the guidance of all concerned. Memorandum to all stations dated Sept. 28, 1955 on this subject is superseded and cancelled.

The following priority listing should not be construed as indicating that funds are available for unlimited installation of answering devices. It is not likely that available funds will permit any appreciable increase in the number of these installations. However, it is possible that some devices can be shifted to different offices where there seems to be a greater opportunity for maximum utilization of the equipment.

A. Types of Stations to be Given Priority

1. Priority will be given to installation of automatic answering devices in stations where there is frequently one man on duty alone who, because of pibal or other observations, will be unable at times to answer the phone personally. Other heavy peak loads of work which prevent answering of the public telephone will also be considered.

2. At stations with limited hours of operation, answering devices may be authorized if necessary to advise the public that the office is closed and when it will reopen. Such offices might also fall under Category 1. above.

3. If the installation of an answering device is recommended for offices other than those described in 1. or 2. above, the recommendation should clearly indicate the extent of use and why the public telephone cannot be answered manually at such times.

B. Use of Answering Devices

1. Automatic telephone answering devices are not to be used as a substitute for an automatic weather exchange of the WE 6-1212 type. It is realized that such services are extremely popular with the public. Calls on such installations frequently exceed 100,000 per day in a single community. However, it is not the intention that the Weather Bureau will provide that type of service at government expense. Instead, the devices we install are to be used, with suitable explanations, only when for some valid reason the public telephone line cannot be answered manually.

2. Where installation has been authorized, the devices may be used during periods when the office is (a) closed, or (b) unattended, or (c) during occasional brief periods of peak workload.

3. While the use of the device under 2. (a) or 2. (b) above would usually occur at the same time each day, it should not be considered as a scheduled use and of course no such schedule should be published or announced. Use under 2. (c) above should be limited and unscheduled.

4. Telephone directory listings will omit reference to use of the device and publicity in connection with its installation should be avoided.

5. The device will be used on the listed public line and an unlisted line will continue to be available for the use of news services, pilots and others who will continue to require a personal contact. There will be no exceptions to the continuance or installation of an unlisted line unless specifically authorized by the Central Office.

6. When a forecast is included in the recorded announcement, current weather should be reflected and the latest complete forecast used. If there is a possibility that the forecast may become obsolete, an announcement similar to #2 in the attachment should be used.

C. Format

To some extent, local requirement will determine the type and amount of material included in the recording. However, the following minimum information is recommended as a standard with such additions as are appropriate locally:

1. The taped recording will always give some indication of when the telephone will again be answered manually.

2. The announcement will always be identified as a recording with an explanation, if considered desirable, of why it is being used.

3. The recording will include the local forecast except in cases where the office will be closed for periods greater than 10 hours.

4. Use of the device should normally be restricted to periods of not more than 15 minutes' duration.

A few samples of typical recorded material are attached.

Local officials are requested to review existing installations in view of these instructions and to bring present practices into agreement so far as possible. In cases of necessary departures, the circumstances should be reported to the Central Office with appropriate recommendations. The Central Office is maintaining a record of installations of this equipment and the removal of any installations should be reported.

Requests for new installations should be directed to the Central Office through the Regional Office with recommendations for planned use as outlined in this circular. Rental costs in most areas are about $12.50 a

month plus a $15.00 installation charge. Announcements are recorded by talking into the transmitter on the telephone hand set to which the device is attached. The period available for an announcement is about 30 seconds.

Contractual arrangements for rental of the answering device will be made with the local telephone company and charges therefor paid from the regional allotment.

F. W. Reichelderfer

F. W. Reichelderfer
Chief of Bureau

Attachment.

ATTACHMENT

"This is a recorded announcement. The latest forecast for _____and vicinity calls for partly cloudy and warmer this afternoon, tonight, and Friday. Highest temperature today 65, lowest tonight 40, and highest Friday 70. The Meteorologist on duty will resume answering the telephone at 10:35 a.m."

"This is a recorded announcement from the _____ office of the Weather Bureau. Our office hours are from 6:00 a.m. through 9:30 p.m. The evening forecast called for cloudy and colder tonight with lowest temperature 28 degrees. Friday clearing and slightly warmer, highest temperature 50. Any necessary revisions to this forecast will be made available to all local radio and television stations."

"This is a recorded announcement from the _____ office of the Weather Bureau. Our office hours are from 8:00 a.m. until 4:30 p.m., Monday through Friday. For current forecasts and temperatures, please listen to our local radio and television stations."

(These examples are intended to be applicable to the various types of stations at which answering devices are in use. However, it is recognized that local considerations will sometimes require inclusion of additional material or omission of portions of the suggested text.)

UNITED STATES DEPARTMENT OF COMMERCE
U.S. WEATHER BUREAU
WASHINGTON
June 6, 1962

IN REPLY, PLEASE ADDRESS
CHIEF, U. S. WEATHER BUREAU
WASHINGTON 25, D. C.

ADDENDUM NO. 1 to CIRCULAR LETTER NO. 21-56

TO : All First-Order Stations

FROM : Chief of Bureau

SUBJECT: Use of Automatic Telephone Answering Devices

The general operating practices regarding automatic answering devices, as contained in Circular Letter No. 21-56, are still current.

Within the last several years, an attachment, known as a "ring-through," has been installed at some stations on a telephone answering device. This combination, until recently installed on an experimental basis to determine the advantages and value of such a combination of equipment, provides a means whereby an answering device can be used 24 hours a day. Calls for repetitive type of information - such as local forecasts; current, maximum, or minimum temperatures; severe weather information; etc., are handled without any need for personal attention to be given each caller.

When the caller dials the listed number and hears the recording the message starts out "If after hearing this complete Weather Bureau recording you still desire more information please hold the line for _____ seconds." This is followed by a recording of one to two minutes of pertinent weather information. At the end of the holding period, if the caller holds the line, a bell rings in the Weather Bureau office and the caller is able to discuss his problem with Weather Bureau personnel when the phone is answered.

All stations, where this equipment has been installed, have expressed their enthusiasm for this additional piece of equipment and have mentioned that it eliminates the need for giving personal attention to from 70% to over 90% of the telephone calls made on the public listed line. It has reduced much of the tension occasioned by the incessant ringing of a telephone bell, and appears to provide additional and a more acceptable service to the public.

This attachment costs about $6.00 a month, in addition to the cost of the answering device, with an installation or termination charge of as much as $150.00. A lack of ready funds for this purpose limits the number of installations which may be realized at this time.

However, in order that we may make plans for possible future installations, all MIC's who feel they have a requirement for this type of equipment should prepare a recommendation for the installation of a ring-through on an existing answering device or the installation of an answering device and ring-through with connection to be made on the single, public, listed telephone line. No additional public listed telephone lines should be planned for.

Please route your recommendations through respective Regional Administrative Offices. Regional Administrative Offices are invited to add their endorsements and establish some order of priority for installations and forward the information to the Central Office, Attention: P&AF Section. The reports will be compiled and final approval for particular installations will be based on public service demand and telephone load, obligation of personnel in existing station program, existence of other mass-dissemination media (such as WE-1212) or a heavier than average direct radio broadcast program, among other criteria.

Stations where this installation is made are requested, as they gain experience with the equipment, to report their evaluation of it, its advantages and disadvantages and to what extent it has contributed to a more efficient operation of the station.

F. W. Reichelderfer

cc: All WBRAO's

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU
Washington 25, D. C.

May 22, 1956 O-5.32

CIRCULAR LETTER NO. 22-56
(To All First-Order Stations)

Subject: Changes in State Forecast (FP) Responsibility for North Dakota, South Dakota, Nebraska, Kansas and Missouri

Reference: Circular Letters No. 11-56 and 35-54

Circular Letter No. 11-56 contained instructions for the decentralization of state forecasting for Minnesota. Arrangements have now been completed to extend this program. WBAS Bismarck will issue the state forecasts (FP) for North Dakota, WBAS Sioux Falls for South Dakota, WBAS Omaha for Nebraska, and WBAS Kansas City for Kansas and Missouri. North Dakota and South Dakota will be transferred to the Kansas City forecast district.

Guidance material, in mapped and written form, will be furnished from the District Forecast Center at WBFC Kansas City in their guidance forecasts (FP-1) for the use of these offices in issuing forecasts. Responsibility at these offices for the issuance of warnings will follow the same instructions given in Circular Letter No. 35-54. Action is also being taken to transfer to these offices the responsibility for issuance of Shipper's Temperature Bulletins (FM) for the designated locations within their state forecast areas of responsibility.

No change will be made in quantitative precipitation forecasting (QPF) responsibility at this time. The five-day forecasts (FE) will be prepared by WBFC Kansas City for the areas covered by the new state forecast centers.

The target date for these changes is July 1, 1956. The effective date will be announced by GENOT.

F. W. Reichelderfer

F. W. Reichelderfer
Chief of Bureau

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU
Washington 25, D. C.

June 1, 1956 0-5.31

CIRCULAR LETTER NO. 24-56
(To All First Order Stations)

Subject: Operational Use of Terms "Instability Line", "Squall Line", and "Line Squall"

In order to achieve uniformity with respect to the use of the terms "instability line" and "squall line", the Weather Bureau and the military meteorological services have agreed to re-define these terms for purposes of operational forecasting. Also, it was agreed to exclude the term "line squall" from use in the operational forecasting of "instability line" phenomena.

The following definitions become effective immediately for operational forecasting and briefing purposes.

a. "Instability line" is a line of incipient, active, or dissipating non-frontal instability conditions. It is an analytical term for indicating primarily the incipient and dissipating stages of non-frontal squall line phenomena and for sake of continuity also includes the active squall line stage. It is frequently found in the warm sector of an extratropical cyclone. Unlike a true front, the "instability line" is transitory in character, usually developing to maximum intensity within a period of twelve hours or less and then dissipating in about the same length of time.

b. "Squall line" is a line of active thunderstorms or squalls which may extend over several hundred miles. It is the phenomenon of the mature or active stage of "instability line" development and may be either a solid or broken line of numerous thunderstorms. Accompanying vertical motions are of a greater order of magnitude than is usual elsewhere in the atmosphere.

The SELS Center has been applying these terms in the same sense as stated in the above definitions as a regular practice. Therefore, no change is involved in SELS procedure.

It is recognized, however, that in the field of general meterology these terms are used in various ways. Consequently, the application of these terms as defined above for operational forecasting is not intended to limit the use of the terms in meteorology generally. For example, a severe storm network observer may report a "line squall" and the forecaster would use this information in forecasting the movement and intensity of the associated "squall line".

F. W. Reichelderfer
Chief of Bureau

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU
Washington 25, D. C. 0-5.34

June 22, 1956

CIRCULAR LETTER NO. 25-56
(To All First Order Stations)

Subject: Criteria for Issuance of Hurricane Warnings and Watches

Reference: Weather Bureau Manual III-B-5007-g

The definition of a hurricane warning given in the referenced paragraph of the Manual is:

> HURRICANE WARNING This form of warning is issued in connection with tropical storms to indicate areas where winds of 75 mph or higher are expected within the next 24 hours; however, hurricane warnings may be issued when dangerously high water, very rough seas, or other critical conditions justifying emergency action are expected to occur with winds as low as 60 mph.

The phrase "expected within the next 24 hours" is not intended to mean that hurricane warnings must always be issued 24 hours in advance, but rather that even under optimum conditions hurricane warnings can rarely be issued more than 24 hours in advance of the onset of hurricane conditions.

When a hurricane threatens the United States coast the forecaster is faced with the requirements (1) that hurricane warnings be issued far enough in advance to permit all necessary protective measures to be taken and (2) that the warnings be dependable. The requirement for dependability on the one hand and for timeliness on the other can rarely be met without some compromise.

With present forecasting techniques hurricane warnings can not always be issued as much as 24 hours in advance with sufficient assurance to serve as a basis for complete inplementation of all protective measures. More often the range of dependable hurricane warnings may be 12 to 18 hours in advance of the onset of hurricane conditions, and there may be times when, due to extremely erratic or indefinite storm behavior, warnings cannot be issued with confidence more than 6 hours in advance. In these conditions warnings 6 to 18 hours in advance may be adequate, especially if the public has been put on guard earlier by issuance of a hurricane "WATCH".

Another important factor determining the appropriate time range of hurricane warnings is the time of day. For example, under conditions of erratic hurricane behavior there would be stronger cause for extending the time range in an advisory issued at 10 p.m. than in one issued at 10 a.m. The obvious reason for this is that the 10 p.m. advisory may represent the last opportunity to get complete public dissemination before 8 or 9 o'clock the following morning.

FILE: 656.4 — CL 25-56 (Criteria for Issuance of Hurricane Warnings and Watches)

WASHINGTON, D.C.
6-22-56

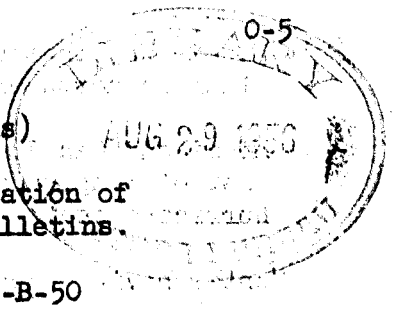
Similarly, the time range of a "hurricane watch" may be influenced by the time of week. Ordinarily "watches" will not be announced more than 36 hours in advance. However, on the last Friday advisory before a weekend it may at times be advisable to issue a "watch" as much as 36 to 48 hours ahead, or to issue a special bulletin advising of the various possibilities and recommending that interests keep in touch with successive 6-hourly advisories.

Within these general guide lines hurricane forecasters will be expected to exercise their judgment in balancing the need for warnings as far in advance as possible against the requirement for accuracy of warnings.

F. W. Reichelderfer
Chief of Bureau

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU
Washington 25, D. C.

June 29, 1956



CIRCULAR LETTER NO. 27-56
(To All First Order Stations)

Subject: Coordination and Standardization of Hurricane Advisories and Bulletins.

Reference: Weather Bureau Manual III-B-50

Studies of hurricane warning services in the past have shown that the value and effectiveness of these services can be increased by improvement in the following features These features (treated separately from the general problem of weather forecasting as a science and the inherent limitations of present techniques, the latter meteorological rather than administrative in nature) are described briefly as follows:

1. Central Information Source. Designate one office to which all news media may look for the latest hurricane forecast and warning information.

2. Coordination Bring together the judgment of the most expert hurricane forecasters, especially in times of critical hurricane situations.

3. Standardization of Issuances Eliminate differently worded issuances from various Centers and Field Offices, which have at times confused the public.

4. Wording. Simplify the form and wording of advisories and bulletins so that the meaning will be clear to the public and the appropriate precautionary actions will be evident and definite.

Without going into detail on the experience and evolution which led to establishment of the present hurricane warning centers with their advantages in providing alternate emergency centers and greater specialization in the regional characteristics of hurricanes, it appears that the desired improvements can be obtained by the following actions and procedures which are effective on July 1, 1956. The measures are numbered in parallel with the desired improvements enumerated above.

