

**NATIONAL WEATHER SERVICE INSTRUCTION 10-514**

**November 14, 2008**

*Operations and Services*

*Public Weather Services, NWSPD 10-5*

**NATIONAL WINTER WEATHER PRODUCTS SPECIFICATION**

---

**NOTICE:** This publication is available at: <http://www.nws.noaa.gov/directives/>

---

**OPR:** W/OS22 (A. Noel)

**Certified by:** W/OS22 (E. Jacks)

**Type of Issuance:** Routine.

---

**SUMMARY OF REVISIONS:** This instruction supersedes NWSI 10-514, “National Winter Weather Products Specification,” dated August 16, 2006. The following changes have been incorporated into this directive:

1. Included ‘probabilistic’ in title of product (Probabilistic Heavy Snow and Icing Discussion). (Section 2)
2. Included a new example of a Probabilistic Heavy Snow and Icing Discussion containing revised HPC wording with regard to heavy snow and/or icing, i.e., THE PROBABILITY OF HVY SNOW OR SIGNIFICANT ICING IS LESS THAN 10 PERCENT’. (Section 2.3.5)
3. Made minor verbiage change to the mission connection portion of the Probabilistic Heavy Snow & Icing Forecasts product. (Section 3.1)
4. Replaced the Probabilistic Icing Forecast chart with a chart containing an actual forecast case of significant icing (previous example was “blank”). (Figure 4)
5. Revised the mission connection and content sections of the 72-Hour Low Tracks Graphic product to include the initial location and pressure of low pressure centers. (Sections 4.1 and 4.3.4)
6. Replaced the 72-Hr Low Tracks graphic with a graphic showing new formatting. (Figure 5)
7. Revised the content section of the 72-Hour Low Tracks Graphic (Non-Technical). (Section 5.3.4)
8. Replaced the 72-Hr Low Tracks (Non-Technical) graphic with a graphic showing new formatting. (Figure 6)

Signed

October 30, 2008

---

David B. Caldwell  
Director, Office of Climate,  
Water, and Weather Services

Date

**National Winter Weather Products Specification**

<u>Table of Contents:</u>	<u>Page</u>
<b>1. Introduction</b> .....	4
<b>2. Probabilistic Heavy Snow and Icing Discussion (product category QPFHSD)</b> .....	4
2.1 Mission Connection .....	4
2.2 Issuance Guidelines .....	4
2.2.1 Creation Software .....	4
2.2.2 Issuance Criteria .....	4
2.2.3 Issuance Time .....	4
2.2.4 Valid Time .....	4
2.2.5 Product Expiration Time.....	4
2.3 Technical Description.....	4
2.3.1 Universal Geographic Code Type.....	4
2.3.2 MND Broadcast Instruction Line .....	4
2.3.3 MND Product Type Line .....	5
2.3.4 Content.....	5
2.3.5 Format.....	5
2.4 Updates, Amendments, and Corrections.....	5
<b>3. Probabilistic Heavy Snow &amp; Icing Forecasts (prod cat. D[1-3]P[04S, 08S, 12S, 25Z])</b> ..	5
3.1 Mission Connection .....	5
3.2 Issuance Guidelines .....	6
3.2.1 Creation Software .....	6
3.2.2 Issuance Criteria .....	6
3.2.3 Issuance Time .....	6
3.2.4 Valid Time .....	6
3.2.5 Product Expiration Time.....	7
3.3 Technical Description.....	7
3.3.1 Universal Geographic Code Type.....	7
3.3.2 MND Broadcast Line.....	7
3.3.3 MND Header.....	7
3.3.4 Content.....	7
3.3.5 Format Examples .....	8
3.3.5.1 D1P04S Example .....	8
3.3.5.2 D1P08S Example .....	9
3.3.5.3 D1P12S Example .....	10
3.3.5.4 D1P25Z Example.....	11
3.4 Updates, Amendments, and Corrections.....	11
<b>4. 72-Hour Low Tracks Graphic (product category LWTK72)</b> .....	11
4.1 Mission Connection.....	11
4.2 Issuance Guidelines.....	11

4.2.1	Creation Software.....	11
4.2.2	Issuance Criteria.....	12
4.2.3	Issuance Time.....	12
4.2.4	Valid Time.....	12
4.2.5	Product Expiration Time.....	12
4.3	Technical Description.....	12
4.3.1	Universal Geographic Code Type.....	12
4.3.2	MND Broadcast Instruction Line.....	12
4.3.3	MND Product Type Line.....	12
4.3.4	Content.....	12
4.3.5	Format.....	13
4.4	Updates, Amendments, and Corrections.....	13
<b>5.</b>	<b>72-Hour Low Tracks Graphic (Non-Technical) (no product ID or header).....</b>	<b>13</b>
5.1	Mission Connection.....	13
5.2	Issuance Guidelines.....	13
5.2.1	Creation Software.....	13
5.2.2	Issuance Criteria.....	13
5.2.2	Issuance Criteria.....	13
5.2.3	Issuance Time.....	14
5.2.4	Valid Time.....	14
5.2.5	Product Expiration Time.....	14
5.3	Technical Description.....	14
5.3.1	Universal Geographic Code Type.....	14
5.3.2	MND Broadcast Instruction Line.....	14
5.3.3	MND Product Type Line.....	14
5.3.4	Content.....	14
5.3.5	Format.....	15
5.4	Updates, Amendments, and Corrections.....	15

1. **Introduction.** This procedural directive describes the winter weather products issued by the Hydrometeorological Prediction Center (HPC) for the contiguous United States (CONUS), guidelines associated with these products, detailed content and format for each product type.

