MONTHLY ABROLOGICAL RECORD - SYNOPTIC OBSERVATIONS

This reference manual was prepared for use with punched card deck 281, MAR Synoptic Observations, produced from United States Havy Monthly Aerological Record, source 999. The Monthly Aerological Record consists of from mix to twenty-four pages per month, but cards are punched from only the first mix pages. Each of these pages contains observations for all days of the month for the same hour. Mormally, hourly observations were taken, but only mix observations per day were recorded on the MAR. This recording form was abandoned in favor of the WBAN forms, in 1945.

All observations made by qualified aerographers under routine match conditions were entered in black ink. Observations made by other than qualified aerological personnel were entered in red ink. Whenever entries were made from estimated data, due to instrument failure or other causes, such entries were also made in red ink.

Weather Elements Recorded

The following weather elements, when reported, were punched: sea level pressure, air temperature, wet bulb temperature, relative humidity, dew point temperature, sea temperature, state of sea, direction of swell, condition of ground, safety of landing conditions, wind velocity, present weather, total cloud amount, upper cloud type, amount, density, and direction of movement, middle cloud height, lower cloud type, amount, density, direction, and height, visibility, precipitation duration and amount, duration of fog, past weather, hours of favorable flying weather, and ceiling height.

General Practices

Cards were punched with the station number, year, month, day, and hour, and the rest of the eard left blank when an observation was missing, unless the station did not report for the whole month. Columns for which data were missing or obviously in error were left blank. In the early stages of punching, each observation was coded onto special code sheets for punching, but in later days, cards were punched directly from the Monthly Aerological Records. All cards were punched by the USEB Tabulating Unit, or the Havy Tabulating Section, in New Orleans.

Form of Punched Card Used

A standard 80 column punch card designed with special headings for punching MAR observations was used. Although columns 78-80 are imprinted with station pressure headings, ceiling height is actually punched in columns 78-79, and column 80 was left blank. A sample of the punch card is shown below.

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			CARD	CONTENT		SOURCE CONTENT
Col – umns	item	Code	Code Definition	Remarks	Units or Symbols	Reporting and Coding Practices
1-3	Source Mo.	999	Havy M. A. R.	<u> </u>	1	United States Navy Monthly Aerological Record.
4-6	Station No.			A three-digit number formulated by the U.S. Havy, Bureau of Aeronautics, to designate the station, was punched in columns 4-6. Lists of these numbers, with names, coordinates, and periods of record, are maintained by the Bureau of Aeronautics, Navy Tabulation Section.		
7-8	Year	20-45	1920 - 1945			
	Month	01-12	Jammary - December			
11-12	Day	01-31	Day of month			
13-14	Hour	01-24	0100 - 2400			Six hours usually reported: 04, 08, 12, 16, 20, and 24. Each observation taken on the hour, and reflects conditions during the past hour. All entries recorded in Standard Zone Time.
15-18	Sea Level Pressure	0000- 0999	1000.0 to 1099.9 mb		millibars to 1/10	
		9000- 9999	900.0 to 999.9 mb	_		
	2.13		Unknown	(C-2	 	
19	Dry Bulb	<u> </u>	0° to 99° F	Golumns 20-21 punched 00-99, Golumns 20-21 punched 00-99,	⊣	
	or Air	│_ \$	100° to 199° F	Columns 20-21 punched 01-99.	- - `	· ·
	Temperature	No. or to	Unknown	Columns 20-21 left blank.	┥	· ·
50 OT	Indicator		Of to 99° F	Column 19 punched 0.	Whole or half	Usually recorded to mearest half degree Fahrenheit. Rounded to whole degrees
20-21	Dry Bulb	<u> </u>	100° to 199° F	Column 19 punched 1.	whole or hall degrees	before punching.
	or Air	1 01 00 ·	-1° to -99° 7	Column 19 punched I.	degrees Fahrenheit	perore puncting.
	Temperature		Unknown	Column 19 left blank,	-Laurannere	•
22	Wet Bulb	ļ		Column 23-24 punched 00-99,		
~~	Temperature	ure X -1° to -99° F		Columns 23-24 punched 01-99.	╡	
	Indicator		Unknown	Columns 23-24 left blank.	┥	
22-21	Wet Bulb .	00-00	0° to 99° F	Column 22 punched 0.	Whole or half	Usually recorded to mearest half degree Fahrenheit. Rounded to whole degrees
~ <i>)</i> -~~	Temperature	07-99	-1° to -99° F	Column 22 punched I.	degrees	before punching.
	20mportuone		Unknown	Column 22 left blank.	Fahrenheit	
25-27	Relative	000-100	0 to 100 percent		Whole percent	
-,	Humidity		Unknown	1	1	
28	Dew Point	0	0° to 99° ¥	Golumns 29-30 punched 00-99,		
	Temperature	X	-1° to -99° ?	Columns 29-30 punched 01-99.]	
	Indicator	Blank	Unknown	Columns 29-30 left blank.		
29-30	Dew Point		0° to 99° 7	Column 28 punched 0,	_Whole of	
	Temperature		-1° to -99° F	Column 28 punched Y.	」・	·
			Unknown	Column 28 left blank.		
31-32	Sea		0° to 99° 7	4	Whole of	Reported by ships. Some land stations reported sea and/or soil temperature. Soil
	Temperature		Unknown			temperature was not coded nor punched. Sea temperature obtained by standard sea water thermometer.
33	State of	0	Calm, no swell	Height of wave, crest to trough: 0	0-9	Reported by ships, and by shore stations with water landing areas.
	Sea	1	Smooth, moderate swell	Less than 1 foot	4	•
		2	Slight, beavy swell	1 to 3 feet	-	
		3	Moderate, no swell Rough, moderate swell	3 to 5 feet 5 to 8 feet	┥	· ·
		5	Very rough, heavy swell High	8 to 12 feet 12 to 20 feet	<u>.</u>	
		7	Very high	20 to 40 feet	_	
		8	Precipitous	Over 40 feet	4	,
		9	Confused			
		<u>Blank</u>	Unknown	<u></u>	<u> </u>	
34	Direction	0	Calm		<u>C</u>	Reported by ships, and by shore stations with water landing areas.
	of Swell	1_	Northeast	J	nr Enr, r, esr	
		2	East			