1. The Weather Bureau Hurricane Warning Center at Miami is hereby designated as the National Hurricane Information Center (short title HURIC) All hurricane advisories and bulletins will be issued by HURIC concurrently with their release and issue by the District Forecast Center having paramount responsibility. By definition, the District Forecast Center having paramount responsibility is that within whose district boundaries (see Weather Bureau Manual III-B-5003) the center of the hurricane exists.

2. There will be no change in the responsibility of respective District Centers, however, prior to each issuance of an advisory or bulletin there will be a phone conference among the hurricane forecasters at the centers most directly concerned, namely:

(a) Miami, New Orleans and Washington when the hurricane center is in the Gulf, the Caribbean west of longitude 75°, or the Atlantic south of latitude 32°.

(b) Miami, Washington, and Boston when the hurricane is in the Atlantic north of latitude 32°.

(c) Miami and San Juan when the hurricane is in the Caribbean east of longitude 75°. (Include Washington if possible when hurricane center is north and west of San Juan.)

The Center having paramount responsibility will normally initiate the conference call. In any event where lack or failure of telephone conference connections will delay issuance of an advisory or bulletin longer than 30 minutes two alternate courses will be open, namely; (a) coordination will be conducted with the Miami Center by other means, e.g., teletype or radio-teletype or (b) in compelling emergencies the Center having paramount responsibility will make the issuance without inter-office coordination.

It is logical to expect that more than one Center will have substantive opinion about the movement of the storm and thus provide the benefit of group judgment through the telephone conference provided in the preceding paragraph. Although there will be occasions when divergent views will be difficult to reconcile in telephone conferences, it should be possible in most cases to reach agreement without delay. In interest of promptness and dispatch it may at times be advisable for the forecaster at the more remote Center to defer to the judgment of the Center having paramount responsibility, unless there are definite and tangible reasons for not doing so. In the event certain items are unresolved, the advisory or bulletin should usually express the alternate possibilities since it is to be assumed that when expert forecasters have differing views either may be right and the public should be fully warned of the possibilities.

3. The hurricane advisories and bulletins issued by all Forecast Centers and other Field Offices which are authorized channels for issuances in any particular case will be identical with those issued by Miami and the District Forecast Center having paramount responsibility. No advisory or bulletin differing in wording from that issued by Miami and the responsible Center will be issued by other Centers or offices, and any local warnings or statements supplementing the official advisories or bulletins should avoid amplifications that would be likely to be interpreted as contradictory and therefore confusing to the public. In order that III-B-5010 may be brought into agreement with the foregoing, the word "bulletin" should be replaced by the word "statement" wherever it appears in the heading and body of that paragraph and its sub-paragraphs: a, b, c, and d.

4. All advisories and bulletins should be standard in form and sequence and should use simple, clear and unambiguous wording and should define the degree of emergency, the geographical extent, the time period, and other features required by the public in order to know what action and precautionary measures are necessary.

While the instructions in this Circular Letter refer specifically to advisories and bulletins on hurricanes, they apply also to issuances on tropical storms of less than hurricane intensity.

F. W. Reichelderfer,
Chief of Bureau

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU
WASHINGTON

January 24, 1958

IN REPLY, PLEASE ADDRESS
CHIEF, U. S. WEATHER BUREAU
WASHINGTON 25, D. C.
AND REFER TO

FILE: 610.2 CL 29-56 (Amendment) (Civil Defense Fallout Winds)

AMENDMENT TO
CIRCULAR LETTER NO. 29-56

0-4.23

TO : All First-Order Stations

FROM : Chief of Bureau

SUBJECT : Civil Defense Fallout winds

REFERENCE : Circular Letter No. 29-56, dated August 15, 1956, Subject: Computation of Civil Defense Fallout Winds; File:610.2

Effective February 1, 1958, the 5,000-foot fallout wind will no longer be computed or transmitted. Observers are also reminded that the time group should be coded in accordance with the UF Code; i.e., the time of observation, not transmission time, should be coded.

For F. W. Reichelderfer.

WASHINGTON, D. C.
1-24-58

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU
WASHINGTON

August 23, 1956

CIRCULAR LETTER NO. 30-56
(To All First Order Stations)

Subject : Prognostic Charts Prepared by the Joint Numerical Weather Prediction Unit.

Reference: CL 44-55, November 3, 1955, "Transmission of JNWP Prognostic Charts on Service C"

CL-16-56, April 24, 1956, "Information on Barotropic Forecasts Prepared by the NMWP Unit" (FILE 630.1)

Beginning 2 July 1956, the thermotropic, two level model replaced the baroclinic, three level model for the JNWP 36-hour, 500 millibar prognostic charts that are being encoded for Service C transmission (FUUS). These prognostic charts are still based on 1500Z data. Description of the thermotropic model is attached.

The JNWP Unit is planning to make certain minor improvements in the barotropic forecasts as soon as operational problems are solved. A description of these changes and their effect on the 72-hour 500 millibar prognostics being distributed via facsimile will be distributed in the near future.

F. W. Reichelderfer
Chief of Bureau

Attachment

FILE: 630.1
x 811.4

CL 30-56 (Prognostic Charts Prepared by the Joint Numerical Weather Prediction Unit)
WASHINGTON, D.C.
8-23-56

ATTACHMENT, C.L. No. 30 -56

Joint Numerical Weather Prediction Unit

1. Introduction

The JNWP Unit on 2 July 1956 began daily issuance of numerical forecasts based on the equations for the so-called "thermotropic" model---a relatively simple barcclinic model in which it is possible to include the effects of major terrain features, and other effects not incorporated in the current 3-level model. Comments on the general quality and usefulness of these forecasts are particularly solicited.

2. The Model

In its present form, the thermotropic model differs from the operational 3-level model in four important respects. They are:

(1) Its state is characterized by the heights of only two isobaric surfaces, located at 1000 and 500 mb. This is advantageous from the standpoint of reducing the amount of initial data to be processed, but naturally results in the loss of some resolving power in the vertical.

(2) The thermotropic model includes the effect of large-scale topographical features, whereas the current 3-level model does not.

(3) The equations for the 3-level model are "linearized," to the extent of replacing the absolute vorticity and static stability (where they enter undifferentiated in the vorticity and adiabatic equations) by constant standard values; the absolute vorticity varies freely in the equations for the thermotropic model.(*)

(4) Since the equations for the thermotropic model require less computing time per grid point, it has been possible to extend the grid over about four times the area now covered by the 3-level forecasts, without a substantial increase in total computing time. The use of a larger grid is expected to reduce errors due to incorrect specification of lateral boundary conditions.

The most restrictive approximations remaining in the thermotropic model are (**):

(1) The direction of the vertical wind shear is constant with height.
(2) The static stability is constant.
(3) As in virtually all extant models, vorticity and horizontal advection of all quantities are computed from the geostrophic wind.

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*The coefficient of the divergence term is not computed from the geostrophic absolute vorticity, but from an approximation to the nongeostrophic vorticity suggested by Shuman in JNWP Unit Tech Memo No. 9.

** The theory of the thermotropic model is outlined briefly in an article by Thompson and Gates in the April 1956 issue of the Journal of Meteorology, and is discussed more fully by Thompson in the August 1953 Progress Report of the GRD-AWS Numerical Prediction Project.

3. Data Preparation

The initial data required by this experimental forecasting system are the heights of the 1000 and 500 mb. surfaces at 1020 grid points, spaced about 200 miles apart in both directions. The grid is a roughly square array (30x34 points), centered on N. America, and extending eastward over the N. Atlantic to W. Europe, westward over the N. Pacific to Japan, northward over the Pole to Siberia, and southward to 20°N. The forecasts are computed daily from upper air data taken at 1500Z (1000 EST). The data are plotted in the conventional manner, and the charts are analyzed manually. The heights of the 1000 and 500 mb. surfaces at the grid points are then interpolated "by eye," and punched on cards. The deck of data cards is usually completed and checked by 1700 EST.

4. Computation of forecast

Shortly after 1700 EST, the deck of data cards is combined with the instruction deck and loaded into the computing machine. From this point onwards, the machine proceeds automatically, printing out 12, 24, and 36 hour forecasts at intervals of about 40 minutes --- i.e. at about 1740, 1820, and 1900 EST.

5. Output Information

At the present time, quantities predicted include the heights of the 1000 and 500 mb. surfaces over the grid area described in Section 3. Heights are expressed in units of tens of feet. As indicated earlier, the predictions are valid 12, 24, and 36 hours after map time. The machine automatically "shades in" regions over which the height lies within previously specified ranges, so that it is an easy matter to draw contours around the edges of those regions.

This system also produces 12, 24, and 36 hour forecasts of vertical air speed at the 500 mb. level.

6. Comments

Comparative forecasts based on the thermotropic model, (a) with and without effect of mountains, and (b) with and without "linearization." have been completed for a limited number of cases. The tests carried out so far indicate that:

1) the quality of the forecasts is improved by including the effects of both the mountains and nonlinearity, but is not much improved by including either alone.

2) The quality of the"thermotropic" forecasts over the larger grid is slightly higher than that of the 3-level forecasts over the present operational grid. A part of this improvement is undoubtedly due to greater freedom from boundary errors in the central portions of the grid.

3) The thermotropic forecasts suffer less from excessive anticyclogenesis in cold polar highs, but still reflect a tendency to overpredict the "buildup" of warm ridges when the SW flow originates in low latitudes. This defect is also present in the current 3-level forecasts and the barotropic forecasts.

file

c.1

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU
Washington 25, D. C.

August 31, 1956

0-5

JPW 9/5

CIRCULAR LETTER NO. 31-56
(To All First Order Stations)

Subject: Coordination of Hurricane Bulletins

Reference: Circular Letter No. 27-56 and Memorandum 0-5.34 of July 19, 1956 Addressed to Hurricane Forecast Centers Only

As originally issued, Circular Letter No. 27-56 required that hurricane advisories be coordinated; it also provided for coordination of bulletins because these releases often contain new information on the location and intensity of the hurricane. The data used sometimes permit of various opinions as to the location and strength of the storm. When different interpretations of this kind exist at the time a bulletin is prepared they could, if not coordinated, result in the release of information that would compromise or bias coordination of a subsequent advisory. For these reasons the principle of inter-office coordination should be followed so far as practicable in connection with bulletins as well as with advisories.

There are practical limits, however, on the number of calls and the amount of forecasters' time that can be profitably devoted to coordination. . . . It is suggested that in order to avoid consuming an undue amount of the forecaster's time in bulletin coordination conferences, the regular bulletins issued midway between the scheduled advisories be coordinated during the conferences initiated by NWAC for coordination of prognostic charts. These conferences at about 1:30 and 6:45 a.m. and p.m. EST regularly include the Miami Office and the forecast center having paramount responsibility. A third forecast center can be called into the conference whenever it seems likely that decisions to be made will affect the area for which that office is responsible. Under this plan the office issuing the bulletin should make it a point to see that the forecast center responsible for the adjoining area is consulted whenever the decisions to be made appear likely to be of immediate concern to that area. The office responsible for the adjoining area may also take the initiative in asking to be called into the conference.

F. W. Reichelderfer,
Chief of Bureau

FILE: 656.4 CL 31-56 (Coordination of Hurricane Bulletins)

Washington, D.C.
8-31-56

File

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU
Washington 25, D. C.

September 5, 1956 O-5.32

JPW 9/6

CIRCULAR LETTER NO.32-56
(To All First-Order Stations)

Subject: State Forecasts (FP) for Kansas

Reference: Circular Letter No. 22-56

Circular Letter No. 22-56 contained instructions for further decentralization of state forecasting in the Kansas City forecast district. Plans outlined in the Circular Letter were changed somewhat in that WBAS Omaha was not established as a state forecast center until September 1. Also, WBFC Kansas City has continued to make the state forecasts (FP) for Kansas. Arrangements have now been made to complete the state forecast center program in the Kansas City district by establishing WBAS Topeka as a state forecast center for Kansas.

Guidance material, in mapped and written form, will be furnished from the District Forecast Center at WBFC Kansas City in their guidance forecasts (FP-1) for the use of Topeka in issuing state forecasts for Kansas. WBFC Kansas City will continue to be responsible for the coordination of warnings covering cold waves, heavy snow, etc. Technical information dealing with warnings of this type, including area and time coverage, will be included in the FP-1 whenever feasible and at intermediate times will be transmitted by telephone, telegraph, or RAWARC from the district forecast center to Topeka. Topeka will be responsible for the phraseology of the warning and for its release to the public via all available channels including Service "C" but technical information in all statewide warnings will be in agreement with the views expressed by WBFC Kansas City. Discussions between Topeka and WBFC Kansas City in order to coordinate warnings (or forecasts) are encouraged and may be initiated by either office.

In regard to severe local storm forecasts, the SELS Center will continue to coordinate with the district forecast center as heretofore and the information will then be passed along to Topeka as quickly as possible. Topeka will be expected to contact WBFC Kansas City on any questions about tornado forecasts. Tornado warnings (evidence of tornado activity already reported) will continue under present arrangements (WB. Manual III-B-1802) with no prior coordination required.

Action is also being taken to transfer to Topeka the responsibility for issuance of the Shippers' Temperature Forecast Bulletin (FM) for Dodge City. No change will be made in quantitative precipitation forecasting (QPF) responsibility at this time. The five-day forecasts (FE) will continue to be prepared by WBFC Kansas City for the Kansas area.

The tentative target date for these changes is October 1, 1956. The effective date will be announced by GENOT.

F. W. Reichelderfer

F. W. Reichelderfer
Chief of Bureau

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU
Washington 25, D. C.

September 14, 1956 0-4.23

JPW 9/20

CIRCULAR LETTER NO. 33-56
(To all First-Order Stations)

FILE: 041 x 610.3 x 458.5

Subject: Radar observations from stations of the Air Defense Command

Reference: 0-4.23 memos of 12-20-54 and 3-2-56, "Information on the WB Radar Program", File: 458.5, X 610.3

CL 33-56 (Radar Observations from Stations of the Air Defense Command)

Arrangements have been made with the Air Force for radar stations of the Air Defense Command (ADC) to make telephone calls direct to nearby Weather Bureau Offices to report strong radar echoes suspected to derive from severe storms. The attached list of stations indicates the Weather Bureau Offices to which the Air Defense Command radar stations will call.

Meteorologists in Charge of the Weather Bureau stations named in the list should contact the Commanding Officer of the appropriate radar site (in some cases, more than one site is involved) and discuss this program with him. It is believed that the ADC has issued authorizing instructions to its personnel. The Commanding Officer should be given the unlisted telephone number of the Weather Bureau that will insure quick delivery of the radar observations to us and advised regarding use of the precedence indicator for priority calls. Collect calls to our offices, if necessary, should be authorized. The radar observations should be placed upon the RAWARC circuit (if available) as soon as possible after receipt so that these data may be available to SELS and SWWC (Severe Weather Warning Center of the Air Force). However, it is the intention that the main use of these observations will be in the local warning program. Meteorologists in Charge are encouraged to work as closely as possible with the Commanding Officer of the radar site, consistent with security regulations, to insure that maximum use is made of the radar observations.