2. **Probabilistic Heavy Snow and Icing Discussion (product category QPFHSD)**

2.1 **Mission Connection.** HPC issues a heavy snow and icing discussion that provides the meteorological reasoning for the 24-hr probabilistic heavy snow and icing guidance graphics for Days One, Two, and Three. This text message is used by NWS field offices and the general meteorological community (private sector and the media) including the aviation community.

2.2 **Issuance Guidelines**

2.2.1 **Creation Software.** HPC uses a text editor to issue the QPFHSD.

2.2.2 **Issuance Criteria.** The QPFHSD discussion follows the issuance of scheduled or event-driven updates to the probabilistic heavy snow and icing graphics. The discussion is routinely issued from September 15 to May 15.

2.2.3 **Issuance Time.** See Table 1, below.

2.2.4 **Valid Time.** See Table 1, below.

<i>HPC Probabilistic Heavy Snow and Icing Discussion</i>				
<i>Issuance Time (UTC)</i>	<i>Valid Time (UTC)</i>	<i>AWIPS ID</i>	<i>WMO Header</i>	<i>Product Description</i>
0930	1200 Day 1 to 1200 Day 3 (72 hour valid period)	QPFHSD	FOUS11 KWBC	Text providing meteorological reasoning for 24-hour heavy snow and icing probabilistic graphics for Days 1, 2, and 3
2130	0000 Day 1 to 0000 Day 3 (72 hour valid period)	QPFHSD	FOUS11 KWBC	Text providing meteorological reasoning for 24-hour heavy snow and icing graphics for Days 1, 2, and 3

**Table 1.** Product schedule and valid times for heavy snow and icing discussion

2.2.5 **Product Expiration Time.** The product expires after either the valid time or a new product is issued.

2.3 **Technical Description.** The HSD follows the format and content described in this section.

2.3.1 **Universal Geographic Code Type.** Not applicable.

2.3.2 **MND Broadcast Instruction Line.** Not applicable.

2.3.3 MND Product Type Line. The QPFHSD header is Probabilistic Heavy Snow and Icing Discussion.

2.3.4 Content. HPC issues a heavy snow and icing discussion that provides the meteorological reasoning for the 24-hr Days One, Two, and Three probabilistic heavy snow and icing guidance graphics.

2.3.5 Format.

FOUS11 KWBC 051944  
QPFHSD

PROBABILISTIC HEAVY SNOW AND ICING DISCUSSION  
NWS HYDROMETEOROLOGICAL PREDICTION CENTER CAMP SPRINGS MD  
344 PM EDT FRI OCT 05 2007

VALID 00Z SAT OCT 06 2007 - 00Z TUE OCT 09 2007

DAY 1...

AN AMPLIFIED UPPER-LEVEL TROUGH WILL CROSS THE GREAT BASIN...PRECEDED BY A STREAM OF SHRTWV ENERGY AND UPPER DIFLUENT FLOW FROM UT TO MT. THE LEFT EXIT REGION SHOULD ALSO HELP TO ENHANCE THE VERTICAL LIFT FROM NWRN WY NWD INTO AND WRN MT...WHERE MODEL GUIDANCE INDICATES THE STRONGEST FRONTOGENETIC FORCING WILL OCCUR AS THE WELL DEFINED COLD FRONT SLICES EAST INTO THE CNTRL ROCKIES. QPF AND THERMAL PROFILES SUPPORT MDT TO HVY SNOW SNOWFALL OVER THE NRN WASATCH INTO WRN WY AND SWRN MT...WITH LOWERING SNOW LEVELS AS HEIGHTS DROP THRU THIS PERIOD. LOCALIZED 12 INCH AMTS ARE POSSIBLE ESPECIALLY OVER THE FAVORED OROGRAPHIC SPOTS IN NWRN WY.

THE PROBABILITY OF SIGNIFICANT ICING IS LESS THAN 10 PERCENT.

DAY 2...

MODELS ARE STARTING TO GET INTO BETTER AGREEMENT WITH THE UPPER SYSTEM REACHING ACROSS THE ROCKIES. THE 12Z RUNS OF THE NAM/GFS AND ECMWF NOW SUGGEST THAT THIS SYSTEM WILL BE PROGRESSIVE ENOUGH TO LIMIT THE THREAT FOR WIDESPREAD HVY SNOW OVER CO/WY. THERE SHOULD STILL BE ENOUGH EMBEDDED ENERGY WITH THE PASSAGE OF THE SHARP TROF...ALONG WITH LOWERING HEIGHTS TO SPARK PERIODS OF SNOW THRU THE HIGHER TERRAIN OF CO DURING D2 AND EXITING WRN WY EARLY THIS PERIOD.

THE PROBABILITY OF SIGNIFICANT ICING IS LESS THAN 10 PERCENT.

DAY 3...

THE PROBABILITY OF HVY SNOW OR SIGNIFICANT ICING IS LESS THAN 10 PERCENT.

HEDGE

\$\$

2.4 Updates, Amendments, and Corrections. Products are updated, amended, or corrected, as necessary.

### 3. Probabilistic Heavy Snow & Icing Forecasts (prod cat. D[1-3]P [04S, 08S, 12S, 25Z])

3.1 Mission Connection. HPC issues probabilistic heavy snow and icing guidance products

to support the NWS winter weather watch/warning/outlook program and to indicate heavy snow and icing threats to external users and partners. These products are issued in probabilistic form to better represent the forecast uncertainty associated with a particular event.