REFERENCE MANUAL

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			CARD	CONTENT		SOURCE CONTENT
Gol	Item	Code	Code Definition	Remarks	Units or Symbols	Reporting and Coding Practices
34	Direction	3	Southeast		SE SSE, S, SSW	
	of Swell (continued)	3	South	<u> </u>	ST	<u> </u>
	(00-01-01-0)	6	West		MBW, W. WAW	-
	1	7	Northwest North		HNW. N. HNB	₫
		I	Unknown			
35	Condition	Blank	Unknown Solid (dry or frozen)	Condition of field considered fit for landing.	0-9	Reported by shore stations only.
"	of Ground	1	Solid (dew)	•		
	(Airfield)	2	Solid (light frost) Solid (heavy frost)			
		4	Solid (snow or water in			
	İ		spots, parts of field usable)			
		5	Solid (snow covered)			
		7	Soft (from rain or than)	Condition of field considered unfit for landing.	┥	
		8	Flooded			
		9	Covered (snow in deep drifts, or heavy snow			
]		cover, 10 in. or more)			•
36	Safety of	Blank	Unknown O to 9 percent		Whole percent	Reported by ships, and by shore stations with water landing areas. Never refers
,,,	Landing	1	10 to 19 percent			landplane facilities. Based on estimate of observer, dependent upon condition of sea, character of swell, and the angle between the direction of the wind and the
	Conditions (Seaplane)	3	20 to 29 percent			direction of the swell.
	(Couperage)	4	40 to 49 percent			·
	1	- 2	50 to 59 percent 60 to 69 percent	•		
		7	70 to 79 percent	·		
		8	80 to 89 percent			
		Blank	Unknown		Letter	True wind velocity entered for both ship and shore stations.
37-38	Wind Direction	00	Calm North Northeast		Directions	Life alim acted th adverses for more such sin such account.
		04	Northeast		1	· ·
	1	06 08	East Northeast			·
		10	East Southeast	·		•
		12	Southeast South Southeast		·	•
		16	South South Southwest			
		18 20	Southwest			
	l .	22	West Southwest			
	l :	26	West Northwest			
	t'	28	Northwest			
	['	32	North Northwest	·		
<u> </u>			Unknown	No X-oversunch in Column 39.	Whole knots	·
5 7-4 0	Wind Speed	00-99	0 to 99 knots 100 to 199 knots	X-overpunch in Column 39.		
			Unknown			
	1	1	· ·			

			CARD	CONTENT		SOURCE CONTENT
Col - umns	item	Code	Code Definition	Remarks	Units or Symbols	Reporting and Coding Practices
1-42	Weather	00	Cloudless	Less than 1 tenth cloud cover.	ъ	In early years of record, Beaufort notation was used in recording weather. Late
	Conditions	01	Partly cloudy	1 to 5 tenths cloud cover.	bc	the "ww" code table of the International Code was used. If no weather was re-
		02	Cloudy	6 to 9 tenthe cloud cover.	С	rorted, total cloud amount was coded as present weather, using codes 00-0%. Whe
		03	Overcast	Over O tenths cloud cover.	0	visibility was revorted in International Code h to f. and no weather symbol was
		04	Low for		?a	revorted, weather was coded as light for (08) if the dew roint spread was 2° P.
		05	Eaze	Visibility 1100 yards or more. See Coding Practices.	7	less: if the dev roint erread was greater than > F weather was coded as have
	İ	06	Duet devils			[] (05). If the visibility was * miles or less, and no weather symbol was remorts
		07	Distant lightning		1	weather was coded as for (40) if the dev roint stread was ?. F. or less: if th
		08	Light fog	Visibility 1100 yards or more. See Coding Practices.	12	dev roint stread was more than ?" F. weather was coded as haze (05). These de-
	i	09	Fog at distance		?e	cisions were made by experienced meteorologists, who also considered other fact
	ļ	10	Precir in sight		15	such as wind velocity and cloud cover, in each individual case. In all cases,
		11	Thunder, but no precip		t	_ highest applicable code was used.
	1	12	Duetstorm in sight			
		13	Ugly, threatening sky		u	
	1	14	Squally weather		q	<u> </u>
	1	15	Heavy squalla	In last 5 hours.	ΣÓ	
	1	15	Waterspouts	In last 3 hours.	1	
	1	17	Smoke		1	·
		18	Blowing dust	Visibility 1100 yards or more.	1	
		12	Signs of hurricane	!	1.	
		20	Preciritation	Preciritation occurred in last hour, but not at time of		
			Drizzle	observation.		
	1	55	Rain			·
	1	23	Snov	! 4	•	
	İ	5/7	Rain and enow		Ì	
		25	Rain showers	<u> </u>		
	}	26	Snow showers			
	İ	27	Hail, or rain and hail			
	1		shovers	4		
	1	28	Light or moderate			-
	1		thunderstorm	<u> </u>		·
		20	Heavy thunderstorm	<u> </u>		
		30	Dustatorm or sandstorm		1	
		31	Duststorm or sandstorm		-	·
		32	Dustatorm or sandstorm		<u> </u>	
	l	35	Duststorm or sandstorm	Las increased.	{	·
			Line of duststorms	 	ke	┥
	1	35 36	Storm of drifting snow	Light or moderate, generally low.	EA	┥ .
		37	Storm of drifting show		1	
	1	38		Light or moderate, generally high.	1	
		30	Storm of drifting snow		1	
		10		Visibility less than 1100 yards. See Coding Practices.	•	-
		41	Moderate for	In last hour, but not at time of observation.	<u> </u>	†
	1	112	Thick or dense for	All they hour, out hot be true of coservation.	i	
		43		Has become thinner during last hour.	1	
		44	Fog. sky not discernible		İ	
		45	Pos sky discominia	No appreciable change in last hour.	1	• •
	I	46	Fog. sky not discernible	The abbreauch committee in rese west.		
	1	47	Fog. sky discewible	Eas begun or become thicker in last hour.	1	
	-	48	Fog. sky not discernible			
	1	40	Fog. in ratches	·		
		50	Drizzle	!	a	
	1		Drizzle, intermittent	Light.		•
		, -, ,				
		51		1		
		52	Drizzle, continuous Drizzle, intermittent	Moderate.	_	·