It is expected that additional stations will participate in this program as more Air Defense Command radars are installed. Should any Meteorologist in Charge of a Weather Bureau station not named herein be contacted by the Officer in Charge of a radar site, the program described herein should be established. Should the MIC learn of the establishment of a new ADC radar station, he should contact the CIC to establish the program.

WASHINGTON, D. C.
9-14-56

Please report to this office, attention 0-5.34, any arrangements that are made to establish the program outlined herein.

It is believed that radar observations from the ADC stations will be transmitted from the radar sites in modified plain language code with distances in nautical miles, speed in knots, and orientation in degrees magnetic. They should be reoriented with respect to true north before transmission (add easterly variation, subtract westerly from azimuth readings given by the ADC).

The FPS-3 is a 23 cm. radar having a peak power output of 650 kw., with pulse lengths of 3 and 6 microseconds, pulse repetition rates of 400 and 200 pps., a horizontal beam width of 1.3 degrees, and range of more than 200 nautical miles. The CPS-6B is a 10 cm. radar having peak power output of 700 kw., with a pulse length of 1 and 2 microseconds, pulse repetition rates of 600 and 300 pps., a horizontal beam width of 1 degree, and a range of more than 200 nautical miles. The location of the stations in latitude and longitude and type of equipment (FPS-3 or CPS-6B) is unclassified. *

For the present, transmission of these reports will be confined to RAWARC where available. Authorization for these transmissions has already been issued. In the event WB stations other than those having access to RAWARC receive ADC Rareps, we would appreciate being so informed. Information of this nature would be helpful in future planning.

An effort is now being made to obtain location identifiers for those stations listed in the attachment. If this can be done, additional assignments will be made upon hearing from individual offices that such identifiers are necessary for ADC Rareps.

* The MPS-7 is similar to the FPS-3

F. W. Reichelderfer
Chief of Bureau

Attachment

ATTACHMENT

Weather Bureau stations to which ADC sites would telephone their radar observations of severe local storms

LOCATION N. LAT.	W. LONG.	STATION NAME	RADAR TYPE	NEAREY WEATHER BUREAU STATION
35-24	108-21	Continental Divide AFS, N. M.	FPS-3	Albuquerque
36-36	106-30	Tierra Amarilla AFS, N. M.	FPS-3	Albuquerque
40-23	73-59	Highlands AFS, N. J.	CPS-6B	Newark
42-01	70-03	North Truro AFS, Mass.	CPS-6B	Boston
43-53	69-55	Brunswick NAS, Me.	CPS-6B	Portland
44-46	73-03	St. Albany AFS, Vt.	CPS-6B	Burlington
47-22	88-10	Calumet AFS, Mich.	FPS-3	Marquette
46-30	95-06	Wadena AFS, Minn.	FPS-3	St. Cloud
43-53	95-56	Chandler AFS, Minn.	FPS-3	Sioux Falls
45-02	89-14	Antigo AFS, Wisc.	FPS-3	Green Bay
42-37	82-49	Selfridge AFB, Mich.	CPS-6B	WBAS, Detroit City Airport
43-08	78-50	Lockport AFS, N. Y.	CPS-6B	Buffalo
48-52	109-55	Havre AFS, Mont.	FPS-3	Havre
48-52	106-24	Opheim AFS, Mont.	FPS-3	Glasgow
48-54	103-52	Fortuna AFS, N. D.	FPS-3	Williston
48-00	101-17	Minot AFS, N. D.	FPS-3	Bismarck
47-30	97-52	Finley AFS, N. D.	FPS-3	Fargo
41-21	76-17	Benton AFS, Pa.	CPS-6B	Scranton
42-37	88-32	Williams Bay AFS, Wis.	CPS-6B	Madison
44-48	86-03	Empire AFS, Mich.	CPS-6B	Muskegon
45-15	92-38	Osceola AFS, Wis.	CPS-6B	LaCrosse
36-11	84-13	Lake City AFS, Tenn.	CPS-6B	Knoxville
38-26	81-40	Gutherie AFS, W. Va.	FPS-3	Charleston
41-04	71-52	Montauk AFS, N. Y.	FPS-3	WBO, New York
37-55	97-53	Hutchinson AFS, Kans.	CPS-6B	Wichita
43-55	75-54	Watertown AFS, N. Y.	FPS-3	Syracuse
43-01	73-41	Saratoga Springs AFS, N. Y.	FPS-3	Albany
35-02	105-49	Moriarity AFS, N. M.	FPS-3	Albuquerque
35-24	97-21	Tinker AFS, Okla.	CPS-6B	Oklahoma City
39-46	87-15	Rockville AFS, Ind.	CPS-6B	Indianapolis
39-14	74-41	Palermo AFS, N. J.	FPS-3	Atlantic City
38-37	77-26	Quantico MAS, Va.	FPS-3	Norfolk
37-07	75-57	Cape Charles AFS, Va.	FPS-3	Norfolk
44-01	83-00	Port Austin AFS, Mich.	FPS-3	WBAS, Detroit City Airport
41-13	80-33	Brookfield AFS, Ohio	FPS-3	Youngstown

LOCATION N. LAT.	W. LONG.	STATION NAME	RADAR TYPE	NEARBY WEATHER BUREAU STATION
40-17	78-33	Claysburg AFS, Pa.	FPS-3	Harrisburg
40-17	92-34	Kirksville AFS, Mo.	CPS-6B	Columbia
45-05	69-05	Charleston AFS, Me.	FPS-3	Portland
46-27	84-23	Sault Ste. Marie AFS, Mich.	FPS-3	Sault Ste. Marie
42-20	85-16	Ft. Custer AFS, Mich.	FPS-3	Lansing
37-09	92-52	Fordland AFS, Mo.	FPS-3	Springfield
47-27	91-14	Finland AFS, Minn.	FPS-3	Duluth
38-28	89-54	Belleville AFS, Ill.	FPS-3	St. Louis
41-21	96-01	Omaha AFS, Nebr.	FPS-3	Omaha
38-50	94-54	Clathe NAS, Kans.	FPS-3	Topeka
40-22	83-43	Bellefontaine AFS, Ohio	FPS-3	Columbus
29-23	98-37	Lackland AFS, Texas	FPS-3	San Antonio
36-45	96-04	Bartlesville, AFS, Okla.	CPS-6B	Tulsa
32-38	96-51	Duncanville AFS, Tex.	CPS-6B	Dallas
29-36	95-10	Ellington AFB, Tex.	CPS-6B	Houston
46-58	67-50	Coswell AFS, Me.	CPS-6B	Caribou
42-41	92-29	Waverly AFS, Iowa	CPS-6B	Waterloo
37-53	86-00	Godman AFS, Ky.	FPS-3	Louisville
40-51	89-49	Hanna City AFS, Ill.	FPS-3	Peoria
27-55	82-30	McDill AFB, Fla.	MPS-7	Tampa
44-20	103-10	Ellsworth AFS, S. D.	MPS-7	Rapid City
35-30	101-40	Amarillo AFB, Tex.	MPS-7	Amarillo
46-25	105-50	Miles City AFS, Mont.	MPS-7	Billings
33-30	94-00	Texarkana AFS, Ark.	MPS-7	Texarkana
32-20	106-58	Las Cruces AFS, N. M.	MPS-7	Albuquerque
32-55	80-05	Charleston AFS, S. C.	MPS-7	Charleston

c.1

UNITED STATES DEPARTMENT OF COMMERCE

WEATHER BUREAU

Washington 25, D. C.

October 9, 1956 0-5.14

SRW 10/19

CIRCULAR LETTER NO. 36-56
(To All First Order Stations)

Subject: Transmission of 24-hour amounts of precipitation - SR Sequence Service "C".

Attached to this letter are new and revised instructions regarding preparation and transmission of precipitation bulletins for stations whose precipitation amounts are transmitted on Service A teletype. These bulletins are available daily on Service "C" in the "SR" sequence. All previous instructions on the subject are superseded by this Circular Letter.

F. W. Reichelderfer
Chief of Bureau

Attachment

FILE: 630.1 CL 36-56 (Transmission of 24-hour Amounts of Precipitation - SR Sequence Service "C") WASHINGTON, D. C. 10-9-56

ATTACHMENT

Twelve Weather Bureau Offices have been selected to prepare the 24-hour precipitation bulletin for stations whose precipitation amounts are transmitted on Service A. The offices preparing these bulletins for the "SR" are listed below:

Station	Service A Circuit	Pcpn Circuit	Service C Circuit
WBAS, Hartford, Conn.	8001	1	30
WBAS, Fort Wayne, Ind.	8002	2	33
WBAS, Knoxville, Tenn.	8003	3	31
WBAS, Montgomery, Ala.	8004	4	31
WBAS, Kansas City, Mo.	8005	5	32
WBAS, Omaha, Nebr.	8006	6	33
WBAS, Sioux City, Iowa	8007	7	33
WBAS, Austin, Texas	8008	8	32
WBAS, Albuquerque, N. Mex.	8009	9	35
WBAS, Helena, Mont.	8010	10	34
WBO, Portland, Oreg.	8011	11	34
WBAS, Fresno, Calif.	8012	12	35

These bulletins will be placed on Service "C" daily by the compiling stations in accordance with scheduled "SR" time and will include all stations on the circuit that report a trace, or more, of precipitation for the 24-hour period ending at 0730 EST. The symbolic form for this bulletin is as follows:

IIIR, IIIRR, IIIRRR and IIIRRRR

In this particular case III will be considered the symbolic form for three letter identifications. R, RR, RRR, and RRRR are symbolic forms for precipitation.

Examples:

3 Letter Identifications	24-Hour Amounts of Precipitation	Coded As
MRB	Trace	MRBT
MRB	.09	MRB9
MRB	.68	MRB68
MRB	.99	MRB99
MRB	1.03	MRB103
MRB	10.98	MRB1098

MISSING AND DOUBTFUL DATA

There are stations that currently enter the 24-hour precipitation amount on Service A although they are not on a 24-hour operational basis. This is done in accordance with instructions in circular N, Paragraph 10159. Requests to have additional stations participate in this program should be forwarded to Central Office for consideration. In cases where the 6-hourly sequence is badly garbled, missing, or doubtful, the collection centers will enter an "X" sign to indicate each missing 6-hour period. The bulletin will be entered in the "SR" sequence as follows:

Example:

BDL PCPN CKT-1
UCA 47 ELM3X POU77XX CRH22XXX LEBXXXX etc.

In the above example, precipitation data are available for UCA for 24-hours, at ELM for 18-hours, at POU for 12-hours, at CRH for 6-hours, and at LEB data are not available for any of the 6-hourly periods for the current 24-hour period.

If no precipitation is reported on the Service "A" circuit for the 24-hour period, the following form will be used:

FUA PCPN CKT-2 NONE

When the Service "C" teletype transmitting machine at any of the designated collection centers is inoperative or garbling is shown on the circuit during the "SR" collection, the precipitation bulletin will be filed as delayed weather (PDW) as soon as practicable.

In times of severe weather, reports of heavy precipitation may be missing or garbled and PDW reports not available on Service A. In such cases the river district office (not necessarily the collection center) in whose area of responsbility these stations fall should obtain by the most practical means the amount of precipitation for the missing periods. Telephone, telegraph or emergency radio networks should be used in obtaining these reports. Transmission of these data should be made in the regular SR river message for the river district office or by RAWARC.

PRECIPITATION FROM AIR WEATHER STATIONS

There are 4 Air Force Circuits (SAUS 90, 91, 93 and 94) on which precipitation data from Air Weather Stations are transmitted. The data for the majority of these stations are relayed to Service A. Since many of these stations are located at strategic points some distance from Weather Bureau synoptic or airways stations, precipitation reports are of value in river forecasting. It is important therefore that these precipitation reports available on the various circuits of Service "A" should be tabulated and transmitted in the precipitation bulletins on Service "C", SR sequence at the end of the group of regular Airway Stations. The instructions listed previously will apply also to the Air Force Stations. A list of the military stations in the United States from which 24-hour precipitation reports should be tabulated and transmitted on Service "C" are grouped below:

AIR WEATHER SERVICE STATION	CALL LETTERS	W.B.STATIONS COLLECTING DATA	AIR WX SERVICE CKT	PCPN CKT
Sumter, S.C.,Shaw AFB	SSC	Knoxville, Tenn.	93	3
Dover, Del.,Dover AFB	DOV	" "	91	3
Aberdeen, Md.,Phillips Field	APG	" "	91	3
Valpariso, Fla.,Eglin Field	VPS	Montgomery, Ala.	93	4
Panama City,Fla.,Tyndall AFB	PAM	" "	93	4
Cocoa, Fla.,Patrick AFB	COF	" "	93	4
Valdosta, Ga., Moody,AFB	VAD	" "	93	4
Greenville, Miss.,Greenville AFB	GVS	" "	93	4
Biloxi, Miss.,Keesler AFB	BIX	" "	93	4

AIR WEATHER SERVICE STATION	LETTERS	W. B. STATIONS COLLECTING DATA	AIR EX SERVICE CKT	PCFN CKT
Columbus, Ind., Bakalar AFB	CLU	Kansas City, Mo.	91	5
Belleville, Ill., Scott AFB	BLV	" "	91	5
Rantoul, Ill., Chanute AFB	RAN	" "	91	5
Hopkinsville, Ky., Campbell, AFB	HOP	" "	93	5
Warrensburg (Knob Noster) Mo., Whiteman AFB	SZL	" "	94	5
Oscoda, Mich., Oscoda AFB	OSC	Omaha, Nebr.	91	6
Lincoln, Nebr., Lincoln AFB	LNK	Sioux City, Iowa	94	7
Big Spring, Tex., Hamilton Airport	BGS	Austin, Texas	90	8
Fort Sill, Okla., Post AAF	FSI	" "	90	8
Enid, Okla., Vance, AFB	END	" "	90	8
Perrin AFB, Texas	PNX	" "	90	8
Killeen, Texas, Gray AFB	GRK	" "	90	8
Clovis, N. Mex., Clovis AFB	CVS	" "	90	8
Alamogordo, N.Mex., Holloman AFB	ALM	Albuquerque, N. Mexico	90	9
Spokane, Wash, Fairchild AFB	SKA	Helena, Mont.	94	10
Odgen, Utah, Hill AFB	HIF	" "	94	10
Mountain Home, Idaho, Mountain Home AFB	MUO	Portland, Oreg.	94	11
Victorville, Calif., George AFB	VCV	Fresno, Calif.	90	12
Muroc, Calif., Edwards AFB	EDW	" "	90	12
Riverside, Calif., March AFB	RIV	" "	90	12
Fairfield, Calif., Trans AFB	SUU	" "	94	12
Sacramento, Calif., Mather AFB	MHR	" "	94	12
Merced, Calif., Castle AFB	MER	" "	94	12

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU
Washington 25, D. C.