3.2 Issuance Guidelines.

3.2.1 Creation Software. HPC uses the N-AWIPS software to generate these products.

3.2.2 Issuance Criteria. These are routine, schedule-driven products, issued as specified in Table 2. Charts are routinely issued from September 15 to May 15.

3.2.3 Issuance Time. Refer to Table 2.

3.2.4 Valid Time. Day 1 encompasses the forecast period from 12 to 36 hours on the 00/12 UTC model forecast cycle (00 UTC for the 0900 issuance and 12 UTC for the 2100 issuance), Day 2 encompasses the forecast period from 36 to 60 hours on the 00/12 UTC model forecast cycle, and Day 3 encompasses the forecast period 60-84 hours on the 00/12 UTC model forecast cycle. Refer to Table 2.

<b><i>HPC Probabilistic Heavy Snow and Icing Graphical Guidance Product Schedule</i></b>				
<b><i>Issuance Time (UTC)</i></b>	<b><i>Valid Time (UTC)</i></b>	<b><i>AWIPS ID</i></b>	<b><i>WMO Header</i></b>	<b><i>Product Description</i></b>
0900	1200 – 1200	D1P04S	PSBB04 KWNH	Day 1 Probability of Receiving at least 4” of Snow Accumulation
	1200 – 1200	D1P08S	PSBB08 KWNH	Day 1 Probability of Receiving at least 8” of Snow Accumulation
	1200 – 1200	D1P12S	PSBB12 KWNH	Day 1 Probability of Receiving at least 12” of Snow Accumulation
	1200 – 1200	D1P25Z	PSBB25 KWNH	Day 1 Probability of Receiving at least .25” of Ice Accumulation
2100	0000 – 0000	D1P04S	PSBB04 KWNH	Day 1 Probability of Receiving at least 4” of Snow Accumulation
	0000 – 0000	D1P08S	PSBB08 KWNH	Day 1 Probability of Receiving at least 8” of Snow Accumulation
	0000 – 0000	D1P12S	PSBB12 KWNH	Day 1 Probability of Receiving at least 12” of Snow Accumulation
	0000 – 0000	D1P25Z	PSBB25 KWNH	Day 1 Probability of Receiving at least .25” of Ice Accumulation
0900	1200 – 1200	D2P04S	PSBC04 KWNH	Day 2 Probability of Receiving at least 4” of Snow Accumulation
	1200 – 1200	D2P08S	PSBC08 KWNH	Day 2 Probability of Receiving at least 8” of Snow Accumulation
	1200 – 1200	D2P12S	PSBC12 KWNH	Day 2 Probability of Receiving at least 12” of Snow Accumulation
	1200 – 1200	D2P25Z	PSBC25 KWNH	Day 2 Probability of Receiving at least .25” of Ice Accumulation
2100	0000 – 0000	D2P04S	PSBC04 KWNH	Day 2 Probability of Receiving at least 4” of Snow Accumulation
	0000 – 0000	D2P08S	PSBC08 KWNH	Day 2 Probability of Receiving at least 8” of Snow Accumulation
	0000 – 0000	D2P12S	PSBC12 KWNH	Day 2 Probability of Receiving at least 12” of Snow Accumulation
	0000 – 0000	D2P25Z	PSBC25 KWNH	Day 2 Probability of Receiving at least .25” of Ice Accumulation
0900	1200 – 1200	D3P04S	PSBD04 KWNH	Day 3 Probability of Receiving at least 4” of Snow Accumulation
	1200 – 1200	D3P08S	PSBD08 KWNH	Day 3 Probability of Receiving at least 8” of Snow Accumulation
	1200 – 1200	D3P12S	PSBD12 KWNH	Day 3 Probability of Receiving at least 12” of Snow Accumulation
	1200 – 1200	D3P25Z	PSBD25 KWNH	Day 3 Probability of Receiving at least .25” of Ice Accumulation
2100	0000 – 0000	D3P04S	PSBD04 KWNH	Day 3 Probability of Receiving at least 4” of Snow Accumulation
	0000 – 0000	D3P08S	PSBD08 KWNH	Day 3 Probability of Receiving at least 8” of Snow Accumulation
	0000 – 0000	D3P12S	PSBD12 KWNH	Day 3 Probability of Receiving at least 12” of Snow Accumulation
	0000 – 0000	D3P25Z	PSBD25 KWNH	Day 3 Probability of Receiving at least .25” of Ice Accumulation

**Table 2.** Probabilistic Heavy Snow and Icing Chart Issuance and Valid Times

3.2.5 Product Expiration Time. The product expires after the valid time or a new probabilistic heavy snow and icing forecast is issued, whichever comes first.

3.3 Technical Description. Charts should follow the format and content described in this section.

3.3.1 Universal Geographic Code Type. Not applicable.

3.3.2 MND Broadcast Line. Not applicable.

3.3.3 MND Header. Not applicable.

3.3.4 Content. These charts depict the probability of receiving specific thresholds of accumulated snow or ice in a 24-hour time period.

- a. Snowfall - closed lines represent the probability (slight, moderate, and high) that enclosed areas will receive equal to or greater than a specific threshold accumulation (4", 8" or 12") of snowfall in a 24 hour period. Note: The 4" threshold on the Snowfall Probability Graphic is drawn only for elevations less than 7,500 feet. Elevation criteria are not imparted for the 8" and 12" thresholds.
- b. Freezing Rain - depicts the probability in the same manner and time period as snowfall, but with an accumulation threshold of .25" (one quarter of an inch) of freezing rain.
- c. The forecaster probability thresholds are:
  - (1) SLIGHT (SLGT): 10% to less than 40% chance of occurrence within the outlined area.
  - (2) MODERATE (MDT): 40% to less than 70% chance of occurrence within the outlined area.
  - (3) HIGH: 70% or greater chance of occurrence within the outlined area.