Weather Conditions (continued)	Code 55 56 57 58 59 60 61 62 63 64 65 66 67 70 71 72 73 74 75 76 77 78 80 81 82 83	Code Definition Drissle, intermittent Drissle, continuous Drissle and fog Drissle and rain Drissle and rain Rain Rain, intermittent Rain, continuous Rain, intermittent Rain, continuous Rain, intermittent Rain, continuous Rain, intermittent Rain, continuous Rain and fog Rain and snow Rain and snow Snow Snow, intermittent Snow, continuous Snow, intermittent Snow, continuous Snow, intermittent Snow, continuous Snow, intermittent Snow, continuous Snow, intermittent Snow, continuous Snow and fog Snow grains Sleet or ice crystals Showers Rain showers Rain showers Snow showers Snow showers	Remarks Heavy. Light or moderate. Heavy. Light or moderate. Heavy. Light. Moderate. Heavy. Light. Light or moderate. Heavy. Light or moderate. Light or moderate.	Units or Symbols df rf re sf		Rep	orting and	Coding Pro	octices		
Conditions (continued)	56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83	Drizzle, continuous Drizzle and fog Drizzle and rain Drizzle and rain Rain Rain Rain, intermittent Rain, continuous Rain, intermittent Rain, continuous Rain, intermittent Rain, continuous Rain, intermittent Rain, continuous Rain and fog Rain and fog Rain and snow Rain and snow Snow, intermittent Snow, continuous Snow, intermittent Snow, continuous Snow, intermittent Snow, continuous Snow, intermittent Snow, continuous Snow and fog Snow grains Sleet or ice orystals Showers Rain showers Rain showers	Light or moderate. Heavy. Light. Moderate. Heavy. Light or moderate. Heavy. Light. Moderate. Heavy. Light or moderate. Heavy. Light or moderate.	rf rg rs							
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1 1	62 63 64, 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83	Rain, continuous Rain, intermittent Rain, continuous Rain, intermittent Rain, continuous Rain, eontinuous Rain and fog Rain and snow Rain and snow Snow, intermittent Snow, continuous Snow, intermittent Snow, continuous Snow, intermittent Snow, continuous Snow, intermittent Snow, continuous Snow and fog Snow grains Sleet or ice orystals Showers Rain showers Rain showers Snow showers	Moderate. Heavy. Light or moderate. Heavy. Light. Moderate. Heavy Light or moderate. Heavy. Light or moderate.	si p		į.					·
1 1	64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83	Rain, intermittent Rain, continuous Rain, intermittent Rain, continuous Rain and fog Rain and snow Rain and snow Snow Snow, intermittent Snow, continuous Snow, intermittent Snow, continuous Snow, intermittent Snow, continuous Snow, intermittent Snow, continuous Snow and fog Snow grains Sleet or ice crystals Showers Rain showers Rain showers Snow showers	Heavy. Light or moderate. Heavy. Light. Moderate. Heavy Light or moderate. Heavy. Light or moderate.	si p		į.					·
1 1	65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83	Rain, continuous Rain, intermittent Rain, continuous Rain and fog Rain and snow Rain and snow Snow Snow, intermittent Snow, continuous Snow, intermittent Snow, continuous Snow, intermittent Snow, continuous Snow, intermittent Snow, continuous Snow intermittent Snow continuous Snow and fog Snow grains Sleet or ice crystals Showers Rain showers Rain showers Snow showers	Heavy. Light or moderate. Heavy. Light. Moderate. Heavy Light or moderate. Heavy. Light or moderate.	si p							
1 1	66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83	Rain, intermittent Rain, continuous Rain and fog Rain and snow Rain and snow Snow Snow, intermittent Snow, continuous Snow, intermittent Snow, continuous Snow, intermittent Snow, continuous Snow, intermittent Snow, continuous Snow and fog Snow grains Sleet or ice crystals Showers Rain showers Rain showers Snow showers	Light or moderate. Heavy. Light. Woderate. Heavy Light or moderate. Heavy. Light or moderate.	si p		.*				:	
1 1	66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83	Rain, continuous Rain and fog Rain and snow Rain and snow Snow Snow, intermittent Snow, continuous Snow, intermittent Snow, continuous Snow, intermittent Snow, continuous Snow, intermittent Snow, continuous Snow and fog Snow grains Sleet or ice crystals Showers Rain showers Rain showers Snow showers	Light or moderate. Heavy. Light. Woderate. Heavy Light or moderate. Heavy. Light or moderate.	si p		·				<i>:</i>	
1 1	68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83	Rain and fog Rain and snow Rain and snow Snow Snow, intermittent Snow, continuous Snow, intermittent Snow, continuous Snow, intermittent Snow, continuous Snow, intermittent Snow, continuous Snow and fog Snow grains Sleet or ice orystals Showers Rain showers Rain showers Snow showers	Heavy. Light. Hoderate. Heavy Light or moderate. Heavy. Light or moderate.	si p		··				<i>:</i>	