JPW 10/17

October 17, 1956 0-4.23

CIRCULAR LETTER NO. 37-56
(To All First-Order Stations)

Subject: Special rawinsondes for fallout winds

Owing to the importance which would be attached to fallout winds in the event of an enemy attack upon this country, stations now participating in this program will take a special rawinsonde observation for fallout purposes if a local yellow alert is received. Thereafter observations will be taken four times daily (0300, 0900, 1500, and 2100 GCT) as long as the alert continues. THIS DOES NOT APPLY TO TEST ALERTS.

The observation will be taken and evaluated as soon as possible after receipt of the alert. First priority will be given to that portion of the evaluation which is required for the computation of the fallout winds. The fallout winds (UF) will be transmitted promptly on Service C and the RAWARC Circuit, if available, using "ZZZ Emergency" procedures when necessary to insure prompt transmission of the reports. The associated raob and winds-aloft data will then be completed and will also be placed on Service C and the RAWARC Circuit as time permits, but the emergency designation will not be used for this purpose.

Where local arrangements have not already been completed for the station to receive actual alerts, such arrangements should be made with local Civil Defense authorities. MIC's of all Weather Bureau stations will inform local Civil Defense officials that emergency fallout winds will be available in the event of a real emergency.

F. W. Reichelderfer

F. W. Reichelderfer
Chief of Bureau

FILE: 610.2 CL 37-56 (Special Rawinsondes for Fallout Winds) WASHINGTON, D. C. 10-17-56

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU
WASHINGTON

JPW
11/5/56

October 31, 1956

IN REPLY, PLEASE ADDRESS
CHIEF, U. S. WEATHER BUREAU
WASHINGTON 25, D. C.
AND REFER TO

C-2.1

FILE: 038.5 CL 38-56 (Certification of Times of Sunrise and Sunset)

CIRCULAR LETTER NO. 38-56

TO : All First Order Stations

FROM : Chief of Bureau

SUBJECT: Certification of times of Sunrise and Sunset

It has come to our attention that certifications of official sunrise and sunset are being furnished to law offices. Technically, the U. S. Naval Observatory, Washington 25, D. C. is responsible for determinations of sunrise and sunset. Therefore, requests for such certification should be forwarded to the Observatory.

F. W. Reichelderfer

WASHINGTON, D. C.
10-31-56

C.1

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU
WASHINGTON

JPW
11/6/56

November 1, 1956

IN REPLY, PLEASE ADDRESS
CHIEF, U. S. WEATHER BUREAU
WASHINGTON 25, D. C.
AND REFER TO
0-5.23

FILE: 633 CL 39-56 (Location Identifiers of Rareps from Air Defense Command (ADC) and Civilian Stations) WASHINGTON, D. C. 11-1-56

CIRCULAR LETTER NO. 39-56

TO : All First-Order Stations

FROM : Chief of Bureau

SUBJECT : Location Identifiers of Rareps from Air Defense Command (ADC) and Civilian Stations

REFERENCE : Circular Letter No. 33-56; September 14, 1956

Circular letter No. 33-56 indicated that location identifiers would be obtained for certain ADC stations. Such assignments have already been made and are listed in the attachment. They should be used on long-line circuits wherever appropriate. It will be observed that they differ from those previously assigned to reporting points in as much as numerals and letters are combined.

The CAA has pointed out that the use of a different system was necessary because of insufficient three letter identifiers to take care of the present number of Rarep reporting points, as well as the expanded number of these and other types of reporting stations anticipated. Wherever practicable, established identifiers were used.

An effort will be made to have the identifiers as representative of the location as possible: i.e., 3AN-Antigo AFS, Wis., 3CH-Chandler AFS, Minn., etc. The numeral shows the CAA Regional Area with the exception of the number 7, which indicates that the station is located in the First Regional Area. Although thought was given to including the latitude and longitude of these stations in the "Location Identifiers" manual, the CAA has felt that to do so would unduly lengthen and complicate the listings.

We would appreciate being informed whenever the need for additional identifiers should arise. A brief notice on this subject will also appear in the "Airmen's Guide" as soon as feasible.

F. W. Reichelderfer

F. W. Reichelderfer

Attachment

ATTACHMENT

Location Identifier	Reporting Point
4DV	Continental Divide AFS, New Mexico
4TX	Tierra Amarilla AFS, New Mexico
7HX	Highlands AFS, N. J.
NTR	North Truro AFS, Mass.
NHZ	Brunswick NAS, Maine
7AL	St. Albany AFS, Vermont
CUT	Calumet AFS, Michigan
3WN	Wadena AFS, Minnesota
3CH	Chandler AFS, Minn.
3AN	Antigo AFS, Wisconsin
MTC	Selfridge AFB, Mich.
7LK	Lockport AFS, New York
HVR	Havre AFS, Montana
4OP	Opheim AFS, Montana
3FA	Fortuna AFS, N. Dakota
3MI	Minot AFS, N. Dakota
3FY	Finley AFS, N. Dakota
7TO	Benton AFS, Pa.
3WB	Williams Bay AFS, Wis.
3EM	Empire AFS, Michigan
3OS	Osceola AFS, Wisconsin
2LA	Lake City AFS, Tenn.
7GU	Gutherie AFS, W. Va.
MTP	Montauk AFS, New York
3HU	Hutchinson AFS, Kansas
7WT	Watertown AFS, N. Y.
7PG	Saratoga Springs AFS, N.Y.
4MY	Moriarity AFS, N. Mexico
TIK	Tinker AFS, Oklahoma
RKV	Rockville AFS, Indiana
7AO	Palermo AFS, N. J.
NYG	Quantico MAS, Virginia
CCV	Cape Charles AFS, Va.
3PA	Port Austin AFS, Mich.
7OO	Brookfield AFS, Ohio
7BG	Claysburg AFS, Pa.
3KV	Kirksville AFS, Mo.
7CZ	Charleston AFS, Maine
3SS	Sault Ste. Marie AFS, Michigan
3FT	Ft. Custer AFS, Mich.
3FO	Fordland AFS, Missouri
3FI	Finland AFS, Minnesota
BVX	Belleville AFS, Ill.
3OM	Omaha AFS, Nebraska
NUU	Olathe NAS, Kansas
7BF	Bellefontaine AFS, Ohio
LAB	Lackland AFS, Texas
BVO	Bartlesville AFS, Okla.
DCV	Duncanville AFS, Texas
EFD	Ellington AFB, Texas
7OS	Coswell AFS, Maine
3WY	Waverly AFS, Iowa
FTK	Godman AFS, Kentucky
3HC	Hanna City AFS, Ill.
MCF	McDill AFB, Florida
RCA	Ellsworth AFS, S. D.
AMA	Amarillo AFB, Texas
MLS	Miles City AFS, Mont.
TXK	Texarkana AFS, Ark.
LCN	Las Cruces AFS, N. Mex.
CHS	Charleston AFS, S. C.

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU
WASHINGTON

JPW 11/13

November 2, 1956

IN REPLY, PLEASE ADDRESS
CHIEF, U. S. WEATHER BUREAU
WASHINGTON 25, D. C.
AND REFER TO

0-5.34

FILE: 656 x 042 CL 40-56 (Community and Industrial Planning for Potential Disasters) WASHINGTON D. C. 11-2-56

CIRCULAR LETTER NO.40-56

TO : All First Order Stations

FROM : Chief of Bureau

SUBJECT : Community and Industrial Planning for Potential Disasters.

REFERENCE: NAED Newsletter dated August 17, 1956

We recently received the attached Newsletter from the Executive Director of the National Association of Electrical Distributors. This Special Report urges Electrical Distributors to begin planning now for possible disasters. Although it is aimed primarily at flood disasters the points made apply in some degree to other types of weather disasters (hurricanes, tornadoes, severe snow storms, etc.) and to other industries.

It is felt that the following points, emphasized in the NAED Newsletter, provide excellent guidance for Weather Bureau officials who may be asked to assist communities or industries in developing their emergency plans:

1. Develop a plan in writing tailored to fit the type of disaster and the industry concerned. Make it known to all personnel affected.

2. Be prepared - even if the disaster does not develop.

3. "Disregard the theory that it can't happen to you."

4. Consult sources of disaster information -- the Weather Bureau, Red Cross. (Note that the Empire Flood Bill described on pages 2 and 3 of the Newsletter places on the Office Manager the responsibility for keeping in touch with the latest weather and/or condition reports.)

In addition to the points listed above the NAED "plan" develops the concept that the responsibility for keeping in touch with storm or flood developments rests with the individual, community official or industry. This is where we believe the responsibility rests; not on the Weather Bureau. That is, the Weather Bureau should do everything possible to get out accurate and timely warnings to as many people as possible but in the last analysis we cannot accept the responsibility for delivering the warning to each person in the affected area. We should, however, aid business and industry groups, communities, etc., to develop plans for using the warnings effectively.

F. W. Reichelderfer

F. W. Reichelderfer,
Chief of Bureau

Attachment

NAED NEWSLETTER

August 17, 1956

SPECIAL REPORT: FLOOD-DISASTER PROGRAM

A flood gives short notice--it is thorough--it is unrelenting. Racing waters flash along the valleys of dozens of creeks and streams. Raging waters pour into rising rivers. Many square miles of city and countryside are swept by sullen, slimy, destructive water. Some lives are lost: much property is destroyed or damaged.

The flood recedes. Then mud--stinking mud that covers everything. Food stocks ruined. Drinking water contaminated. Homes wrecked. Power lines down. Gas and sewage disrupted. Roads washed away. Factories knocked-out. Machinery upended or buried under many feet of silt. Files water soaked, important papers lost forever. Debris of every description everywhere. The whole community affected. The whole community at a standstill.

The cause of the sudden disaster? Heavy rains, a hurricane, a tornado--does it matter? The damage is done. A rapid return to "routine" living is in order. Time for a cleanup. How long will it take to recover? That depends on everyone; everyone must help. But a few can help more than others!

The electrical wholesale distributor is one of these. As a vital part of his community's life, the distributor's operations must remain as full functioning as possible in case of flooding or similar disaster. Unless he is wiped out, the distributor can function--to varying degrees--if he is prepared. Now! Before a disaster strikes, is the time to plan.

This NAED "flood-disaster" program is not the plan. It offers ideas, suggestions, not set cure-alls. It recommends: that the wholesaler sit down with his key personnel and THINK about possible prevention. Set up a plan suited to his company's needs. Develop a plan for potential disaster -- one designed to protect his own establishment; and to alert the community so the various civil authorities, relief units, businessmen, will be made aware that the electrical wholesale distributor is ready and able to come through and supply his necessary, specialized aid with his firm's full resources.

After food, medicine and shelter, electricity is the next requisite into a flooded area--it is essential for power. And electrical equipment is needed to put the power to work. Because of their unique qualifications, electrical wholesale distributors are needed--men who know what to do, when to do it, how to do it quickly.

The effects of a flood cannot be fully appraised immediately. At first, damage estimates will vary widely. Communications are disrupted, rumors abound. The distributor's most important problem is that he should quickly convince his customers, his community, that he is still operating and will continue to do so. Word-of-mouth; radio; telephone, if any; newspaper later. Get the true facts across.

Time is required to ascertain what must be done. There will be short-range and long-range considerations. Experience shows there will be a "run" on certain electrical materials, equipment. An adequately stocked electrical wholesaler can take care of almost all foreseeable demands. Some emergency measures, though, are necessary--measures to be taken covering procedures, special supplies. Firms with undamaged or slightly-damaged inventories are able to meet most orders. Manufacturers, or branch houses, can be called on for additional help.

It is advisable that a priority system be set-up beforehand. The service given during a disaster will long be remembered. For example, a large industrial account can deplete vital stocks quickly, leaving little, if anything, for the distributor's regular customers and emergency cases. If this happens the distributor might as well not be functioning.

The flood cannot be anticipated. The clean-up can, in part. What it will take, and how long, depends on the extent of damage. A great deal of preventive and constructive measures should be considered before a disaster strikes.

The long range. Disregard the theory that it can't happen to you. It just might happen. Prevention is often better than the cure. If planning a new building, cast a weather-eye towards paths of potential floods, other hazards. With an established location, a provision might be made for a temporary headquarters in event the distributor is forced from his building.

In preparing for an emergency, try to come to an understanding with local civil authorities, so that personnel and trucks will be able to operate as effectively as possible. Perhaps police or Civil Defense identification might be obtained authorizing personnel to enter stricken areas. Sources of disaster information--the Weather Bureau, Red Cross--should also be consulted.

Think about: relocation of all or part of physical stocks; certain structural changes in the building; warehouse shelving (especially in low-lying areas); employee relations; emergency duties of key personnel; emergency stocks, provisions.

For example. Some distributors in flood-threatened sections have relocated and rearranged their stocks from the standpoint of good, economical storage and handling facilities, plus adequate flood protection. It has been noted there was no particular inconvenience as to everyday handling of goods. In low areas, concrete blocks may be used to support 12-inch high platforms for storage of large carton goods--air conditioners, coolers, built-ins. Or decking can be provided under wire and cable, raising reels and boxes about six-inches above the floor.

Employee relations are extremely important. Experience has shown jobs should be re-arstored as soon as possible after flooding. All employees should be called back at once, not just the high-salaried workers and, then later, the hourly workers. Many firms also see to it that their payroll department is fully staffed and operating! The employees collect their pay --on schedule--for work done prior to the flood. There will be more than enough work for everyone to do. And employees, too, have long memories. More important, they'll need their money.

Special duties. Heads of various departments can be delegated special duties to be put into action in case of impending flood. One of the best examples of such a program is contained in the "Flood Bill" of Empire Supply Co., Inc., Visalia, Calif. Their plan "came about as the result of a flood in 1951, which, although it threatened to cause us some damage, actually did not affect us. The 'heat' of doing something about it was brought about by the December, 27, 1955, flood and the recurrence of surplus waters which hit us in January, 1956..."

The Empire "Flood Bill", in part, provides that... "the following steps shall be taken by department heads:

"Office manager--secure all reserves of stationery and supplies in the stationery storage room. The general office area will be protected by others, but all office records are to be located a minimum of 12-inches off the office floor. Particularly...the bottom drawers of filing cabinets, etc., which can be placed on desks and counters. The radio should be turned on to the local station supplying the community with flood news. The office manager will keep the general manager informed as to the latest weather and/or condition reports. At the direction of the general manager, the office manager will place calls to bring in outside salesmen to assist the counter supervisor and head shipper.

"Head counter supervisor--shall call Rembac's Blockyard at RE 2-1894 or J.J. Simon Co. at RE 4-5373 for two truckloads of sand. On arrival of sand, direct that sand be dumped in the yard area for easiest use. Direct the installation of Sisalkraft paper around both warehouse buildings, using wood strips (1x2) purchased for this purpose. Paper shall be laid flat on the ground surface and raised to a height of approximately 2-1/2 ft. and nailed in place behind the strips running horizontal to the ground. As paper is being placed, direct the dumping of sand on top of paper lying on the ground to form a water seal around the buildings. Direct the placement of sand bags over the storm drain opening in the N.E. corner of Main and Burke Sts. It is located next to the stop sign, in the gutter, Direct placement of sandbags on top of Sisalkraft paper at all door openings.