Notes:

- a. At times the forecasters may use only one (slight) or two (slight and moderate) isolines for the forecast. This simply implies there is no moderate risk (only a slight risk is indicated) or high risk (only a slight and moderate risk are shown), respectively.
- b. Specific (deterministic) accumulations for a particular location in the United States can be obtained from the National Weather Service home page.

c. The probabilistic graphics combined with the deterministic forecasts provide a user both the most likely amount expected from an event and the potential the event will produce accumulations in excess of specific thresholds.

3.3.5 Format Examples. Examples of Day 1 Snow and Ice Accumulation charts follow. The format for Day 2 and Day 3 charts is identical and examples are not provided.

3.3.5.1 D1P04S Example.

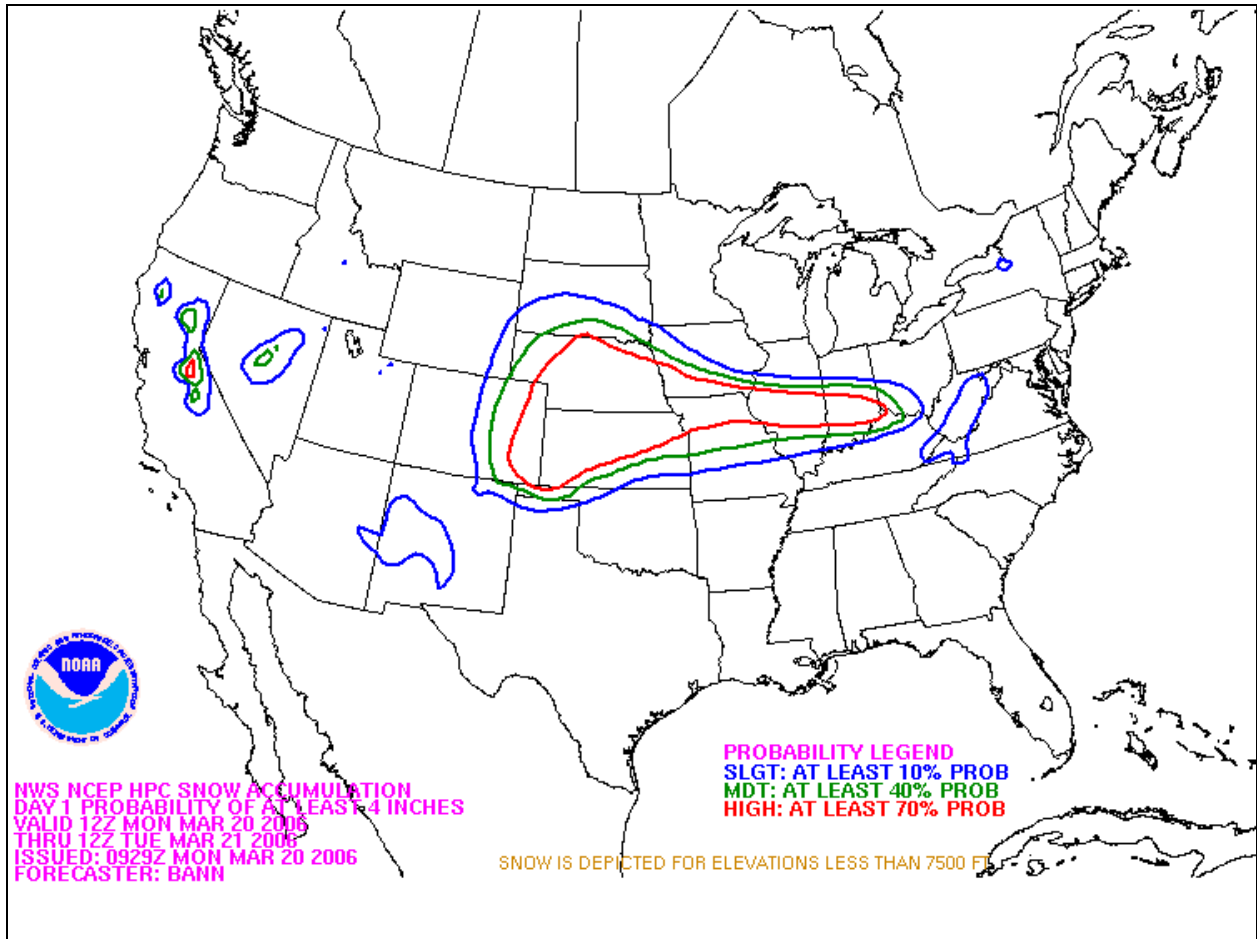


Figure 1. D1P04S - Day 1 Probability of Receiving at Least 4" Snow



3.3.5.2 D1P08S Example.

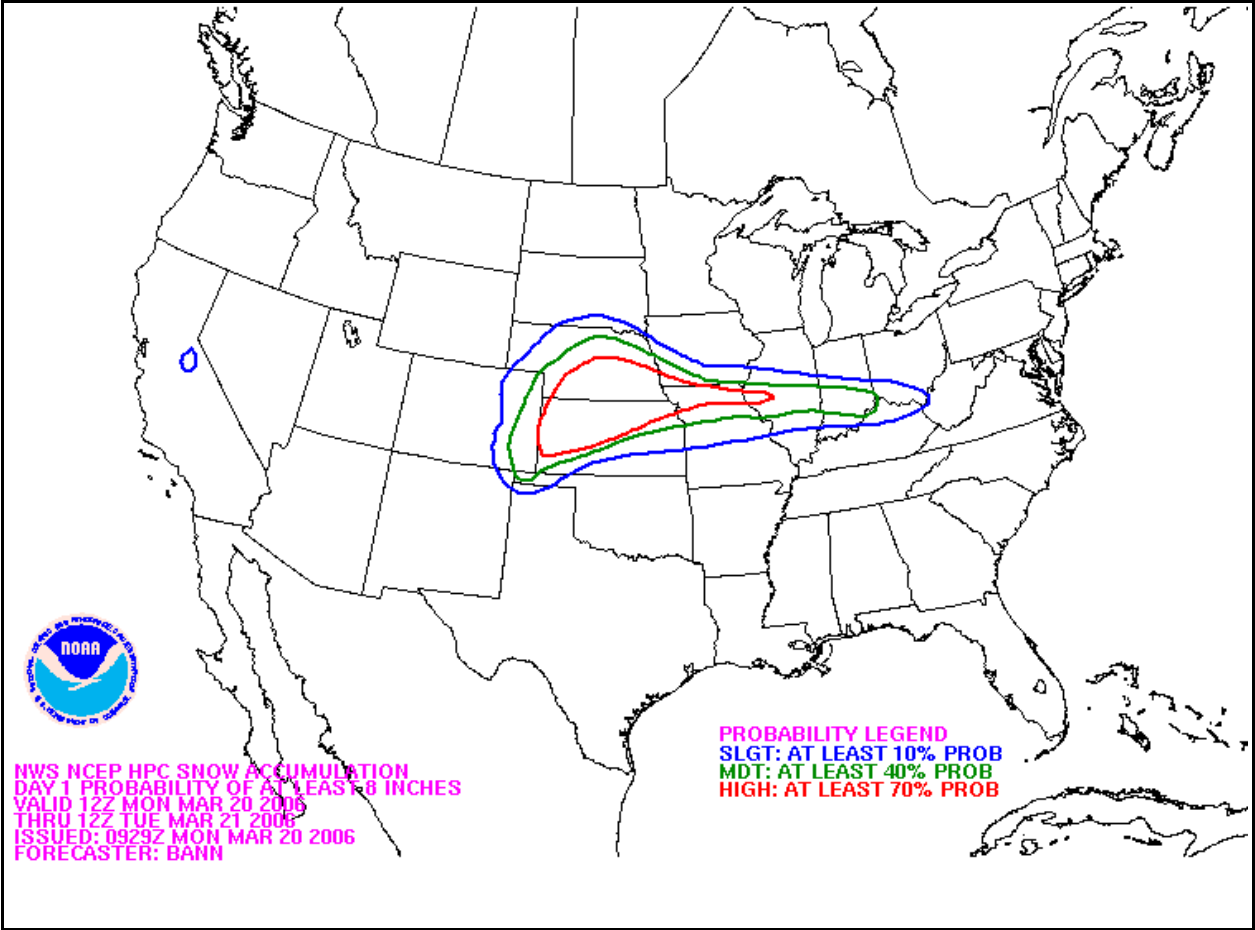


Figure 2. D1P08S - Day 1 Probability of Receiving at Least 8" Snow

3.3.5.3 DIP12S Example.

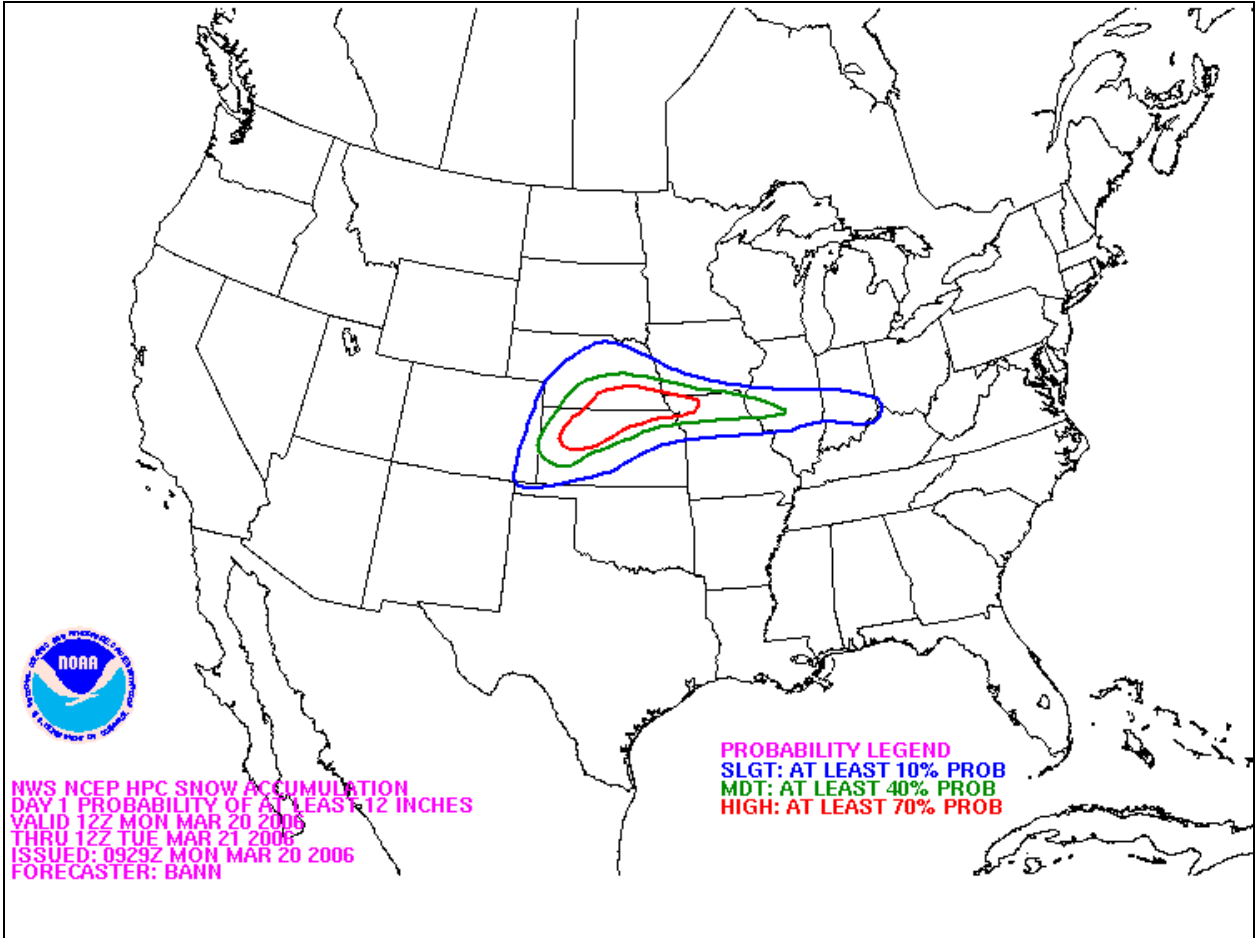
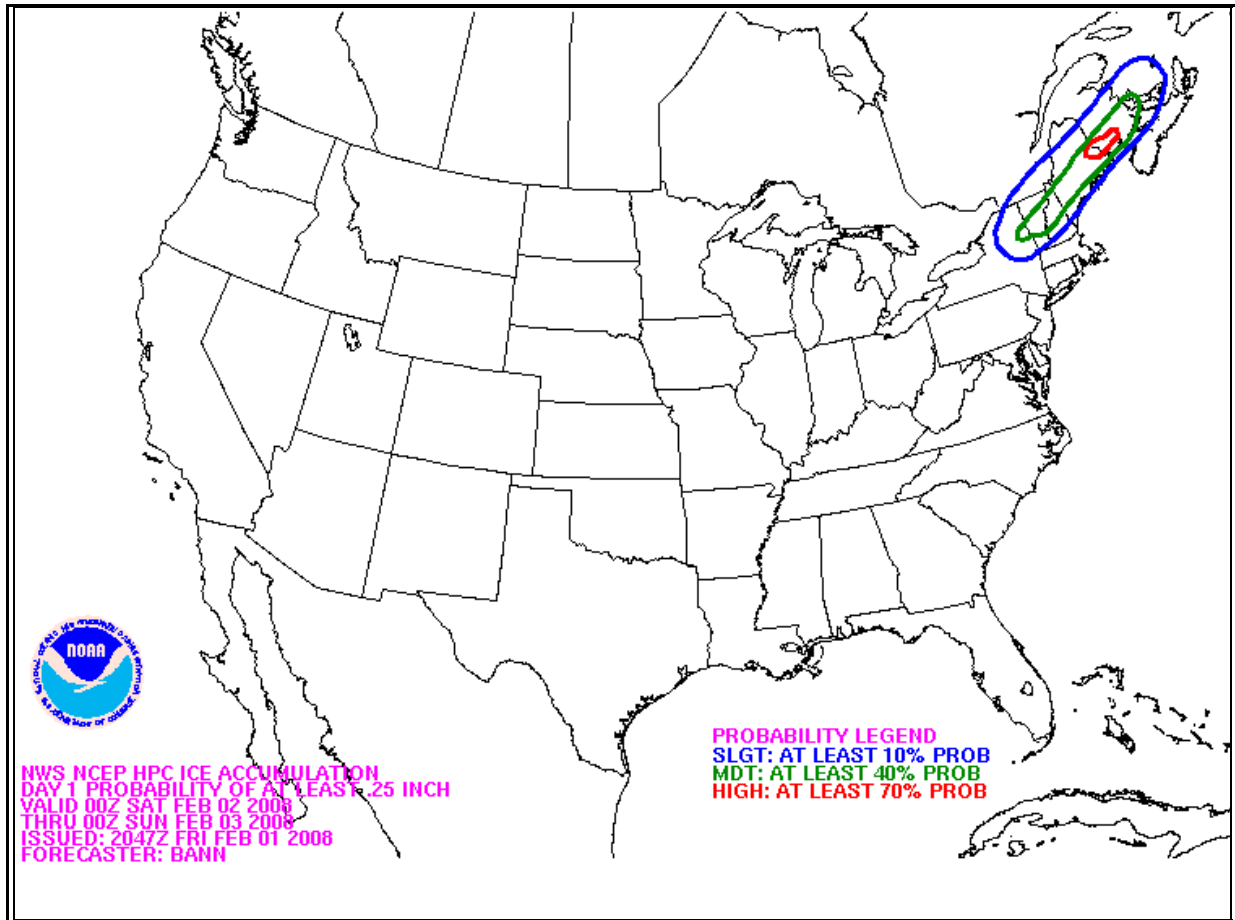


Figure 3. DIP12S - Day 1 Probability of Receiving at Least 12" Snow

3.3.5.4 D1P25Z Example.



**Figure 4.** D1P25Z - Day 1 Probability of Receiving at Least .25" Ice

3.4 Updates, Amendments, and Corrections. HPC will correct for format and grammatical errors as required.

**4. 72-Hour Low Tracks Graphic (product category LWTK72).**

4.1 Mission Connection. HPC issues a graphic chart which depicts the initial and forecast location and central pressure of significant surface lows impacting the CONUS in 12-hour increments out to 72 hours into the future. This graphic is used by NWS field offices and the general meteorological community including the private sector and the media.