1 1	68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83	Rain and snow Rain and snow Rain and snow Snow Snow, intermittent Snow, continuous Snow, intermittent Snow, continuous Snow, intermittent Snow, continuous Snow, continuous Snow and fog Snow grains Sleet or ice crystals Showers Rain showers Rain showers Snow showers	Heavy. Light. Hoderate. Heavy Light or moderate. Heavy. Light or moderate.	si p		į.·				;	
1 1	69 70 71 72 73 74 75 76 77 78 79 80 81 82 83	Rain and snow Snow Snow, intermittent Snow, continuous Snow, intermittent Snow, continuous Snow, intermittent Snow, continuous Snow and fog Snow grains Sleet or ice crystals Showers Rain showers Snow showers	Heavy. Light. Hoderate. Heavy Light or moderate. Heavy. Light or moderate.	sf P PF						:	
1 1	70 71 72 73 74 75 76 77 78 79 80 81 82 83	Snow Snow, intermittent Snow, continuous Snow, intermittent Snow, continuous Snow, intermittent Snow, continuous Snow and fog Snow grains Sleet or ice crystals Showers Rain showers Snow showers Snow showers	Light. Moderate. Heavy Light or moderate. Heavy. Light or moderate.	sf P		·			·	:	
1 1	71 72 73 74 75 76 77 78 79 80 81 82 83	Snow, intermittent Snow, continuous Snow, intermittent Snow, continuous Snow, intermittent Snow, continuous Snow and fog Snow grains Sleet or ice crystals Showers Rain showers Rain showers Snow showers	Moderate. Heavy Light or moderate. Heavy. Light or moderate.	sf P		.*				<i>:</i>	
1 1	72 73 74 75 76 77 78 79 80 81 82 83	Snow, continuous Snow, intermittent Snow, continuous Snow, intermittent Snow, continuous Snow and fog Snow grains Sleet or ice crystals Showers Rain showers Rain showers Snow showers	Moderate. Heavy Light or moderate. Heavy. Light or moderate.			··				<i>:</i>	
1 1	73 74 75 76 77 78 79 80 81 82 83	Snow, intermittent Snow, continuous Snow, intermittent Snow, continuous Snow and fog Snow grains Sleet or ice orystals Showers Rain showers Rain showers Snow showers	Heavy Light or moderate. Heavy. Light or moderate.			.·				<i>:</i>	
1 1	74 75 76 77 78 79 80 81 82 83	Snow, continuous Snow, intermittent Snow, continuous Snow and fog Snow grains Sleet or ice crystals Showers Rain showers Rain showers Snow showers	Heavy Light or moderate. Heavy. Light or moderate.			. •			-	<i>:</i> -	
1 1	75 76 77 78 79 80 81 82 83	Snow, intermittent Snow, continuous Snow and fog Snow grains Sleet or ice crystals Showers Rain showers Rain showers Snow showers	Light or moderate. Heavy. Light or moderate.			.•					
1 1	76 77 78 79 80 81 82 83	Snow, continuous Snow and fog Snow grains Sleet or ice crystals Showers Rain showers Rain showers Snow showers	Light or moderate. Heavy. Light or moderate.			. •				٠	
1 1	77 78 79 80 81 82 83	Snow and fog Snow grains Sleet or ice crystals Showers Rain showers Rain showers Snow showers	Light or moderate. Heavy. Light or moderate.			· ·				•	
I !	78 79 80 81 82 83	Snow grains Sleet or ice crystals Showers Rain showers Rain showers Snow showers	Light or moderate. Heavy. Light or moderate.			. •					
1 1	79 80 81 82 83	Sleet or ice crystals Showers Rain showers Rain showers Snow showers	Heavy. Light or moderate.	F	_	. •					
I !	80 81 82 83	Showers Rain showers Rain showers Snow showers	Heavy. Light or moderate.	F]						
1 1	81 82 83	Rain showers Rain showers Snow showers	Heavy. Light or moderate.	F							
1 1	82 83	Rain showers Snow showers	Heavy. Light or moderate.		~						
1 1	83	Snow showers	Light or moderate.		1						
I !					┥			-			,
I I	. w'	CATION STICES	Reavy.		4						
1 1	84	Showers of light or	MAG 41.0	per	4					•	
I I	87	moderate rain and snow	<u> </u>] per]						
	86	Showers of heavy rain	1		1 .						
	Į.	and snow	1	-	1 .						
	87	Showers of snow pellets	1	1 _	J ·						•
	88	Showers of light or		ph	7						
	1	moderate hail, or		1	}			. •			
		rain and hail		1]			•			
	89	Showers of heavy hail,			7						
		or rain and hail	·		1	. .				• -	
	90	Thunderstorm with precip	At time of observation.								
	91	Rain and thunder in	Rain, but no thunder, at time of observation.	7			•			•	
1 1		last hour	l		Ì						
1 l	92	Precipitation and	Snow, or tain and snow, but no thunder at time of	7							
	[thunder in last hour	observation.	Į.	{						
	93		With rain or snow, but no hail.	tr. ts	1						
	94	Thunderstorm, light	With small hail.	th	7						
\ \ \t	95	Thunderstorm, moderate	With rain or snow, but no hail,	1	1						
	96 '	Thunderstorm, moderate	With small hail.	7							
į t	97	Thunderstors, heavy	With rain or anow, but no hail.	7							
\ \ \ \ \		Thunderstorm, with		ન્	1						
1. 1	L	duststorm			1						
ļ †	- AA	Thunderstorm, heavy	With bail,			•					
1 1	99	Unknown			1						
t	99 Blank			7					•		
. [
			[1							

