



PAN EVAPORATION OBSERVATION

TAKING THE WIND RUN OBSERVATION ON THE TOTALIZING ANEMOMETER NovaLynx Model 200-2510 (Black Cup)

OBSERVER INSTRUCTIONS

JUNE 2015

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service - Cooperative Weather Observer Program
Office of Observations, Surface and Upper Air Division,
Program Management Branch- W/OBS31



Table of Contents

<u>Section:</u>	<u>Page</u>
1. Equipment Description.....	3
1.1 Evaporation Pan Mounting.....	3
1.2 Anemometer.....	3
1.3 Counter Display Unit.....	4
2. Taking the Daily Observation.....	5
3. Reporting the Daily Observation.....	6
4. Semi-Annual Check.....	7
<u>Appendix:</u>	
A. Manufacturer’s Specifications.....	8
B. WS Form B-92 for Reporting Wind Run.....	9

1. Equipment Description

The totalizing anemometer is a simple and precise way to measure air motion across the evaporation pan. Wind run is simply the total distance of the traveled wind over a period of time.

This instrument is mounted onto the same wooden platform that supports the Evaporation Pan. The NovaLynx model is an instrument comprised of a black plastic three-cup rotating assembly mounted to a small grey enclosure that contains the electronic counter. The same enclosure displays the wind run as an accumulated value in miles.

When you open the access door (Figure 1.3) of the enclosure you will see an LCD display the total number of miles accrued on the instrument in the course of its outdoor operation.

The pole mounted enclosure remains closed at all times, except for the brief time when you read the displayed value and write the value to a note pad.

1.1. Evaporation Pan Mounting: In order to realistically determine the amount of air motion across the surface of the water in the pan, the totalizing anemometer is required to be positioned between six to eight inches above the rim of the Evaporation Pan (see Figure 1.2).



Figure 1.1 NovaLynx Model Totalizing Anemometer



Figure 1.2 Mounting Location for All Models of Totalizing Anemometers (legacy totalizer shown)

1.2. Anemometer: The cups rotate 960 revolutions per mile of wind passage. A magnetic switch in the anemometer creates an electronic pulse with each revolution and this is counted by the totalizer and converted into miles of wind passage. The cups will start to turn when the air motion reaches 0.75 miles per hour.

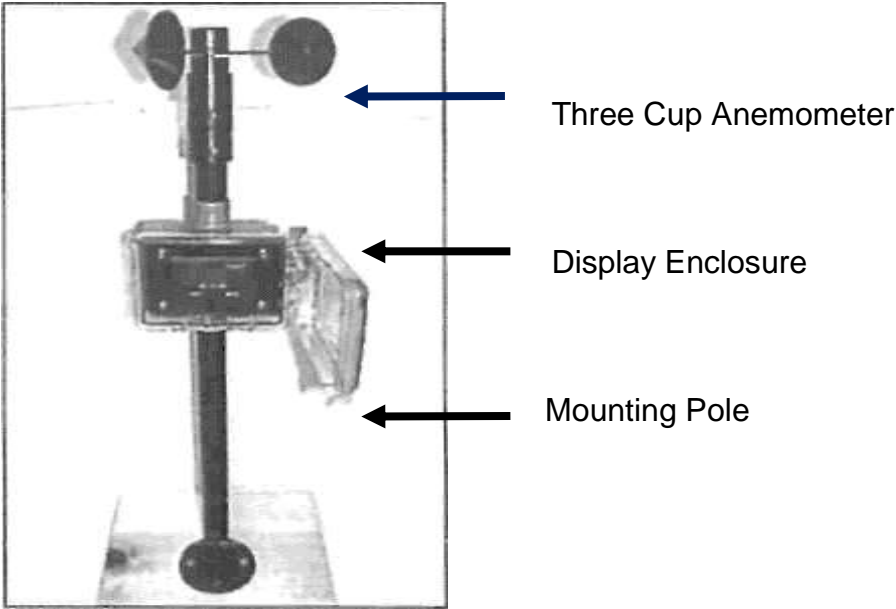


Figure 1.3 Totalizing Anemometer manufactured by the NovaLynx Company

1.3. Counter Display Unit:

The totalizer is located inside the water tight and corrosion resistant enclosure. The display can be viewed by opening the hinged door from the left side. The unit is setup to display the accumulated wind run in tenths of miles.

There are two buttons directly below the display: **T/R** and **RST**. (Figure 1.4).

The **T/R button** was designed as a toggle for some users to select between 'wind run' and 'average wind speed.'



Figure 1.4 Accumulated Wind Run (Instrument recently installed).

The **RST button** was designed as a 'zero reset' function to clear the accumulated data.

⚠ Do not press either button.

The counter will increment to nearly ten million miles (i.e., 9999999.9) before it begins a new cycle at zero.