"Head shipper and receiver--with your crew, relocate all floor stock necessary and possible to a height of approximately 12-inches above the floor level in both buildings...using reserve stocks of lumber and building materials. Our truck can be loaded with excess stocks, if necessary. On arrival of sand in yard area, construct a sand ring or dam around wire storage bins and around reel storage area. Bring emergency pump, hose and plastic pipe into main building...

"General manager--will contact local trucking concerns whose facilities we normally use to obtain spare vans and trailers for temporary storage of surplus goods...will make neccessary arrangements to advise families of our personnel in event normal working schedule is interrupted. Will make arrangements as necessary, for warm, dry clothing, sleeping facilities and food. Will advise California Highway Patrol, Fire and Police Departments, Sheriff's Office, County and City p.a.'s of our ability to supply materials for emergency use."

This is part of a plan developed by one wholesale distributor. Prior precautions had already been taken. Empire Supply believes that, "in following the procedure as outlined, we will be taken care of nicely in the future."

Advance planning must include emergency health safeguards for the wholesaler's establishment. Some are: canned food, drinking water, empty cans for waste disposals, disinfectants, first aid kits, perhaps even clothing. Useful tools: hammers and nails, hatchets, saws, pliers, crow-bars, wrenches, spades, shovels, pumps. Don't neglect: flashlights, batteries, candles, kerosene lamps. Caution note: check basement, in particular electrical installations, oil burner motors. Also watch gas flames, pilot lights--advisable to shut off valves. A handy item: a battery operated radio for flood, disaster information reports. This list could go on and on. Make up your own check-list, one suited to your own needs, circumstances.

After the initial shock, first requests generally run towards flashlights, batteries, tape, fuses, portable generators, heat lamps, dehumidifiers, hot plates--materials and equipment for quick aid work. Later demands are for mostly large orders, more permanent items, due to better, more complete damage reports.

In the end, the distributor will have to set up his own dispersion system. Possible orders should be measured against inventory. In addition to the aforementioned priority system, others might include an allotment system, first-come-first-served, utility work, municipal service for relief work, or variations and combinations. It's quite likely that counter and telephone service might have to be maintained 24 hours a day. Delivery schedules will, in most cases, vary.

Salesmen especially, and other company personnel, are familiar with the surrounding area. Their special knowledge should be put to good use in rescue, relief, rehabilitation work. As soon as possible, salesmen might visit industrial customers, and others, in their respective territories, to assess electrical damage, with the view of getting essential supplies into those places as soon as possible. The work-giving industries--the source of livelihood for the community--must get back into action quickly.

Arrangements might have to be made for the extension of credit to hard-hit customers. Oftentimes current bills have to be deferred. Repayment plans, in some cases, will have to be worked out. Manufacturers, banks, may have to be called in.

Despite continual weather forecasting improvement, it is, in many instances, next to impossible--even with full hydrologic and topographic gear--to get an accurate forecast out in appreciable time. On large rivers--because of control projects and warning systems--flood stages can be accurately forecast and something done to combat or offset the rising water. But when it comes to forecasting a flood warning on small rivers, innumerable streams and creeks, you come to a dead end. These flash floods give little warning; are most unexpected.

In many stricken New England states, heavy rains fell below control dams. The subsequent floods were below these dams, in places where it was difficult to build levees or which had never experienced a flood. Another area around Denver that was subjected to a flash flood this summer, was drought-stricken a year ago!

Many towns, cities are more prepared now to mobilize manpower, equipment than they were a year ago. Most such aid, though, is of a stopgap nature--of necessity. For the most part, permanent flood control programs are in early planning stages and will not be completed for several years.

Communities, mostly in disaster-stricken areas, have improved on flood warning systems, but still, three and four years and a great deal of money are needed for adequate protection. A recent survey, undertaken by hard-hit Connecticut, indicated that some localities, if not all, would sustain similar damage losses today if the comparable disaster of 1955 happens to reoccur. Much has been done. Much remains to be done. It takes time and money.

Past flood-disasters have brought forth no set rehabilitation pattern for businesses, residential communities. Banks in disaster areas have loaned money to business victims at low interest rates. Other business resources, state and local agencies also have helped out.

The Small Business Administration--which makes disaster loans at 3%--in its fiscal year report ending June 30, 1956, approved over 5,000 loans--almost twice as many as in previous years. More than 3,000 loans were disaster loans--averaging $13,400. In New England, S.B.A. loans totaled close to the agency's limit assigned such loans--$23 million. Naturally, additional funds would have been made available. But this was only one section of the country, and the time covered only a few months!

Most insurance policies do not contain flood coverage clauses. In the past such coverage has been prohibitive. The recently-signed Federal Flood Insurance Act is "admittedly experimental" in nature. The government says it ultimately intends to vacate the field in favor of the private insurance industry. The Federal Government is not in the flood insurance business. The act provides for the government to lead the way, to enable this field of responsibility to be absorbed into the private system in the shortest time.

Individuals and businessmen can buy the new insurance. The insurance would not cover the first $100 of flood damage. Maximum coverage for a home would be $10,000. No individual or company could get insurance totaling more than $250,000. The government will decide what rate is to be charged and then pay up to 40% of the fee. The policy-holder will pay the remaining 60%. For a fee less than the insurance premium, a person could buy the right to get a Federal loan in case he sustains damages resulting from flood.

The act says that a flood includes "any flood, tidal wave, wave wash, or other abnormally high tidal water, deluge or the water component of any hurricane or other severe storm, surface landslide due to excess moisture, and shall have other meaning as may be prescribed by regulation." The program is under the Housing and Home Finance Agency.

As was noted in the beginning. This is not the plan. Ideas and suggestions have been made. It is up to you--individually--to act. You know better than anyone else. THINK ABOUT IT.

c.2

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU
WASHINGTON

November 30, 1956

IN REPLY, PLEASE ADDRESS
CHIEF, U. S. WEATHER BUREAU
WASHINGTON 25, D. C.
AND REFER TO
0-5.32

FILE: 630

CL 41-56

CIRCULAR LETTER NO. 41-56

TO: All First-Order Stations

FROM: Chief of Bureau

SUBJECT: Use of "Downtown Data"

REFERENCE: 0-5.32 Circular Letter No. 39-55 dated August 10, 1955, Subject: Use of "Downtown Data", File 630

(Use of "Downtown Data")

Cities for which "Downtown Data" are transmitted were listed in Circular Letter No. 39-55. On or about December 1, 1956, Chicago will be added to the list but will transmit temperature data only from the new Grant Park installation. Other cities transmitting these data are: Portland, Maine; Charleston, S. C.; Duluth, Minn.; Miami, Florida; Corpus Christi, Texas, and Los Angeles, California. The reports are coded in accordance with Paragraph 6.2 of Manual for Synoptic Code, First Edition and transmitted with the 1230 and 0030Z (0730 and 1930 EST) reports.

In addition, the offices at West Palm Beach, Florida and Asheville, North Carolina include "downtown temperature data" in the Service A hourly report twice daily. The maximum temperature for the preceding 12 hours is added to the 0030Z (1930E) report and the minimum temperature for the preceding 12 hours is added to the 1230Z (0730E) report. The "downtown data" follows the airport maximum or minimum temperature in the additive portion of the hourly report. Two slants (//) are used to separate the airport and downtown temperatures, e.g., 93//88.

"Downtown Data" will be used in all temperature and precipitation bulletins released to the public.

For F. W. Reichelderfer

NOTE: Circular Letter No. 39-55 is superseded by this Circular and may be removed from files and destroyed.

WASHINGTON, D. C.
11-30-56

C.2

FILE: 770 x 630

CL 42-56

(The Facsimile Chart Program of the National Weather Analysis Center)

WASHINGTON, D. C. 12-4-56

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU
WASHINGTON

December 4, 1956

IN REPLY, PLEASE ADDRESS
CHIEF, U. S. WEATHER BUREAU
WASHINGTON 25, D. C.
AND REFER TO
0-5

CIRCULAR LETTER NO. 42-56

TO: All First Order Stations

FROM: Chief of Bureau

SUBJECT: The Facsimile Chart Program of the National Weather Analysis Center

The material that follows has been prepared to describe the type of charts prepared in the National Weather Analysis Center for facsimile transmission. Information is included to explain the collection of observational data, preparation of the various charts, analyses transmitted, and the identification of symbols used with facsimile material.

It is expected that further revisions in this material will be necessary from time to time as program changes are made. Minor changes will be distributed as "pen and ink" corrections; for major changes revised pages will be furnished.

We would appreciate suggestions from field offices regarding additions to or revisions of this descriptive material on the National Weather Analysis Center to make it more useful.

This Circular Letter is a revision of Circular Letter No. 32-55 and therefore Circular Letter No. 32-55 should be removed from files and destroyed.

F. W. Reichelderfer

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU
WASHINGTON

DESCRIPTION OF CHARTS TRANSMITTED

OVER THE

WEATHER FACSIMILE NETWORK

CIRCUIT 1R2

NOVEMBER 1956

Table of Contents

Charts and Illustrations

Figure

Commerce-Weather Bureau, Washington, D. C.

INTRODUCTION

Many different types of charts are analyzed in the National Weather Analysis Center (NWAC). Of these, some are transmitted over the Weather Facsimile Network, while others are used as auxiliary charts within the Analysis Center. Only the transmitted charts are described here.

The facsimile charts are composed of sets of different types of lines: continuous lines (light and heavy), broken lines, dashed lines, and dotted lines. These are sufficient for transmission purposes since no chart has more than three sets of lines. However, the same type of line must be used for different elements of analysis on different charts. On the following pages an attempt has been made to define the various uses of these lines. Examples of the different charts together with brief descriptions of them have also been included.

For those who are interested in a more detailed treatment of the basic ideas, operational program and chart preparation of the National Weather Analysis Center, four references are available. Two articles have appeared in the B.A.M.S. and the Navy Department has issued a publication on the National Weather Analysis Center. The first article (1) explains the basic ideas of "Central Analysis." The other article (2), although considerably out of date, explains in some detail the operation of the National Weather Analysis Center. The Navy publication (3) is more technical; it not only explains the various charts but also goes into the scientific basis for the prognostic procedures used in the Analysis Center in 1952. Many changes have been made since 1952, but this publication continues to be the basic explanation of National Weather Analysis Center operations, analyses, and prognostic procedures. A new book (4) has appeared which develops the subject of synoptic analysis along the lines now practiced in the NWAC.

The Facsimile circuit is operated by the Air Force (AF/AACS) over AT & T lines using Times Facsimile transmitters and receivers, mainly, although MUFAX and ALDEN receivers are also used.

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(1) Holzman, B. G. "The Separation of Analysis and Forecasting - A New Basis for Weather Service Operations." Bulletin American Meteorological Society, Vol. 28, 281-293, June 1947.

(2) Vederman, J., "The Weather Bureau-Air Force-Navy Analysis Center," Bulletin American Meteorological Society, Vol. 30, 335-341, December 1949.

(3) U. S. Navy Department, "Practical Methods of Weather Analysis and Prognoses." Office Chief of Naval Operations, NA50-IP-502, November 1952.

(4) Saucier, W. J., Principles of Meteorological Analysis Uni. of Chicago Press, 1955.

NATIONAL WEATHER ANALYSIS CENTER
FACSIMILE SCHEDULE
REVISED OCT. 1, 1956

P	M	C	E	Z					
1600	1700	1800	1900	0000	1	21Z WINDS ALOFT Upper Levels			ULUS
1622	1722	1822	1922	0022	2	21Z WINDS ALOFT Lower Levels			ULUS
1644	1744	1844	1944	0044	3	15Z TROPOPAUSE SEC. I			AUHN 9
1706	1806	1906	2006	0106	4	PROGNOSTIC COMPOSITE SEC. I 30 HR. SFC. V.T. 0030Z 36 HR. 500 MB. V.T. 0300Z			FXHN
1728	1828	1928	2028	0128	5	700 MB. PROG. 36 HR.-V.T. 03Z SEC. I — 24 HOUR PRECIPITATION			FUHN 7
1750	1850	1950	2050	0150	6	PROGNOSTIC COMPOSITE SEC. II 30 HR. SFC. V.T. 0030Z 36 HR. 500 MB. V.T. 0300Z			FXHN
1812	1912	2012	2112	0212	7	15Z 300 MB. ANAL SEC. II			AUHN 3
1834	1934	2034	2134	0234	8	0030Z SFC. ANAL. SEC. I			ASHN
1856	1956	2056	2156	0256	9	COMPOSITE CHART 0030Z — 12 HR. PRES. CHGE. — MAXIMUM TEMPERATURES — 6 HR. PRECIPITATION — CLOUDS			AXUS
1918	2018	2118	2218	0318	10	300 MB. PROG. 36 HR.-V.T. 03Z SEC. I			FUHN 3
1940	2040	2140	2240	0340	11	200 MB. PROG. & 150 MB. WINDS 36 HR. - V.T. 03Z SEC. I			FUHN 2
2002	2102	2202	2302	0402	12	0030Z SFC. ANAL. SEC. II			ASHN
2024	2124	2224	2324	0424	13	15Z 700 MB. ANAL SEC. II			AUHN 7
2046	2146	2246	2346	0446	14	15Z 500 MB. ANAL SEC. III			AUHN 5
2108	2208	2308	0008	0508	15	15Z 500 MB. ANAL SEC. IV			AUHN 5
2130	2230	2330	0030	0530	16	5 DAY OBS. Prepared by Extended Fcst. — MON., WED. & FRI.			APUS*
2200	2300	0000	0100	0600	17	5 DAY FORECASTS A — Prepared by Extended Fcst — MON., WED. & FRI.			FSUS
2222	2322	0022	0122	0622	18	03Z WINDS ALOFT Lower Levels			ULUS
2244	2344	0044	0144	0644	19	5 DAY FORECASTS 'B' on Mon. Wed. & Fri. 03Z WINDS ALOFT Upper levels on other days			FSUS
2306	0006	0106	0206	0706	20	COMPOSITE CHART 03Z — FREEZING LEVEL SNOW COVER & STABILITY			AXUS I
2328	0028	0128	0228	0728	21	03Z 850 MB. ANAL SEC. I			AUHN 8
2350	0050	0150	0250	0750	22	SFC. PROG. 36 HR-V.T. 1230Z SEC. I			FSHN
0012	0112	0212	0312	0812	23	03Z 500 MB. ANAL SEC. I			AUHN 5
0034	0134	0234	0334	0834	24	0630-SFC. ANAL.- SEC. I 0300Z-1000-500 MB. THICKNESS			ASHN
0056	0156	0256	0356	0856	25	03Z 700 MB. ANAL SEC. I			AUHN 7
0118	0218	0318	0418	0918	26	03Z 500 MB. ANAL SEC. II			AUHN 5
0140	0240	0340	0440	0940	27	03Z 700 MB. ANAL SEC. II			AUHN 7
0202	0302	0402	0502	1002	28	0630Z-SFC. ANAL.-SEC. II 0300Z-1000-500 MB. THICKNESS			ASHN
0224	0324	0424	0524	1024	29	03Z 300 MB. ANAL SEC. I			AUHN 3
0246	0346	0446	0546	1046	30	03Z 150 MB. ANAL SEC. I			AUHN I
0308	0408	0508	0608	1108	31	03Z 200 MB. ANAL SEC. I			AUHN 2
0338	0438	0538	0638	1138	32	03Z 300 MB. ANAL SEC. II			AUHN 3