Col- umns 43-44 Total Cloud Amount 45 Predominat Upper Cloud Form 48 Density of Upper Cloud Upper Cloud 49 Direction Upper Cloud 50-52 Height of Predominat Intermedia Clouds 53 Predominat Lower Cloud Form	10md 00 B1 10md 1 2 2 2 2 2 2 2 2 2	1 ank 1 1 2 3 4 4 4 5 6 6 6 6 6 6 6 6 6	O to 10 tenths Unknown Fransparent Semi-transparent Sedium Dense Very dense No upper clouds Unknown Salm Northeast	Remarks Left blank if 10/10 lower clouds reported.	Units or Symbols C1 C1-St, Cs C1-Cu, Cc A-Cu, Ac A-St, As Acc -, f, 1-10 1-5	Obtained by adding amounts of upper and lower clouds. If sum of upper and lower cloud amounts exceeded 10/10, 10 was punched. If sum was 10/10 or less, that amount was punched, although it was impossible to determine whether the two layers combined actually covered that amount of the sky or a lesser amount. Few or 1- was coded as 00, and 9* was coded as 10. Any cloud type reported with Nb in parentheses, indicating precipitation occurring, was punched as if the (Nb) had not been reported. This cloud amount applies to all upper clouds, and is not necessarily restricted to the predominating type reported. Few was punched as 00, and 9* as 10. Density of predominating upper clouds.
Amount 45 Predominate Upper Clouder Form 46-47 Upper Clouder Form 48 Density of Upper Clouder Clouder Clouder Clouder Form 50-52 Reight of Predominate Intermediate Cloude Form	nate 0 loud 1 2 2 3 4 4 5 6 6 B1 loud 00 B1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 ank 1 1 2 3 4 4 4 5 6 6 6 6 6 6 6 6 6	So upper clouds Sirrus Sirrus Sirrostratus Sirrocumulus Iltocumulus Iltocumulus Iltocumulus castellatus Jaknown O to 10 tenths Jaknown Fransparent Sedium Dense Very dense Foupper clouds Jaknown Salm Mortheast Sast	Left blank if 10/10 lower clouds reported.	C1-St, Cs C1-St, Cs C1-Cu, Cc A-Cu, Ac A-St, As Acc, f, 1-10 1-5	cloud amounts exceeded 10/10, 10 was punched. If sum was 10/10 or less, that amount was punched, although it was impossible to determine whether the two layers combined actually covered that amount of the sky or a lesser amount. Few or 1- was coded as 00, and 9+ was coded as 10. Any cloud type reported with Nb in parentheses, indicating precipitation occurring, was punched as if the (Nb) had not been reported. This cloud amount applies to all upper clouds, and is not necessarily restricted to the predominating type reported. Few was punched as 00, and 9+ as 10. Density of predominating upper clouds.
Upper Cloud Form 46-47 Upper Cloud Amount 48 Density of Upper Cloud 49 Direction Upper Cloud 50-52 Reight of Predominat Intermedia Clouds 53 Predominat Lower Cloud Form	1 1 2 2 3 4 4 5 6 6 81 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 (2 (2 (3 (3 (4 (4 (4 (4 (4 (4 (4 (4 (4 (4 (4 (4 (4	Cirrus Cirrostratus Cirrostratus Cirrostratus Cirrostratus Cirrostratus Litocumulus Litocumulus Litostratus Litostratus Litosumulus castellatus Cinknown Cirrosparent Comi-transparent Medium Cense Very dense No upper elouds Cinknown Calm Cortheast Cast	Left blank if 10/10 lower clouds reported.	C1-St, Cs C1-St, Cs C1-Cu, Cc A-Cu, Ac A-St, As Acc, f, 1-10 1-5	combined actually covered that amount of the sky or a lesser amount. Few or 1- was coded as 00, and 9+ was coded as 10. Any cloud type reported with Nb in parentheses, indicating precipitation occurring, was punched as if the (Nb) had not been reported. This cloud amount applies to all upper clouds, and is not necessarily restricted to the predominating type reported. Few was punched as 00, and 9+ as 10. Density of predominating upper clouds.
Upper Cloud Form 46-47 Upper Cloud Amount 48 Density of Upper Cloud 49 Direction Upper Cloud 50-52 Reight of Predominat Intermedia Clouds 53 Predominat Lower Cloud Form	1 1 2 2 3 4 4 5 6 6 81 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 (2 (2 (3 (3 (4 (4 (4 (4 (4 (4 (4 (4 (4 (4 (4 (4 (4	Cirrus Cirrostratus Cirrostratus Cirrostratus Cirrostratus Cirrostratus Litocumulus Litocumulus Litostratus Litostratus Litosumulus castellatus Cinknown Cirrosparent Comi-transparent Medium Cense Very dense No upper elouds Cinknown Calm Cortheast Cast	Left blank if 10/10 lower clouds reported.	C1-St, Cs C1-St, Cs C1-Cu, Cc A-Cu, Ac A-St, As Acc, f, 1-10 1-5	Any cloud type reported with Nb in parentheses, indicating precipitation occurring, was punched as if the (Nb) had not been reported. This cloud amount applies to all upper clouds, and is not necessarily restricted to the predominating type reported. Few was punched as 00, and 9* as 10. Density of predominating upper clouds.
Form 46-47 Upper Cloud Amount 48 Density of Upper Cloud 49 Direction Outper Cloud 50-52 Height of Predominat Intermedia Clouds 53 Predominat Lower Cloud Form	2 3 4 5 6 81 10ud 00 81 of 1 10uds 2 4 5 81 81	2	Pirrostratus Pirrocumulus Pitocumulus Pitocumulus castellatus Piknown Pito 10 tenths Piknown Pransparent Pend-transparent Redium Pense Pory dense Po upper elouds Piknown Palm Pitocumulus castellatus	Left blank if 10/10 lower clouds reported.	C1-St, Cs C1-Cu, Co A-Cu, Ac A-St, As Acc -, f, 1-10	This cloud amount applies to all upper clouds, and is not necessarily restricted to the predominating type reported. Few was punched as 00, and 9+ as 10. Density of predominating upper clouds.
Amount Density of Upper Cloud Direction of Upper Cloud Form Amount Density of Upper Cloud Amount Direction of Upper Cloud Form Amount Direction Upper Cloud Form Amount Direction Upper Cloud Form	loud 00 B1 of 1 louds 2 3 4 .5 X B1 on of 0	4	Altocumilus Altocumilus castellatus Altocumilus castellatus Anknown O to 10 tenths O to 10 tenths O te	Left blank if 10/10 lower clouds reported.	C1-Cu, Co A-Cu, Ao A-St, As Aco , f, 1-10 1-5	the predominating type reported. Few was punched as 00, and 9 as 10. Density of predominating upper clouds.