2. Taking the Daily Observation

1. At the standard hour for the observation open the enclosure door.
2. Read the displayed values on the LCD screen. It is displayed in tenths of a mile.
3. Round this reading to the nearest whole mile.
4. Write this value to a notepad. One such notepad is WS Form B-82, illustrated in Figure 2.1. Use the form's Remarks and Notes section or its reverse side, to journal the reading.
5. Do not press either the Reset Button (i.e., RST) or the Totalizer/Ratemeter Button (i.e., T/R).
6. Close the enclosure door.
7. Obtain the Accumulated Miles logged from yesterday's observation. Subtract that value from today's displayed reading (rounded to nearest mile). This is the 24-hour wind run in units of whole miles.
8. Write this 24-hour value to a notepad (i.e., WS Form B-82).

WS FORM B-82 - OFFICIAL WEATHER OBSERVER'S RECORD

DATE _____, 20____ DAY OF WEEK _____

TEMPERATURE °F			PRECIPITATION																							
24 Hrs. ending at Observation		AT. OBSN.	DRAW A STRAIGHT LINE (———) THROUGH HOURS PRECIPITATION WAS OBSERVED. AND A WAVED LINE (~~~~) THROUGH HOURS PRECIPITATION PROBABLY OCCURRED BUT WAS NOT OBSERVED.																							
MAX.	MIN.		A.M.												P.M.										Midnight	
			1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	
			
PRECIPITATION		SNOW, ICE PELLETS, HAIL ICE on ground at Obsn. (Inches)	WEATHER						REMARKS AND NOTES																	
24 Hr. Amounts AT OBSN.			Fog	Ice Pellets	Gleaze	Thunder	Hail	Damaging Wind																		
RAIN, MELTED SNOW, Etc. (Inches and Hundredths)	SNOW, ICE PELLETS, HAIL (Inches and tenths)																									

ENTER ADDITIONAL NOTES ON REVERSE SIDE

Figure 2.1 WS Form B-82 – Official Weather Observer's Record. Observers write down the accumulated wind run and the manually calculated 24-hour run on this temporary log.

3. Reporting the Daily Observation

Open the official reporting system your NWSREP instructs you to use. This is either the WxCoder's form (Figure 3.1) or the legacy printed form, 'Record of Evaporation and Climatological Observations' (i.e., WS Form B-92).

Then access your notepad where you wrote down the current day's observations.

1. Read your notes of the displayed 'Accumulated Miles' and enter this figure into the proper column in the official reporting form. For the Superform, it is the column marked, "**Anemometer dial reading**" located as the fourth column in from the right side (See Orange Square in Figure 3.1).
2. Next, read the value of the calculated '24-hour Miles,' from your notes and enter this figure into the proper column in the official reporting form. For the Superform, it is the column marked, '**24 hour movement**' located as the third column from the right side (See Green Square in Figure 3.1).

Observers who use WxCoder will enter the current day's 24-Hour Miles, and the Accumulated Miles into the Third and Fourth columns from right-side, respectively (See Figure 3.1).

Day	Max temperature	Min temperature	Air observation	Precipitation	Melt-d Accum	Snowfall	Snow depth	Evaporation	Max water temperature	Min water temperature	Anemometer dial reading	24 hour movement	Monthly precipitation	Remarks
1	73	38	42	0.00	1	0.0	0	0.18	72	41	8299	47	0.00	
2	73	39	38	0.00	1	0.0	0	0.20	72	42	8339	50	0.00	
3	72	37	30	0.00	1	0.0	0	0.22	70	42	8408	99	0.00	
4	61	29	34	0.00	1	0.0	0	0.22	65	35	8500	92	0.00	
5	58	31	31	0.00	1	0.0	0	0.14	60	32	8575	76	0.00	
6	55	23	23	0.00	1	0.0	0	0.15	60	32	8639	64	0.00	
7	51	21	22	0.00	1	0.0	0	0.10	59	32	8689	49	0.00	
8	56	20	25	0.00	1	0.0	0	0.11	59	33	8735	47	0.00	
9	63	24	26	0.00	1	0.0	0	0.15	64	35	8792	57	0.00	
10	64	25	26	0.00	1	0.0	0	0.12	65	41	8839	47	0.00	
11	67	28	29	0.00	1	0.0	0	0.13	66	47	8889	50	0.00	
12	70	32	42	0.00	1	0.0	0	0.13	67	46	8928	61	0.00	
13	61	40	42	0.03	1	0.0	0	0.04	62	45	8982	54	0.03	
14	52	32	34	0.00	1	0.0	0	0.05	59	45	9027	45	0.03	
15	48	32	36	0.00	1	0.0	0	0.09	65	47	9072	45	0.03	
16	62	34	40	0.00	1	0.0	0				9122	50	0.03	Evapen drained-end of season
17	56	31	32	0.16	1	0.0	0				9221	113	0.16	
18	49	24	26	0.00	1	0.0	0				9299	64	0.19	
19	55	23	28	0.00	1	0.0	0	0.00			9346	47	0.19	
20	61	26	44	0.00	1	0.0	0				9390	44	0.19	
21	64	37	44	0.00	1	0.0	0				9461	71	0.19	
22	56	38	46	0.06	1	0.0	0				9540	79	0.25	
23	56	30	30	1.02	1	3.0	3				9656	106	1.27	
24	39	38	27	0.14	1	1.0	2				9725	88	1.41	
25	37	24	25	0.00	1	0.0	1				9761	36	1.41	
26	37	18	20	7		7	1				9824	63	1.41	
27	37	18	33	0.00	1	0.0	7				9900	30	1.41	
28	44	30	41	0.00	1	0.0	0				9905	45	1.41	
29	54	36	36	0.00	1	0.0	0				9956	51	1.41	
30	60	32	33	0.00	1	0.0	0				5	48	1.41	
31	56	30	30	0.00	1	0.0	0				12	47	1.41	
56.70... 29.48... 33.74... 1.416080000... 4														