P	M	C	E	Z					
0400	0500	0600	0700	1200	33	09Z WINDS ALOFT Upper Levels			ULUS
0422	0522	0622	0722	1222	34	09Z WINDS ALOFT Lower Levels			ULUS
0344	0544	0644	0744	1244	35	03Z TROPOPAUSE SEC. I			AUHN 9
0506	0606	0706	0806	1306	36	PROGNOSTIC COMPOSITE SEC. I 30 HR. SFC. - V.T. 1230Z 36 HR. 500 MB. V.T. 1500Z			FXHN
0528	0628	0728	0828	1328	37	700 MB. PROG. 36 HR. - V.T. 15Z SEC. I — 24 HOUR PRECIPITATION			FUHN 7
0550	0650	0750	0850	1350	38	PROGNOSTIC COMPOSITE SEC. II 30 HR. SFC. - V.T. 1230Z 36 HR. 500 MB. - V.T. 1500Z			FXHN
0612	0712	0812	0912	1412	39	0030Z SFC. ANAL SEC. III			ASHN
0634	0734	0834	0934	1434	40	1230Z SFC. ANAL SEC. I			ASHN
0656	0756	0856	0956	1456	41	COMPOSITE CHART 1230Z — 12 HR. PRES. CHGE. - MINIMUM TEMPERATURES — 6 HR. PRECIPITATION - CLOUDS			AXUS
0718	0818	0918	1018	1518	42	300 MB. PROG. 36 HR. - V.T. 15Z SEC. I			FUHN 3
0740	0840	0940	1040	1540	43	200 MB. PROG. & 150 MB. WINDS 36 HR. - V.T. 15Z SEC. I			FUHN 2
0802	0902	1002	1102	1602	44	1230Z SFC. ANAL SEC. II			ASHN
0824	0924	1024	1124	1624	45	0030Z SFC. ANAL SEC. IV			ASHN
0846	0946	1046	1146	1646	46	CIRCUIT LINE-UP			
0908	1008	1108	1208	1708	47				
0930	1030	1130	1230	1730	48				
1000	1100	1200	1300	1800	49				
1022	1122	1222	1322	1822	50	15Z WINDS ALOFT Lower Levels			ULUS
1044	1144	1244	1344	1844	51	15Z WINDS ALOFT Upper Levels			ULUS
1106	1206	1306	1406	1906	52	COMPOSITE CHART 15Z — FREEZING LEVEL SNOW COVER & STABILITY			AXUS I
1128	1228	1328	1428	1928	53	15Z 850 MB. ANAL SEC. I			AUHN 8
1150	1250	1350	1450	1950	54	PROGNOSTIC COMPOSITE SEC. I 48 HR. SFC. - V.T. 1230Z 48 HR. 500 MB. - V.T. 1500Z			FXHN 5
1212	1312	1412	1512	2012	55	15Z 500 MB. ANAL SEC. I			AUHN 5
1234	1334	1434	1534	2034	56	1830Z-SFC. ANAL.-SEC. I 1500Z-1000-500 MB. THICKNESS			ASHN
1256	1356	1456	1556	2056	57	15Z 700 MB. ANAL SEC. I			AUHN 7
1318	1418	1518	1618	2118	58	PROGNOSTIC 72 HR. 1000 MB SEC. I V.T. 03Z — Prepared by USAF	FUHN		KWAF
1340	1440	1540	1640	2140	59	15Z 500 MB. ANAL SEC. II			AUHN 5
1402	1502	1602	1702	2202	60	1830Z-SFC. ANAL.-SEC. II 1500Z-1000-500 MB. THICKNESS			ASHN
1424	1524	1624	1724	2224	61	PROGNOSTIC BAROTROPIC 72 HR. 500 MB. SEC. I — Prepared by JNWP V.T. 03Z	FUHN 5		KWAF NR5
1446	1546	1646	1746	2246	62	15Z 300 MB. ANAL SEC. I			AUHN 3
1508	1608	1708	1808	2308	63	15Z 200 MB. ANAL SEC. I			AUHN 2
1538	1638	1738	1838	2338	64	15Z 150 MB. ANAL SEC. I			AUHN I

* FEHN "30DAY OUTLOOK FCST." TRANSMITTED ON 1ST & 15TH. THIS CHART IS AVAILABLE APPROXIMATELY EVERY 15 DAYS. IF THE 1ST OR 15TH IS ON MON., WED., OR FRI., THE CHART WILL BE TRANSMITTED THE FOLLOWING DAY.

TYPES OF FAX CHARTS AND THEIR FACSIMILE TRANSMISSION NUMBERS AS SHOWN ON FACSIMILE SCHEDULE

1.	Winds Aloft	1, 2, 18, 19[b], 33, 34, 50, 51
2.	Tropopause	3, 35
3.	Prognostic Composite	4, 6, 36, 38, 54
4.	Upper Air Progs	5, 10, 11, 37, 42, 43
5.	Upper Air Analyses	7, 13, 14, 15, 21, 23, 25, 26, 27, 29, 30, 31, 32, 53, 55, 57, 59, 62, 63, 64
6.	Surface Analyses	8, 12, 24, 28, 39, 40, 44, 45, 56, 60
7.	Surface Prog	22, 58[a]
8.	Composite Charts	9, 20, 41, 52
9.	Extended Forecast Charts	
	5 day observations	16[c]
	5 day forecasts "A"	17[c]
	5 day forecasts "B"	19[c]
	30 day outlook	16[d]
10.	Numerical Weather Prediction	61
11.	Circuit Line-up	46, 47, 48, 49

It should be noted that charts of the same type have transmission numbers which are cyclic with respects to 32. That is, the chart with transmission number "1" is the same type as that with number "33."

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a. Prepared and transmitted by U. S. Air Force, Air Weather Service.
b. Except on Monday, Wednesday, and Friday
c. Monday, Wednesday, and Friday
d. Twice a month (near 1st and 15th of each month)

TYPES OF LINES AND OTHER FAX SYMBOLS

Tropopause "break-line" (also "intermediate" contours and isobars).

Height contours or surface isobars

Height contours for the higher level when analyses or progs for two different levels are shown on the same chart

Isotherms when shown on upper-air analyses.

Isotachs when shown on upper-air analyses and progs. "JET MAX," when it exists, is shown by region within relatively small area of closed isotachs.

Jet stream or axis of maximum (50 knots or more) wind speed.

Zero Change)
) Isallobars on 12 hr.
Plus Change) Pressure Change Chart
)
Minus Change)

Outline on high cloud shield covering 6/8ths or more of sky.

Outline of middle cloud shield covering 6/8ths or more of sky.

Outline of area where precipitation is occurring.

Snow depth lines (One inch depth and 6 inch depth of snow are shown on the freezing level chart).

Dew point line (Isodrosotherms are shown on 850 mb Analysis only)

1000-500 mb thickness lines on 0630Z and 1830Z surface analyses only.

The dotted and dashed lines are applied to the charts with inked wheels. The continuous and broken lines are applied with a pencil.

DEFINITION OF LINES AND DATA ON FACSIMILE CHARTS

Contours on the upper level constant pressure charts are the lines drawn through all points having the same height. Thus, the contours of the constant pressure surface correspond to the contours with which we are familiar on an ordinary topographic map of the earth's surface.

Isobars on the surface (sea level) map are lines drawn through all points having the same sea level pressure.

Isotherms are lines drawn through all points having the same temperature at the level considered.

Isodrosotherms are lines drawn through all points having the same dew point temperature at that particular level.

Isotachs are lines drawn through all points having the same wind speed regardless of the direction of the wind.

The heavy lines with an arrowhead are the axes of the maximum flow in the wind field (strictly speaking, they are not jet streams).

Thickness lines indicate the vertical distance between two constant pressure levels. These are lines of constant mean virtual temperature also since the distance between two particular isobaric surfaces is a function only of the mean virtual temperature.

Virtual temperature is the temperature at which perfectly dry air under the same pressure would have the same density as the actual atmospheric air with its water vapor component. That is, the virtual temperature is higher than the temperature of the actual air by an amount which is directly proportional to the magnitude of the water vapor component. As the water vapor component increases, the density of the air decreases if the pressure and temperature remain constant.

The "Stability Index" is obtained by first, lifting a parcel of air adiabatically (dry and/or moist) from 850 mb to 500 mb; second, the temperature reached by this parcel at 500 mb is subtracted from the actual temperature at 500 mb. This difference is the "Stability Index;" plus values indicate stability; minus values indicate instability.

"Potential" temperature is the temperature that a parcel of air would have if it were compressed or expanded adiabatically (that is, mechanically, without adding heat to or removing heat from the parcel) to a standard pressure of 1000 mb. Potential temperature is usually expressed in degrees Celsius or degrees Absolute.

Verifying time of a prognostic chart is sometimes abbreviated to "V. T." followed by a 4 digit group indicating the Z time (sometimes a two digit date group precedes the time).

Tropopause: The "first tropopause" is defined as the lowest level at which the lapse-rate decreases to 2°C/km or less, and averages 2°C/km or less for at least 2 km above.

If at some level above the "first tropopause," the lapse-rate exceeds 3°C/km over at least 1 km then a "second tropopause" is usually present and is defined by the same criteria as the "first tropopause."

Isallobars are lines of equal pressure change. In the charts transmitted by FAX the changes are for 12 hour sea level pressure changes. "Plus" change lines are called anallobars and "minus" change lines katallobars.

Cloudiness areas are outlined to show high type or middle type clouds. The area where the sky is covered by 6/8ths or more of high clouds is bounded by a continuous line; the area covered by 6/8ths or more of middle clouds is bounded by a dashed line.

A dotted line bounds the area over which precipitation is occurring at the time of the map.

A stippled area (24 hour precipitation) on the 700 mb. 36 hr. prog indicates where one inch or more of precipitation is expected.

DESCRIPTION OF THE DIFFERENT TYPES OF FAX CHARTS

1. Winds Aloft Cha rts

Winds aloft are plotted in the "5 and 10" system. Each full barb on the wind arrows is 10 knots and a half barb is 5 knots; a pennant is 50 knots. The arrows fly with the wind. In order to make the data from the radiosonde network available to the field in plotted form before the analyses are made at the National Weather Analysis Center, the data for 850 mb are plotted on the 4000 ft. Winds Aloft chart; the 700 mb data are plotted with the 10,000 ft. winds; and the 500 mb data are plotted with the 20,000 ft. winds.

2. Tropopause Chart

The tropopause chart shows the analysis of the radiosonde data at the height of the tropopause over the North American area. The consensus is that three main tropopause "leaves" usually exist in the atmosphere over an area as extensive as the one here considered. The lowest of the three leaves is the Polar Tropopause which is usually at about 300 mb or 27°C potential 1/ temperature. The Subtropical Tropopause is usually at about 200 mb or 52°C potential temperature. The highest leaf is the Tropical Tropopause at about 100 mb or 127°C potential temperature. The "break lines" are drawn so as to give the lower of two leaves the greater areal extent where the observations show that the lower leaf is the dominant one at that particular point. There are frequently two break lines on the chart: one for the break between the Polar and the Sub-tropical tropopauses and another for the break between the Sub-tropical and the Tropical tropopauses.

3. Prognostic Composite Charts

Two different sets of these charts are transmitted: one set is for 30 hr surface and 36 hr 500 mb prognostics; the other is for 48 hr surface and 48 hr 500 mb prognostics. The 30 hr and 48 hr surface progs are shown by isobars at intervals of 4 mb or multiples of 4 mb. The frontal systems are shown according to the model for printed fronts. 2/ The centers of high and low pressure are indicated with an "H" and "L" respectively. Trough lines and ridge lines are shown when necessary by long dashed and zig-zag lines respectively. The centers have arrows to show the direction of movement at verifying time 3/ and the accompanying number gives the speed in knots.

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1. Definition of Potential temperature p 5.
2. Refer to example of printed fronts, fig. 3.
3. V.T. verifying time, p. 6.

The 500 mb prognostic contours are shown by dashed lines at intervals of 200 ft. or multiples of 200 ft. The troughs and ridges at 500 mb are usually displaced 200 or 300 miles to the west of the corresponding troughs and ridges at the surface. However, because of the 3 hour difference in V.T. 3/ of the 30 hr surface and the 36 hr 500 mb portions of the one prog the 500 mb trough and ridge lines are usually shown more nearly vertical above the corresponding troughs and ridges of the surface prog.

Many charts transmitted during the second half of the 24 hour period are the same as those transmitted during the first half except that the time is different.

4. Upper Air Progs

Fronts are shown on the 700 mb prog when the frontal surface is well defined at that level. The fronts conform to the printed models. 4 / The contours at 700 mb are usually at 200 ft intervals except during the summer months when 100 ft intervals are used over part of the map where necessary to define the pattern. During the summer the contour gradient frequently becomes rather weak south of latitude 50°N. A stippled area is shown on the 700 mb prog for 0300Z or 1500Z when one inch or more of precipitation is expected within the 24 hour period ending at 0300 Z or 1500Z, respectively.

The contours on the 300 mb and 200 mb progs are at intervals of 400 ft or multiples of 400 ft. Isotachs are drawn at 25 knot intervals and the jet stream is indicated by a heavy line with an arrowhead.

The 150 mb prog consists of wind vectors plotted at selected latitude-longitude intersections on the 200 mb prog.

The 72 hour 500 mb prog is prepared by the Joint Numerical Weather Prediction unit (JNWP) using their barotropic model.

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3. V.T. verifying time, p. 6.
4. Refer to examples of printed model, fig. 3.

5. Upper Air Analyses

All upper-air constant pressure analyses show contours of height as continuous lines at intervals of 100, 200, or 400 ft. and also isotherms as dashed lines at intervals of 5°C. The 850 mb chart is the only one that shows the dew point lines; these are dotted lines at intervals of 10°C. Fronts are shown on the 850 mb chart and at 700 mb when they are well defined at these levels. The higher levels, 300, 200, and 150 mb, have isotherms and also isotachs, lines of equal wind speed. The isotachs are shown as dotted lines at intervals of 25 knots up to 150 knots and at intervals of 50 knots above that speed; a heavy line with an arrowhead is shown on the analysis through the axis of maximum wind speed as indicated by the isotach analysis. The number within the highest valued isotach indicates the maximum speed in knots.

6. Surface Analyses

Surface analyses have isobars at 4 mb intervals with fronts shown according to the printed convention. The central pressure of highs and lows is shown by an underlined two digit number: the tens and units digits of the pressure in millibars. The direction and speed of the centers are shown by a vector whose length corresponds to the distance that the center will move in the next 6 hours. A three digit number in brackets is shown along each front; this number gives the type, intensity, and character of the front according to the U. S. Weather Analysis Code. Storm tracks showing positions at 6 hourly intervals over the preceding 24 hours are indicated on the 0630Z chart. Twice a day, on the 0630Z and the 1830Z surface charts, the thickness, 1000-500 mb, is shown by dotted lines at 200 ft. intervals.