Amount Density of Upper Cloud Direction of Upper Cloud Form Amount Density of Upper Cloud Amount Direction of Upper Cloud Form Amount Direction Upper Cloud Form Amount Direction Upper Cloud Form	loud 00 B1 of 1 louds 2 3 4 .5 X B1 on of 0	5	Altostratus Altocumulus castellatus Jaknown D to 10 tenths Juknown Transparent Semi-transparent Sedium Dense Very dense No upper clouds Juknown Selm Northeast Sest	Left blank if 10/10 lower clouds reported.	A-St, As Acc -, f, 1-10 1-5	the predominating type reported. Few was punched as 00, and 9 as 10. Density of predominating upper clouds.
Amount Density of Upper Cloud Direction of Upper Cloud Form Amount Density of Upper Cloud Amount Direction of Upper Cloud Form Amount Direction Upper Cloud Form Amount Direction Upper Cloud Form	loud 00 B1 of 1 louds 2 3 4 .5 X B1 on of 0	6	Iltocumulus castellatus Jnknown D to 10 tenths Jnknown Fransparent Semi-transparent Sedium Dense Very dense No upper elouds Jnknown Sealm Sealm Seats	Left blank if 10/10 lower clouds reported.	Acc -, f, 1-10 1-5	the predominating type reported. Few was punched as 00, and 9 as 10. Density of predominating upper clouds.
Amount Density of Upper Cloud Direction of Upper Cloud Form Amount Density of Upper Cloud Amount Direction of Upper Cloud Form Amount Direction Upper Cloud Form Amount Direction Upper Cloud Form	loud 00 B1 of 1 louds 2 3 4 .5 X B1 on of 0	lank	Inknown D to 10 tenths Unknown Fransparent Send-transparent Sedium Dense Very dense No upper elouds Unknown Salm Northeast Sast	Left blank if 10/10 lower clouds reported.	-, f, 1-10 1-5 C	the predominating type reported. Few was punched as 00, and 9 as 10. Density of predominating upper clouds.
Amount Density of Upper Cloud Direction of Upper Cloud Form Amount Density of Upper Cloud Amount Direction of Upper Cloud Form Amount Direction Upper Cloud Form Amount Direction Upper Cloud Form	B1 of 1 louds 2 3 4 .5 X B1 on of 0	lank 1 2 3 3 4 1 5 1 1 1 1 1 1 1 1	Inknown Fransparent Semi-transparent Sedium Dense Fory dense Soupper clouds Juknown Salm Sortheast		I-5 C NE	the predominating type reported. Few was punched as 00, and 9 as 10. Density of predominating upper clouds.
Direction of Upper Cloud 49 Direction of Upper Cloud 49 Direction of Upper Cloud 50-52 Reight of Predominat Intermedia Clouds 53 Predominat Lower Cloud Form	of 1 louds 2 4 .5 B1 on of 0	1 2 3 1 4 1 5 X 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 1 2 1	Fransparent Semi-transparent Sedium Sense Fory dense So upper clouds Jaknown Salm Sortheast Sest		C NE	Density of predominating upper clouds.
Upper Cloud Upper Cloud Upper Cloud Fredominat Intermedia Clouds Predominat Lower Cloud Form	louds 2 3 4 5 5 I Bl. on of 0	2 S S S S S S S S S	Semi-transparent Sedium Sense Fory dense So upper clouds Jaknown Salm Sortheast		C NE	
50-52 Height of Predominat Intermedia Clouds 53 Predominat Lower Cloud Form	2 4 .5 X B1	3 1 4 1 5 X 1 1ank 0 1 1 2 1	Sedium Dense Fery dense So upper clouds Juknown Calm Northeast			Direction from which clouds are moving.
Upper Cloud 50-52 Height of Predominat Intermedia Clouds 53 Predominat Lower Cloud Form	on of O	5 N X 1 Lank 0 0 0 1 1 2 1	Very dense No upper clouds Vaknown Calm Northeast East			Direction from which clouds are moving.
Upper Cloud 50-52 Height of Predominat Intermedia Clouds 53 Predominat Lower Cloud Form	on of O		No upper clouds Unknown Calm Northeast Cast			Direction from which clouds are moving.
Upper Cloud 50-52 Height of Predominat Intermedia Clouds 53 Predominat Lower Cloud Form	on of O	1ank (1 0 (1 1 1 2 1	Inknown Calm Northeast Cast	· · ·		Direction from which clouds are moving.
Upper Cloud 50-52 Height of Predominat Intermedia Clouds 53 Predominat Lower Cloud Form		1 1	Northeast East			Direction from which clouds are moving.
50-52 Height of Predominat Intermedia Clouds 53 Predominat Lower Clour Form	louds 1	2 1	est	·		
Predominat Intermedia: Clouds 53 Predominat Lower Clou Form	<u> </u>				ENE. E. ESE	=
Predominat Intermedia: Clouds 53 Predominat Lower Clou Form	i 3	3 18	Southeast		SE	-
Predominat Intermedia: Clouds 53 Predominat Lower Clou Form	4	4 8	outh		SSE, S, SSW .	<u> </u>
Predominat Intermedia: Clouds 53 Predominat Lower Clou Form	5		outhwest		37	•
Predominat Intermedia: Clouds 53 Predominat Lower Clou Form	1 %		West Morthwest		MSW, W, WANN	-
Predominat Intermedia: Clouds 53 Predominat Lower Clou Form	8		North		NNW, N, NNB	-
Predominat Intermedia: Clouds 53 Predominat Lower Clou Form			so upper clouds		· ·	7
Predominat Intermedia: Clouds 53 Predominat Lower Clou Form			Inknown to 99,900 feet	X-overpunch in column 50 indicates that height was	Foot	Described to first but and and and are to the area to but dead float. But and
Intermedia: Clouds 53 Predominat Lower Clour Form	nate X		No intermediate clouds	obtained by some reliable means, within hour preceding	roet	Reported in feet, but coded and punched to the nearest hundred feet. Estimated heights were entered on the reporting form in red; measured heights in black, which
Lower Clou	diate Bl	lank (Jaknowa	observation,		were X-overpunched. Heights of Ci, Cs, or Cc were never entered.
Form			To low clouds	<u>:</u>	Fog	Any cloud type reported with No in parentheses, indicating precipitation occurring, was punched as if the (No) had not been reported.
54-55 Lower Clow	2	2 (umilus, fractocumilus		Cu. Fo	The bearing as at and last same was and raboves.
54-55 Lower Clow	3		umiloniabus		Cu-Nb, Cb	1
54-55 Jower Class	 4		tratocumilus tratus, fractostratus		St-Cu, Sc S, St, Fs	-
54-55 Lower Close	16	<u>6</u>	inbostratus		Mb-St. Na	1
54-55 Lower Class		lank l	Jaknowa	<u></u>		<u></u>
			to 10 tenths		-, f, 1-10	This amount applies to all low clouds, including fog, and is not necessarily
56 Density of		-5 S		Column 53 punched 2-6.	1-5	pensity of predominating lower cloud type, except fog.
Lower Clou		1 1	ery thin fog	Column 53 punched 1.	1-5	Density of fog, if fog is reported as predominating lower cloud form.
			hin fog	·]	
1	<u>2</u>		Thin in spots, light		1	•
]	3		ray Dense fog		1	
	3	5	ery dense fog		}	
	. 2 3		No low clouds Jaknowa			
]	2 3 4 5		PARESTER .		1	