4.2 Issuance Guidelines.

4.2.1 Creation Software. HPC uses the N-AWIPS software to generate this product.

4.2.2 Issuance Criteria. This is a schedule-driven product, routinely issued from September 15 to May 15.

4.2.3 Issuance Time. The low tracks graphic is issued at 0900 UTC and 2100 UTC daily, or when any corrections or amendments are needed.

4.2.4 Valid Time. The low tracks graphic is valid until expiration time or until a new low tracks graphic is issued.

4.2.5 Product Expiration Time. The product expires at expiration time or when a new low tracks graphic is issued, whichever comes first.

4.3 Technical Description. The chart should follow the format and content described in this section.

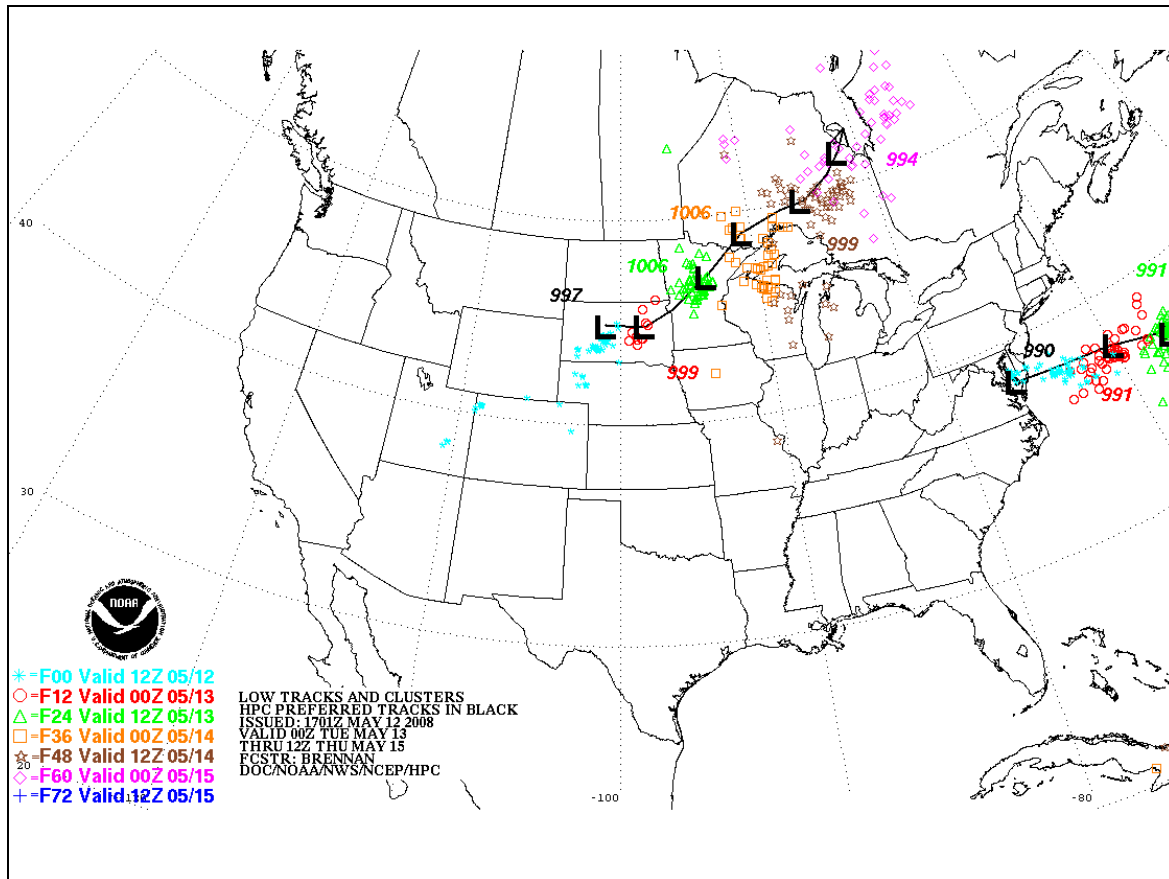
4.3.1 Universal Geographic Code Type. Not applicable.

4.3.2 MND Broadcast Instruction Line. Not applicable.

4.3.3 MND Product Type Line. Not applicable.

4.3.4 Content. The chart depicts the initial and forecast location and central pressure of surface lows associated with significant winter weather in the CONUS in 12-hour increments out to 72 hours into the future (ending at 12 UTC on the 2100 UTC issuance and ending at 00 UTC on the 0900 UTC issuance). The initial position and central pressure of existing lows at 00 UTC or 12 UTC are depicted in black, with initial model positions of existing lows shown in cyan. HPC's forecast low positions and track forecast are depicted in black. The HPC forecast central pressure and all available computer model forecast positions for a given time period are depicted with symbols in colors matching the valid date and time of the forecast, as shown in the index. The spread of model forecast positions provides users with a sense of the uncertainty associated with the forecast.

4.3.5 Format.



**Figure 5.** LWTK72 – 72-Hr Low Tracks

4.4 Updates, Amendments, and Corrections. HPC will correct for format and grammatical errors as required.

**5. 72-Hour Low Tracks Graphic (Non-Technical) (no product ID or header).**

5.1 Mission Connection. HPC issues a non-technical version of the 72-hour low tracks graphic chart which depicts the forecast location of significant surface lows impacting the CONUS in 12-hour increments out to 72 hours into the future. Due to its non-technical nature this graphic can be used by the public as well as the general meteorological community including the private sector and the media.