7. Surface Prognostic Charts

Two prognostic charts are transmitted showing conditions for the surface or 1000 mb only. The surface chart is the 36 hour prognostic transmitted by NWAC with isobars, fronts, instantaneous movement vectors of the centers, and central pressures in tens and units of millibars.

The 1000 mb chart is the 72 hour prog from Air Weather Service. It has height contours at 200 ft intervals, with fronts according to the printed convention, and centers of highs and lows labeled with "H" and "L" respectively.

8. Composite Charts

These transmissions are made up of two or four small auxiliary charts. The transmissions made up of two charts are the freezing-level, stability and snow-cover set. On this set the contours of the freezing level are shown at intervals of 2000 ft with "BF" plotted at those stations where the surface temperature is below freezing (32°F. or 0°C). The stability chart outlines areas of stability and instability, obtained from the Stability Index 5/, at intervals of 4 units. Plus values indicate stability and minus values, instability. During the winter months the snow depth is shown on the freezing level chart. The reported depth of the snow cover is analyzed by drawing two dotted lines, one for the 1 inch and the other for the 6 inch cover of snow.

The transmissions made up of four charts are composed of 12 hr pressure changes, 6 hr precipitation amounts, cloud cover, and the maximum or minimum temperature observed in the preceding 12 hours. On the pressure change chart the zero change is put in as a heavy line, the plus changes at intervals of 4 mb are shown as continuous lines and the minus changes as dotted lines with the same interval. Precipitation data are plotted in hundredths of an inch at each station reporting occurrences of precipitation during the last six hours. Cloud cover is shown by outlining both the area reporting 6/8ths or more of high clouds and also the area reporting 6/8ths of middle type clouds.

In addition to cloud coverage, the area where precipitation is occurring at the time of observation is enclosed by a dotted line.

9. Extended Forecast Section Charts

On Monday, Wednesday, and Friday of each week (beginning at 0530Z), the Extended Forecast Section of the Weather Bureau transmits three groups of composite charts. The first group includes 4 maps giving the means of observed sea level pressure and of 700 mb heights for the 5 day period beginning 6 days ago, the departure of the 5 day mean surface temperature from normal, and the total 5 day precipitation in terms of heavy, moderate, light, or no rain. All of these are for the same five-day period.

The second group (set "A") of 5 day forecast charts consists of one containing 5 day mean sea level isobars and a temperature anomaly 6/ pattern for the next 5 days. The dates for which the forecast apply are

5. Definition of Stability Index, p. 5.

6. Weather Bureau Manual, Vol. III, Chapter B-30.

always stated explicitly on the charts. The second chart contains the prognostic 5 day mean 700 mb contours and the total precipitation expected in the next 5 days. The other two charts of the group are prognostic sea level charts for 24 hours and for 48 hours verifying at the synoptic times indicated on the individual charts.

The third group (set "B") of 5 day forecast charts contain 4 individual prognostic sea level charts for the 3rd, 4th, 5th, and 6th days verifying at the synoptic times indicated on the particular charts.

These charts are prepared and transmitted for use at field forecast offices. The charts actually cover a "6-day" period in order that the field stations may be enabled to prepare a full 5-day forecast for the public. However, the mean charts are for the 5-day period as indicated.

A fourth group of charts prepared by Extended Forecast shows the 30-day Outlook. This group is transmitted at 0530Z on the 1st and 15th of each month; if the 1st or 15th is on Monday, Wednesday, or Friday, the chart will be transmitted the following day. The group is composed of a prognostic 30-day mean of the 700 mb contours with the principal cyclone and anticyclone tracks for the period; a prognostic 30-day mean temperature chart, U.S. area only, showing areas predicted to be near normal, above or below normal, and much above or much below normal for the period; and a prognostic 30-day total precipitation chart, U.S. area only, showing areas expected to have heavy, moderate, or light precipitation for the entire period.

The classes into which the area is divided according to whether precipitation is expected to be light, moderate, or heavy and mean temperature near normal, etc., are converted to numerical values by reference to normal charts prepared by the Extended Forecast Section. The normals of temperature 7/ and the class limits for precipitation 7/vary from month to month so that the proper chart must be consulted for comparison.

10. Circuit Line-up

Four transmission periods have been reserved free of scheduled transmissions for the communications company to take over the line to check for line voltage and detection of any line trouble that may interfere with high quality reception of the facsimile charts.

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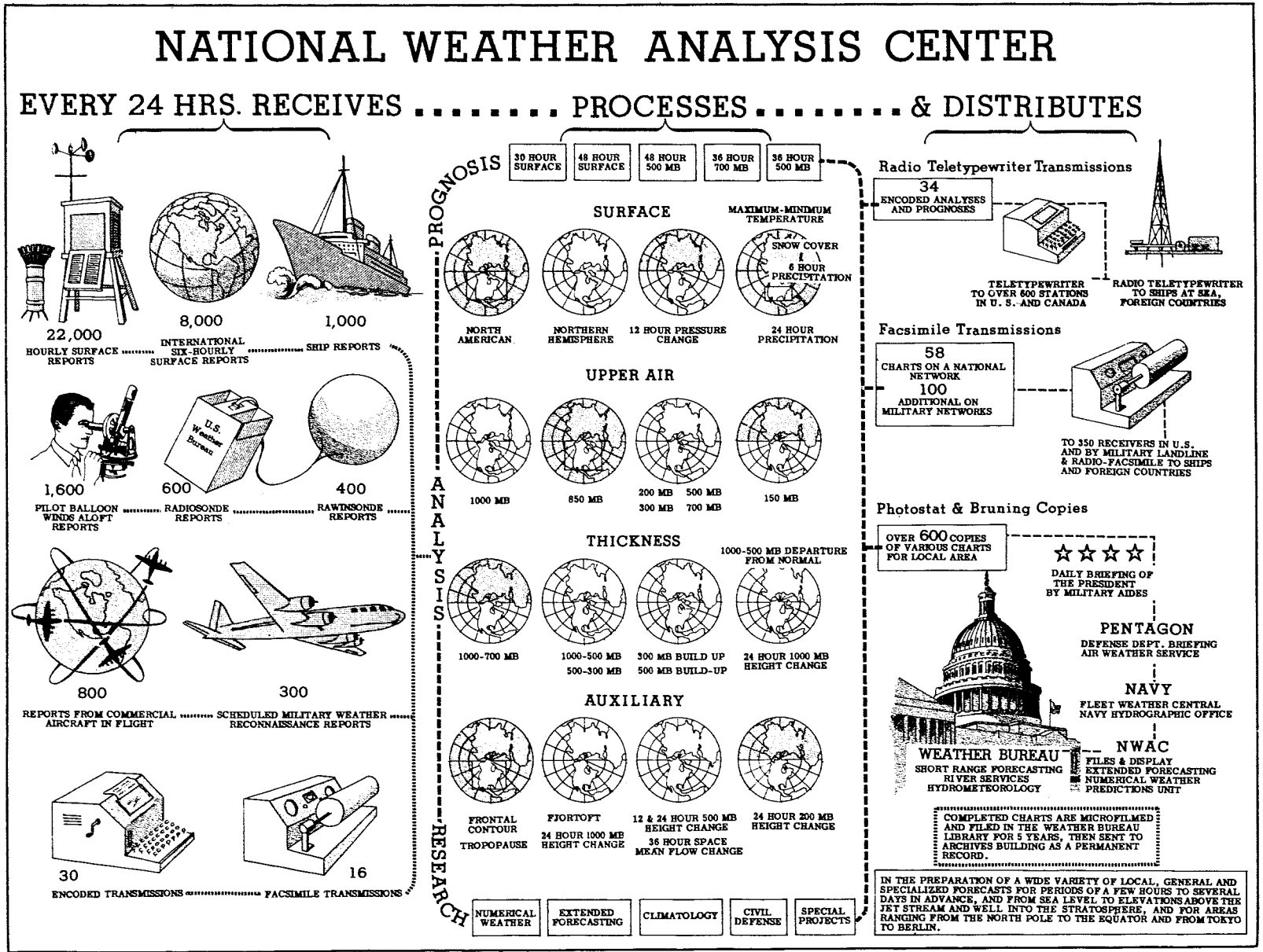
7. Weather Bureau Manual, Vol. III, Chapter B-30.

FIGURE 1: SCHEMATIC CHART OF ANALYSIS CENTER OPERATIONS.



L.S. 5622 U. S. DEPARTMENT OF COMMERCE, WEATHER BUREAU Aug. 31, 1956

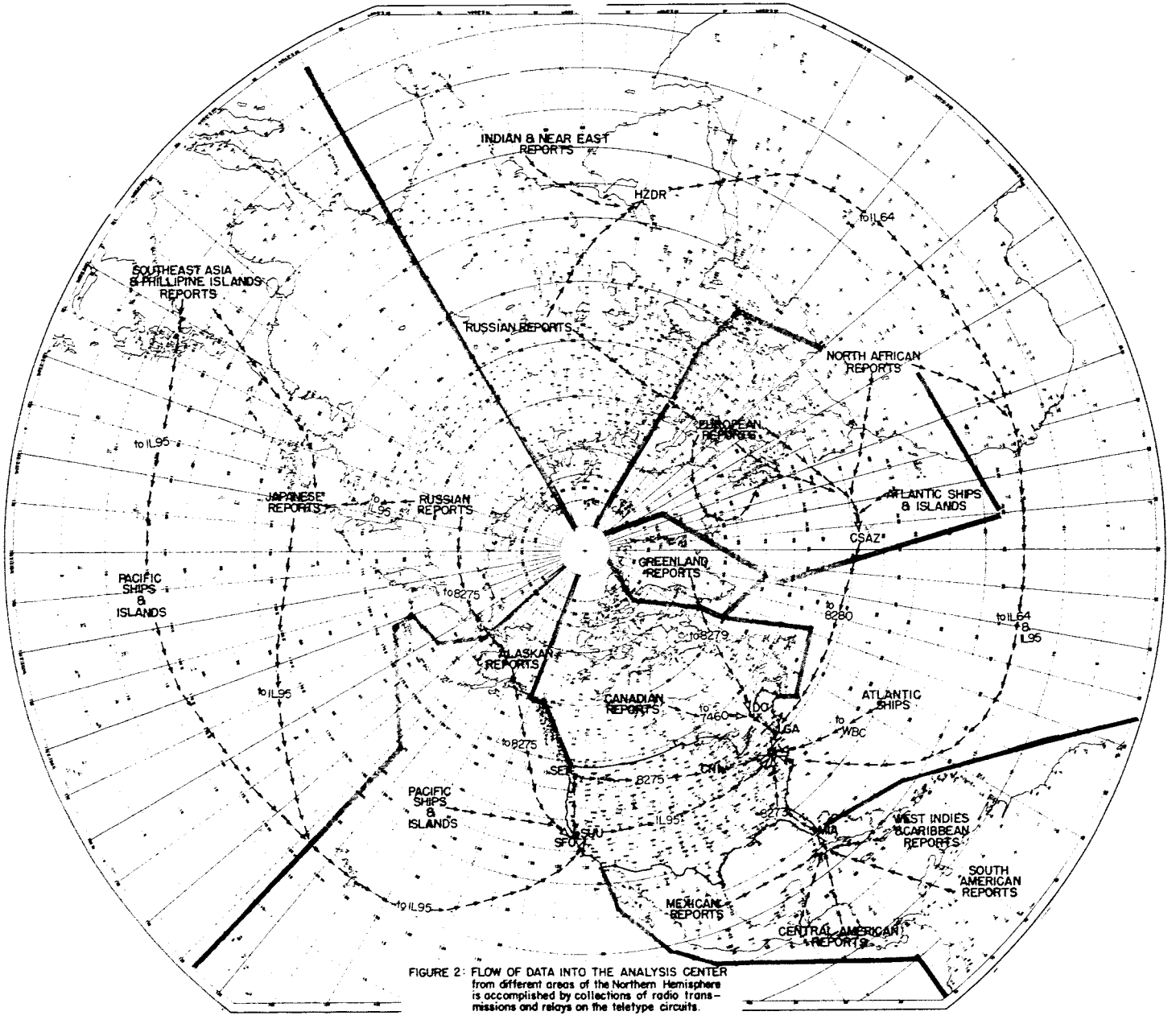


FIGURE 2: FLOW OF DATA INTO THE ANALYSIS CENTER from different areas of the Northern Hemisphere is accomplished by collections of radio transmissions and relays on the teletype circuits.

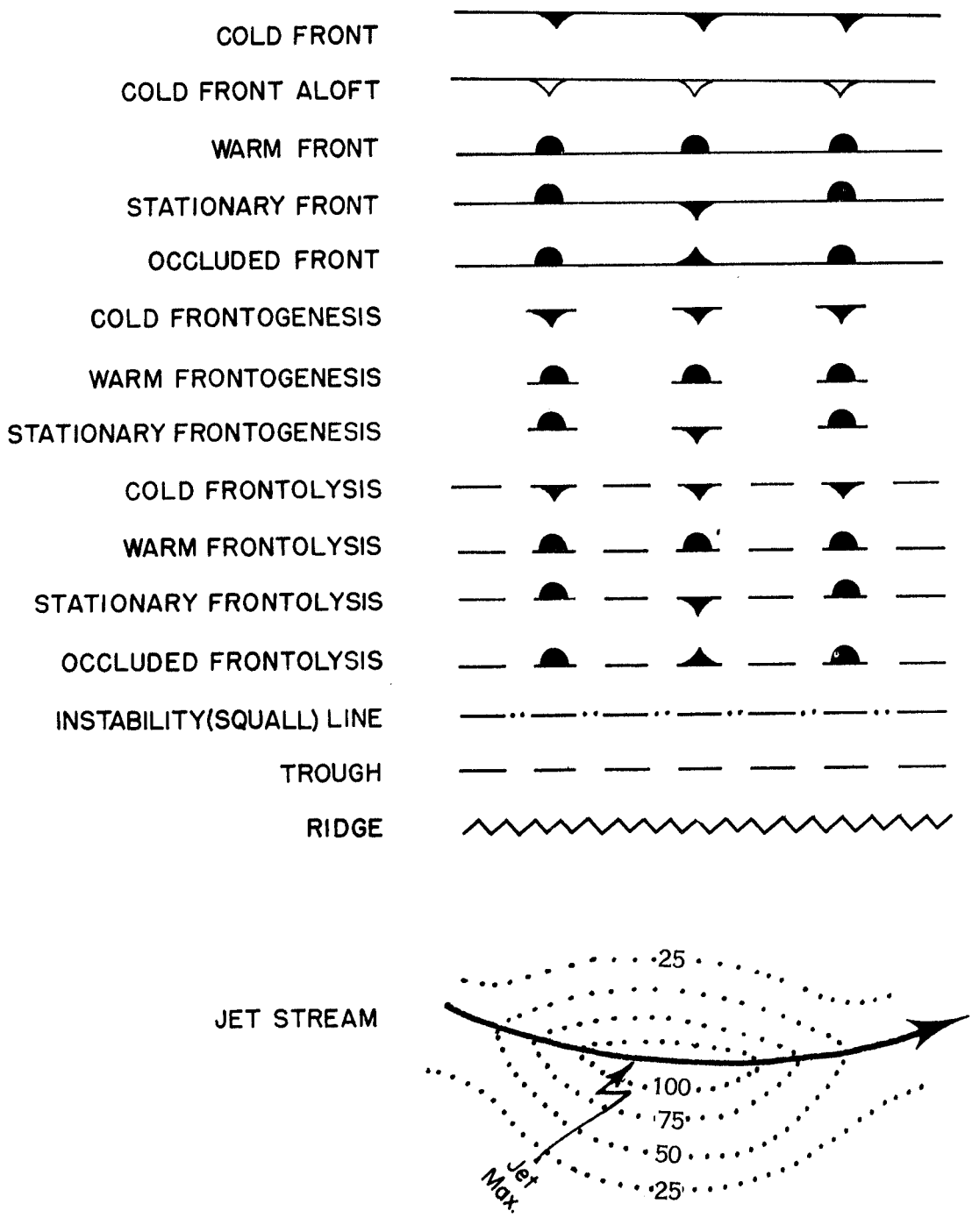


FIGURE 3: WBAN WEATHER ANALYSIS SYMBOLS.
These are the symbols most generally used by the National Weather Analysis Center although there are occasionally others.
(See WBAN Analysis Symbols, Feb. 1, 1950)