			CARD	CONTENT		SOURCE CONTENT
Col – umns	Item	Code	Code Definition	Remarks	Units or Symbols	Reporting and Coding Practices
57	Direction of Low Clouds	8-0 X	See Column 49. No low clouds		Letter Directions	Direction from which clouds are moving.
58-60	Height of Low Clouds	000-999 XXX	Unknown O to 99,900 feet No low clouds	X-overpunch in column 58 indicates that height was obtained by some reliable means, within hour preceding	Feet	Reported in feet, but coded and punched to the nearest hundred feet. Estimated heights were entered on the reporting form in red; measured heights in black, which
61	Visibility (Shore Stations)	0 1 2 3 4	Unknown Less than 1/32 mile 1/32 mi but not 1/8 mi 1/8 mi but not 5/16 mi 5/16 mi but not 5/16 mi 5/16 mi but not 1 1/4 mi 1 1/4 mi but not 2 1/2mi 2 1/2 mi but not 6 mi 6 mi but not 10 miles 10 mi but not 30 miles	observation. Statute miles.	0-9	were X-overpunched. For shore stations only.
	Visibility (Ship Stations)	9 Blank 0 1 2 3 4 5 6	30 miles or over Unknown Less than 50 yards 50 yds but not 200 yds 200 yds but not 400 yds 400 yds but not 1000 yds 1000 yds but not 1 mile 1 mi but not 2 miles 2 mi but not 5 miles 5 mi but not 10 miles	Nautical miles.	0-9	For ship stations only.
62-64	Duration of	Blank 000-240	10 mi but not 30 miles 30 miles or over Unknown 0.0 to 24.0 hours			Recorded in or converted to hours and tenths.
65-68	Precip Amount of Precip	Blank 0000- 9999 000X Blank	Unknown 0.00 to 99.99 inches Trace Unknown or not reported	X-overpunch in Column 65 indicates estimated amount. Precipitation amounts from midnight to 6 AM are punched on the 0800 observation, amount from 6 AM to 6 PM on the 1200 observation, and the amount from 6 PM to midnight on the 1600 observation. No precipitation amounts are punched for the other hours.	In. to 1/100	Estimated amounts were entered on the recording form in red, or were underlined or encircled in red; measured amounts were entered in black. On ships and stations where raingage was not available, the following precipitation table was used for the purpose of estimating amount of rainfall: RATE AMOUNT PER HOUR RATE AMOUNT PER HOUR Trace 0.01 inch Heavy 0.50 inch Light 0.10 inch Very heavy 1.00 inch Moderate 0.30 inch Extremely heavy 2.00 inches
69-71	Duration of Fog	000-240 Blank	0.0 to 24.0 hours			Recorded in or converted to hours and tenths. Includes only fog with visibility less than 1100 yards, visibility code 3 or less.
72	Past Weather Obstruction to Vision	0 1 2 3 4 5 6 7 8 9 Blank	None Exceptional Visibility Drifting snow, light or moderate Drifting snow, heavy Hase Low fog Wist Light fog Fog Unknown		V ks, k/s s /k K/s, S/k z, 2 fs, fg n, H f	Recorded in early years in Beaufort notation, later in symbols of International Code.
73	Past Weather Precip	0 1 2 3 4	None Precip in sight Thunder, no precip Drissle Showers		ip t d, D p, P	- - - -