5.2 Issuance Guidelines.

5.2.1 Creation Software. HPC uses the N-AWIPS software to generate this product.

5.2.2 Issuance Criteria. This is a schedule-driven product, routinely issued from September 15 to May 15.

5.2.3 Issuance Time. The non-technical low tracks graphic is issued at 0900 UTC and 2100 UTC daily, or when any corrections or amendments are needed.

5.2.4 Valid Time. This product is valid until expiration time or until a new non-technical low tracks graphic is issued.

5.2.5 Product Expiration Time. The product expires at expiration time or when a new non-technical low tracks graphic is issued, whichever comes first.

5.3 Technical Description. The chart should follow the format and content described in this section.

5.3.1 Universal Geographic Code Type. Not applicable.

5.3.2 MND Broadcast Instruction Line. Not applicable.

5.3.3 MND Product Type Line. Not applicable.

5.3.4 Content. The chart depicts the forecast location of surface lows associated with significant winter weather in the CONUS in 12-hour increments out to 72 hours into the future (ending at 12 UTC on the 2100 UTC issuance and ending at 00 UTC on the 0900 UTC issuance). The forecast positions and track of the low are displayed in white. The initial position of existing lows at 00 UTC or 12 UTC will be depicted in red without circles. The yellow circles around each forecast low position represent a 75% probability that the observed low will be located within the circle. Note: This probability is derived from the previous season's verification data.

5.3.5 Format.

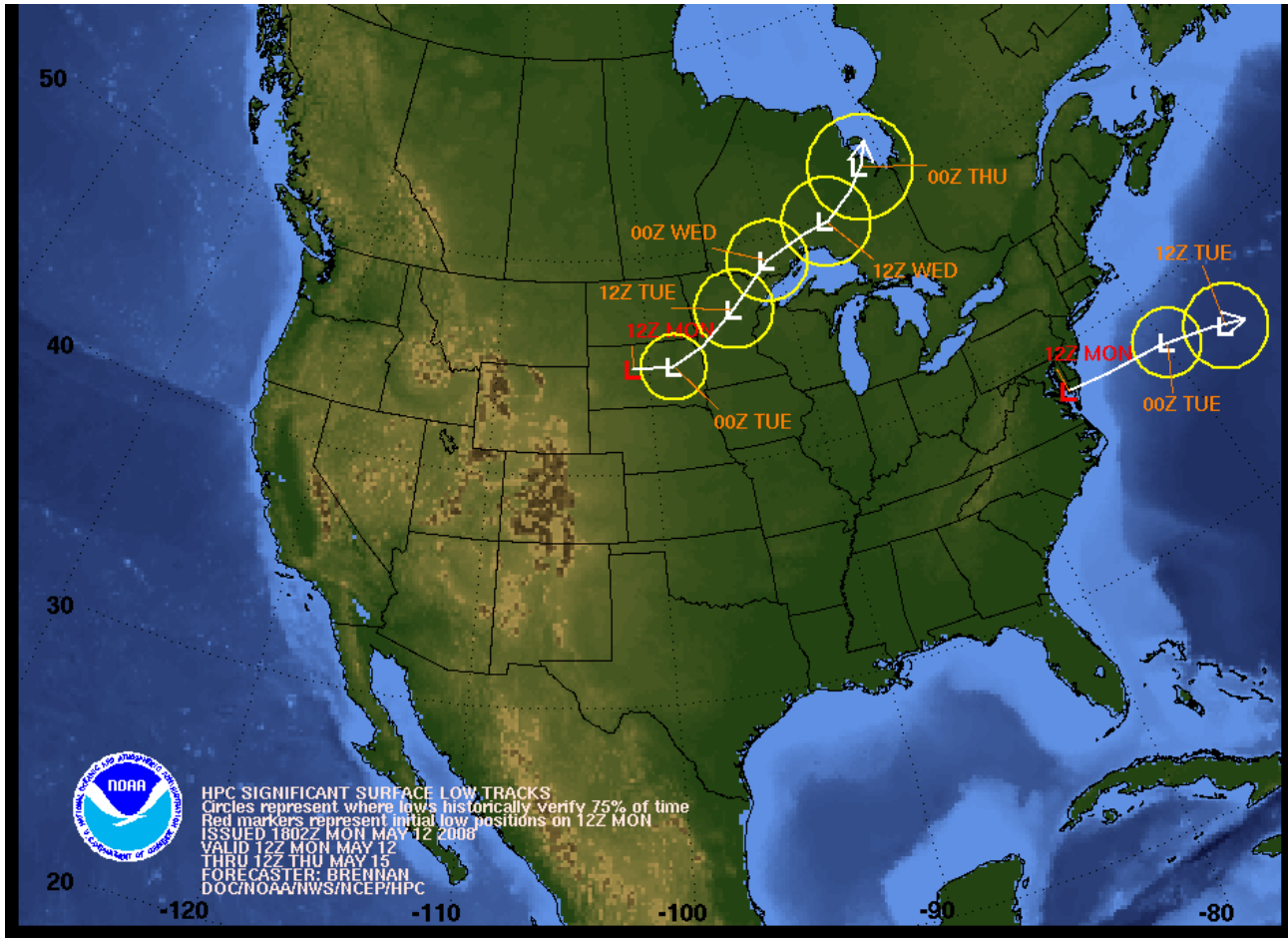


Figure 6. 72-Hr Low Tracks (Non-Technical)

5.4 Updates, Amendments, and Corrections. HPC will correct for format and grammatical errors as required.