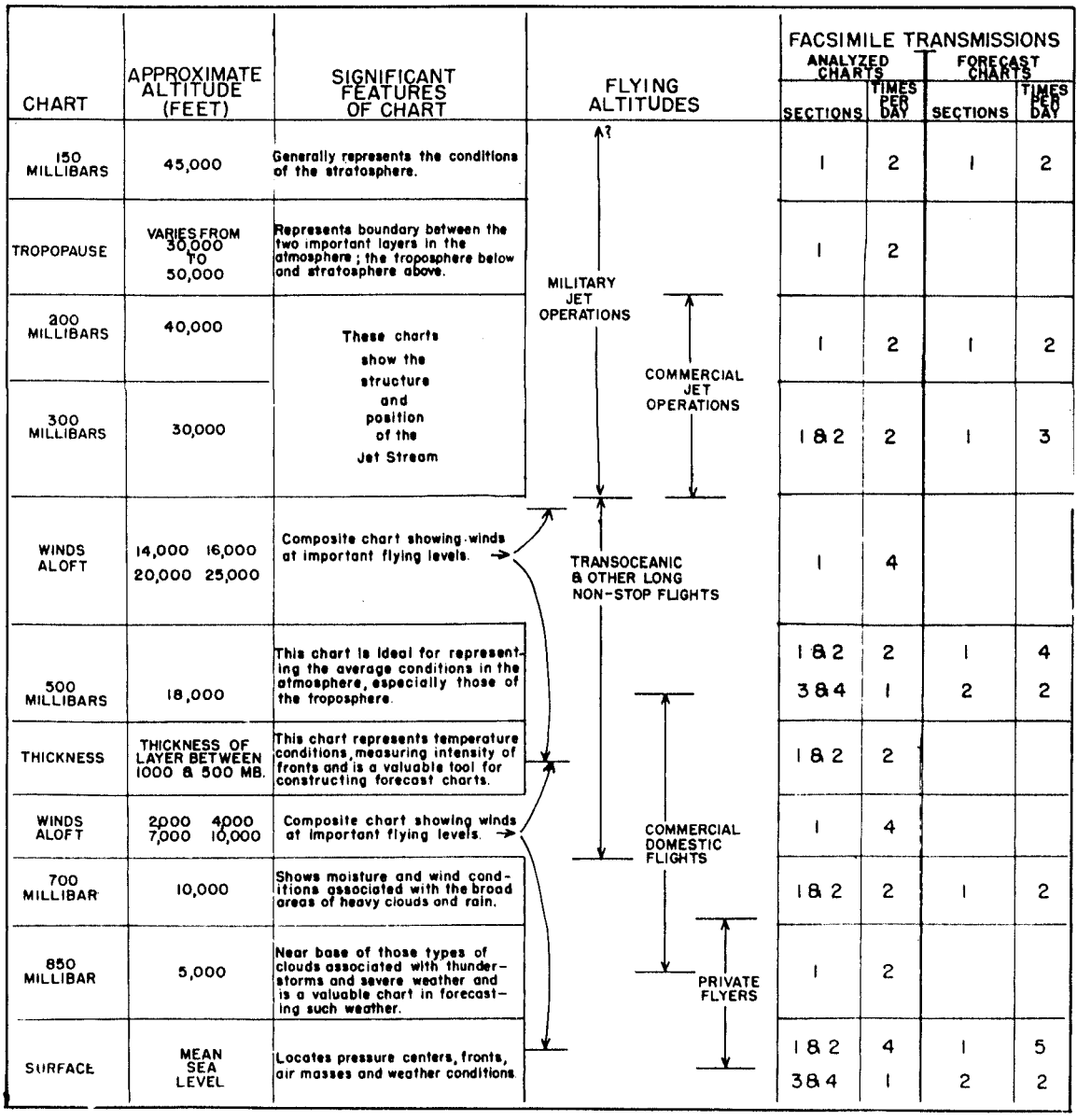


FIGURE 4: SCHEMATIC CHART OF NATIONAL WEATHER ANALYSIS CENTER TRANSMISSIONS.

with aspects of the vertical structure and aviation applications of the analyses.

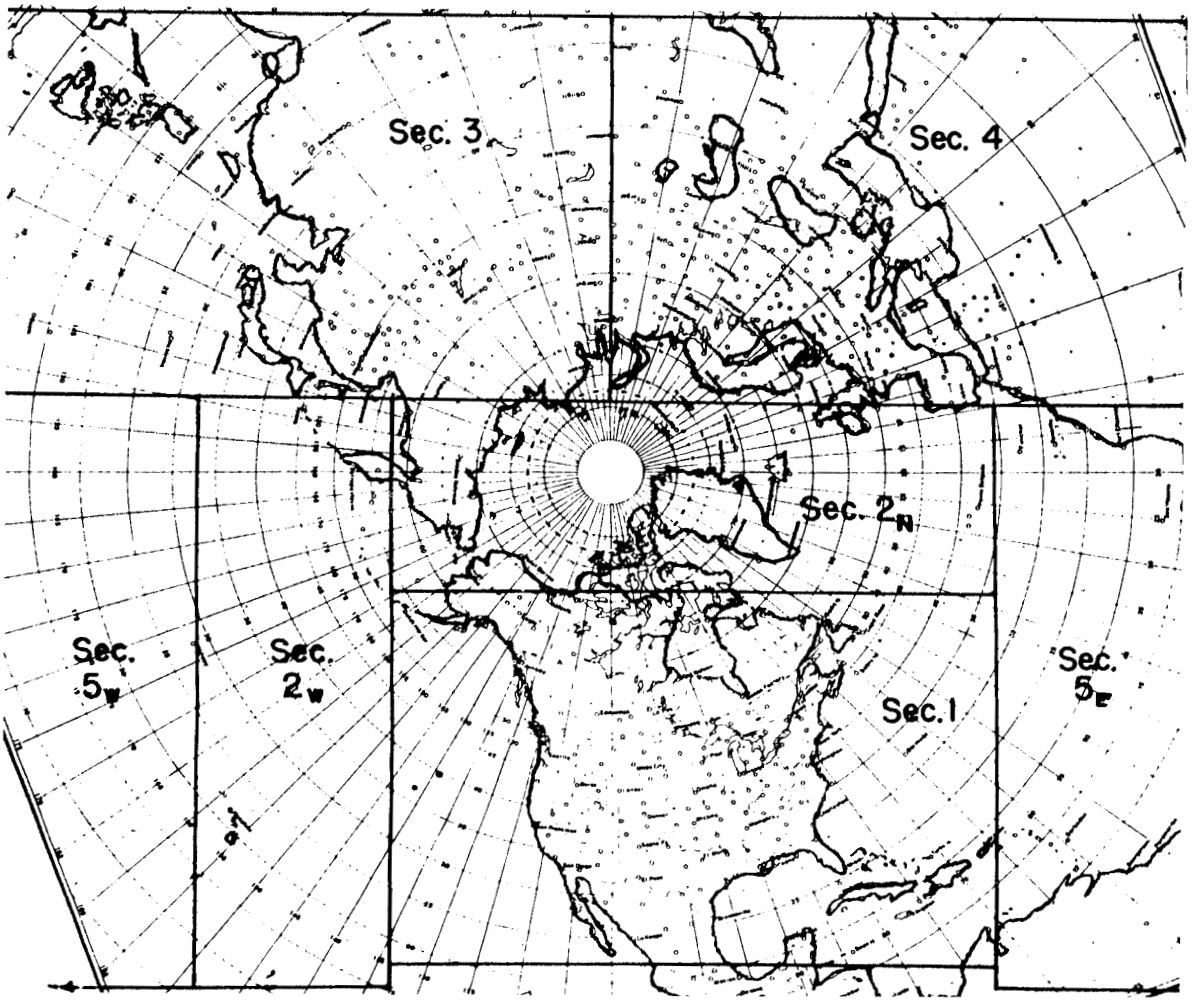


FIGURE 5: HEMISPHERIC MAP ON POLAR STEREOGRAPHIC PROJECTION WITH OUTLINES OF AREAS COVERED BY THE SEVERAL FACSIMILE MAP SECTIONS

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU
Washington 25, D.C.

December 7, 1956 0-4.22

CIRCULAR LETTER NO. 43-56

TO : All First Order and CAA Stations

FROM : Chief of Bureau

SUBJECT: Weather Reports Transmitted by Automatic Teletypewriter Weather Stations.

Reference: Circular Letters 45-55 and 8-56.

At the present time automatic teletypewriter weather reporting stations have been, or soon will be, activated at Park Place, Pa. (PKL), Front Royal, Va., (FRR), Joliet, Ill., (JOT), Sandberg, Calif., (SDB), Ontario, Calif., (ONT), Troutdale, Ore., (TTO), and Worcester, Mass., (ORH). At the last three named stations groups containing the visual elements (ceiling, sky, visibility, weather and/or obstructions to visition) and remarks will be appended by the observer to the automatic report.

In the interests of standardization of reports and economy of teletypewriter circuit time, it is desirable to revise the format now being used at Ontario (Circular Letter 8-56), for the groups added by the observer for use at all stations making a combination automatic and manual report.

Effective December 15, 1956 these groups will follow, without a space, directly after the slant (/) behind the last group (RRR) of the automatic report and will be in the customary order of arrangement prescribed in Circular N for the elements and remarks. For Example, the reports will appear in the teletypewriter sequence collective in a form similar to the following:

ONT --/24/ 62/45/2318/996/ --/000/10ⓄM25⊕3K VSBY N2W21/2

In this case the groups added (10ⓄM25⊕3K VSBY N2W21/2) indicate scattered clouds at 1000 ft, a measured ceiling at 2500 ft with an overcast sky, prevailing visibility 3 miles - obstruction smoke, visibility to the north 2 miles and to the west 2 1/2 miles. Please note, however, that visibility value reported automatically in the second group (24) is runway visibility while that added by the observer is the prevailing visibility (see Pars. 2220 and 2310 of Circular N for definitions).

Details of the code used in automatic teletypewriter reports was originally outlined in Circular Letter 45-55. In order to present additional information on the coding of visibility, temperatures, dewpoints and wind speeds, they are restated below.

The symbolic form for automatic teletypewriter station reports is:

iii hh/V_rV_r/ TT/T_dT_d/ddff/$\Delta\Delta\Delta$ --/RRR/

where:

iii = station designator

hh = height of cloud base in hundreds of feet above the ground

(zero is reported as 00, and unlimited as 99)

V_rV_r = horizontal (runway) visibility in tenths of miles as determined by a transmissometer (zero is reported as -- and over 9 miles as 94)

TT = temperature
T_dT_d = dewpoint

} Values of 100 degrees or higher are reported as the actual value minus 100 (e.g., 107 as 07); Values of zero or below as 100 minus the actual value (e.g., -15 as 85).

dd = wind direction in tens of degrees

ff = wind speed in knots (speeds of 100 knots or higher are reported as the actual value minus 100 (e.g., 112 as 12)

$\Delta\Delta\Delta$ = altimeter setting

-- = unassigned

RRR = amount of precipitation (cumulative amount reported hourly beginning at each 6-hourly synoptic time)

When instrumentation for measuring and reporting any of the above elements is either not provided or is inoperative, hyphens (--) are transmitted in those spaces. To illustrate - the Ontario report shown above would be decoded as: cloud height - missing; runway visibility - 2.4 miles; temperature - 62 degrees; dewpoint - 45 degrees; wind direction - 230 degrees; wind speed - 18 knots; altimeter setting 29.96 inches; and precipitation - none.

Circular Letters 45-55 and 8-56 are hereby cancelled and may be destroyed.

F. W. Reichelderfer
Chief of Bureau

C.1

FILE: 610 x 630.1 x 540 CL 43-56 (Addendum) (Weather Reports Transmitted by Automatic Teletypewriter) WASHINGTON, D. C. 5-8-57

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU
WASHINGTON

May 8, 1957

IN REPLY, PLEASE ADDRESS
CHIEF, U. S. WEATHER BUREAU
WASHINGTON 25, D. C.
AND REFER TO
0-4.22

ADDENDUM TO CIRCULAR LETTER NO. 43-56

To : All First Order and CAA Stations

From : Chief of Bureau

Subject: Weather Reports transmitted by Automatic Teletypewriter

Reference: Circular Letter No. 43-56, dated December 7, 1956.

Effective immediately, the automatic station at Front Royal, Virginia, will include a report of thunderstorm occurrence, under certain conditions, in the message appearing on Service A teletypewriter circuits. The occurrence will be indicated by a "T" following the runway visibility in place of the slant which will appear on the automatic stations not capable of reporting thunderstorms. A sample report from Front Royal might be:

FRR --/28T 76/54/3223/998/--/084.

If no thunderstorm were occurring, the space for the "T" will be left blank. The report would then be:

FRR --/28 76/54/3223/998/ --/084.

The thunderstorm detecting device is a broadly tuned radio receiver peaking around 9 kc. The receiver gain is sufficiently low as to respond only to local storms up to a ten mile range. At least five local flashes of lightning are required before a "T" will appear in the observation following visibility. This feature prevents an occasional man-made burst of electrical noise from accidentally inserting a "T" in the observation. The "T" is automatically removed following a transmitted observation. Should five or more local lightning flashes occur during the period following a transmission and just before the next transmitted observation, the "T" will again appear on the circuit.

Other automatic stations will be converted to report thunderstorms within the next few months. Announcement of each will not be made, but in each case the disappearance of the slant following the visibility will be indicative of the system having the capability to report thunderstorms.

F. W. Reichelderfer