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			CARD	CONTENT		SOURCE CONTENT
Col - umns	Item	Code	Code Definition	Remarks	Units or Symbols	Reporting and Coding Practices
73	Past	5	Rain		r, R	
	Weather	6	Snow		a. S	
		7	Rain and snow		rs, RS	
	Precip	8	Hail]	h, H	
	(continued)	9	Thunderstorm, with		t	
			precipitation			
		Blank	Unknown			
74	Past	0	None	Total cloud amount less than 1/10.	<u> </u>	
	Weather	1	Clear	Total cloud amount 1/10 to 3/10,	<u> b</u>	4
		2	Partly cloudy	Total cloud amount 4/10 to 6/10.	bc	
	Misc.	3	Cloudy	Total cloud amount 7/10 to 9/10.	6	_
	Weather	4	Overcast	Total cloud amount more than 9/10.	0	
			Ugly, threatening sky	↓·	u	
		6	Lightning		1	
	ł	7	Gale	-	Gale	
	1	8	Squally weather	1	9, Q	- -
	İ		Heavy squalls	-	KQ	4
77 70	N		Unknown	<u> </u>		
75-77	Favorable	Blank	0.0 to 24.0 hours Unknown	-		Reported in or converted to hours and tenths. Favorable flying weather must meet
	Flying Weather	DIAME	Odkaowa			the following criteria: Sky partly cloudy or cloudy with ceiling 1000 feet or above, with surface wind speed less than 20 knots, with visibility 2 mautical miles (2 1/2 statute miles), or better.
78-79	Height of	00-97	0 to 9700 feet	Height of ceiling punched in these columns, despite		Height of low clouds, if below 9751 feet, provided more than 5/10 clouds exist.
,	Ceiling	99	Unlimited (ceiling	printing of "Station Pressure" on the card form.	'	Not punched for early record.
			above 9750 feet, or clear to 5/10 clouds)			
		Blank	Unknown			
80		Blank	Not used.			
				•		