Figure 3.1 Example of Superform Entries (i.e., with WxCoder).

Note: Observers who use the printed reporting method, WS Form B-92, enter their observation of Accumulated Miles and 24-hour Miles into their respective columns under the column heading, '**Wind.**' The observations are entered in the respective sub-columns, marked 'Anemometer Dial Reading' and '24-Hour Movement.' See Appendix B for an illustration of WS Form B-92, Record of Evaporation and Climatological Observations.


4. Semi-Annual Check

Your NWSREP should inspect the Totalizing Anemometer every six months upon time of scheduled station visitation. Phone or email your NWSREP as soon as possible upon hearing any noisiness in the cup bearings, or suspected error in the counter readings, or a fading LCD display, or damage to the enclosure (i.e., hinges or latch). Your NWSREP will replace the instrument bearing and cup assembly if the unit becomes noisy or if the spinning threshold is too high a wind speed.

At start and end of observation season, leave the totalizer counter unchanged. Never reset the totalizing anemometer.

Note: For the Observer, no maintenance actions are required for the NovaLynx either for external components or the display inside the enclosure. If any part of the Totalizing Anemometer needs cleaning attention, first phone your NWSREP to describe the condition and then the NWSREP should respond with a recommended action.

APPENDIX A – MANUFACTURER’S SPECIFICATIONS – NovaLynx Model 200-2510-A

System Component	NovaLynx Specification	Remarks
Anemometer Design		
Wind Totalizer Type	3-Cup Anemometer	
Cup Size	2.0-inch Cup Diameter	
Cup Material	Plastic, glass reinforced nylon	
Cup Design	Conical	
Cup Constant	960 Rev/mile (597 rev/km)	
Starting Speed:	0.75mph	
Max Speed:	75mph, survival 100mph	
System Size:	9-inches diameter, 15-inch height	
Enclosure Color:	Grey	
Weight:	5-lbs.	
Totalizer System		
Digits:	Eight (8)	9,999,999.1
Counter:	Up counting	Pre-Programmed
Decimal Point:	5 places (programmable) maximum	Tenths is required
Scaler:	0.00001 to 100.00000	Pre-Programmed
LCD Display		
Internal Battery:	3V, Lithium	
Life Expectancy:	5-years +	
Display Size:	0.43-inches	
Front Panel Rating:	NEMA 4X	
Operating Temperature	32° F to 131° F	
		
Photo of NovaLynx Totalizing Anemometer Assembly Kit.		

APPENDIX B – WS FORM B-92 ‘Record of Evaporation and Climatological Observations’

Station		County			State		Date (Month & yr)		Time of Complete Observation (Local time)		Standard Time in Use		RECORD OF EVAPORATION AND CLIMATOLOGICAL OBSERVATIONS							
DATE	AIR TEMPERATURE °F						PRECIPITATION						WIND		EVAPORATION (Inches & hundredths)		WATER TEMP. °F		ADDITIONAL DATA/REMARKS	
	24 Hours Ending at Observation		At Observation		Supplemental Readings at _____		Time of beginning		Time of ending		24 Hour Amounts		Anemometer: Dir. Reading (S/Mag)	24 Hour Waverent	Gage Reading or Amount Added +	Reading When Tank Filled or Amount Removed -	Amount of Evaporation	24 Hours Ending at Observation		
	Max	Min	Dry-bulb	Wet-bulb	Dew Point	Dry-bulb	Wet-bulb	Dew Point	Time of beginning	Time of ending	Rain, Melted Snow, etc. (in & hundredths)	Snow, Ice Pellets, Hail, etc. (in & hundredths)						As Observed (inches)		As Observed (inches)
1																				
2																				
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				
11																				
12																				
13																				
14																				
15																				
16																				
17																				
18																				
19																				
20																				
21																				
22																				
23																				
24																				
25																				
26																				
27																				
28																				
29																				
30																				
31																				
Sum																				
Avg																				

WS FORM B-92 (1-80) (PRES. BY WSOM B-17)

U.S. DEPARTMENT OF COMMERCE
NOAA
NATIONAL WEATHER SERVICE

OBSERVER

STATION NUMBER