NWS REQUEST FOR CHANGE FORM	1. WSH TRACKING NUMBER	1A. REV LEVEL	2. DATE RECEIVED
	AWIPS/DRG RC 15075		May 6, 2016;

PART A - COVER SHEET

This form is in three parts. Submitters must complete unshaded blocks in Part A, and as much of Part B and C as possible. If there is no specific required change date, enter 60 days from date submitted. Address questions to NWS Change Management at (301) 713-1373. Submit change requests to the NWSRC mailbox (External: NWSRC@noaa.gov).

3. ORIGINATOR OFFICE	4. SUBMITTING AUTHORITY	5. COGNIZANT TECHNICAL INDIVIDUAL	6. ORIGINATOR TRACKING NUMBER	7. DATE SUBMITTED
NWS/STI/MDL	Name: Phillip Shafer Routing Code: W/STI12	Name: Judy Ghirardelli Routing Code: W/STI11 Phone: 301-427-9496	MDL2016-04	05/05/2016

8. SYSTEMS AFFECTED BY CHANGE

☐ ASOS ☒ AWIPS ☐ CSSA ☐ CRS ☒ DATA PRODUCTS

☐ EMWIN ☐ NEXRAD ☐ RRS ☒ OTHER (specify) NDGD/NCDC

9. ORD IDENTIFIER

10. TITLE OF CHANGE

Add Super/sub headers for Gridded Localized Aviation MOS Program (GLMP) products over CONUS for SBN transmission and distribution to NWSTG/NDGD/NCDC

11. CATEGORY OF CHANGE

☒ RC ☐ PECP ☐ ECP

12. TYPE OF CHANGE

☐ DOCUMENTATION ONLY ☐ HARDWARE ☐ SOFTWARE ☒ DATA

13. SITES AFFECTED

All

14. STATEMENT OF REQUIREMENT, PROBLEM, OR DEFICIENCY OF EXISTING SYSTEM

The NWS forecaster needs gridded forecast guidance for the preparation and updating of digital forecast products. Localized Aviation MOS Program (LAMP) forecasts need to be available at the WFO in gridded format to facilitate more efficient and effective use by NWS forecasters in GFE. Gridded LAMP guidance is not currently available for all elements needed. The current Gridded LAMP system only outputs temperature, dew point temperature, ceiling height, visibility, sky cover, wind speed and wind direction.

15. KNOWN OR PROPOSED SOLUTION

MDL will produce Gridded LAMP (GLMP) guidance over the CONUS for the following elements, and make them available in GRIB2 format over the SBN and on NWSTG/NDGD:

- Observations (0-hour) and forecasts (1-25 hour) of 10-m wind gust
- Forecasts (1-25 hour) of the probability of ceiling height <500 ft, <1000 ft, and <=3000 ft
- Forecasts (1-25 hour) of the probability of visibility <1mile, <3 miles, <=5 miles

The guidance will be available on a 2.5km Lambert Conformal grid covering the same expanse as the NDFD CONUS grid. More information about the GLMP products is available at http://www.weather.gov/mdl/lamp_gridded. The attached documents outline the superheaders and individual headers, and NDGD directory path and file names for each GLMP element. Note that the header scheme skips letters representing the element to allow for future products. These products should be transmitted across the SBN and routed to NDGD and NCDC beginning on June 14, 2016.

16. ALTERNATE SOLUTIONS

None

17. REQUIRED CHANGE DATE	18. RATIONALE FOR REQUIRED CHANGE DATE	19. PRIORITY
06/14/2016	TIN requires 30-day notice. Implementation date is being coordinated with NCO staff… tentatively scheduled for Jun 14, 2016.	☒ ROUTINE ☐ URGENT ☐ EMERGENCY

DRG/CCB/PMC/CMB DECISION

20. DECISION AUTHORITY AND IMPACT LEVEL

☐ PMC or NWS CMB DECISION REQUIRED ☐ CCB LEVEL ONLY ☐ FAST TRACK ☐ MAJOR CHANGE ☐ MINOR CHANGE

21. CCB LEVEL DECISION

☒ APPROVED ☐ DISAPPROVED ☐ RECOMMEND APPROVAL ☐ REFERRED TO OSIP

SIGNATURE

Anthony Robinson

DATE RE-SIGNED

June 10, 2016

FOR USE ONLY WHEN PMC or NWS CMB DECISION REQUIRED

22. PMC OR NWS CMB DECISION

☐ APPROVED ☐ DISAPPROVED

SIGNATURE/DATE

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PART A - DATA PRODUCTS SUPPLEMENT

This information is required for Data Products submissions.

3. INTERNAL NWS USE ONLY	4. PRODUCT SOURCE	5. AWIPS DATA TYPE
☐ YES ☒ NO	NCEP WCOSS	Grids (GRIB2)

6A. NOTIFICATION	6B. CHANGE NOTICE NUMBER	6C. ISSUE DATE	6D. TEST DATE	6E. IMPLEMENT DATE
SBN/NOAAPort	15075	6/10/2016		6/14/2016
EMWIN				
NWWS				
NDGD	15075	6/10/2016		6/14/2016
NCDC	15075	6/10/2016		6/14/2016

Please see attached documents for complete header and product size/projection information

7. NODE ID	8. AWIPS ID NNNXXX	9. WMO HEADER	10. ADD REV DEL	11. SEAS Y/N	12. CHAR PER MSG	13. FREQUENCY	14. NWSTG DISTR
		Header:					**Description:**
		0-hour Observations					
		LHUAii KMDL	Add	N	1MB/file	Once hourly	Wind Gust
		1-25 hour Forecasts					
		LRUAii KMDL	Add	N	25MB/file	Once hourly	Wind Gust
		LMUCii KMDL	Add	N	25MB/file	Once hourly	Ceiling Probability <500 ft
		LMUDii KMDL	Add	N	25MB/file	Once hourly	Ceiling Probability <1000 ft
		LMUFii KMDL	Add	N	25MB/file	Once hourly	Ceiling Probability <=3000 ft
		LNUCii KMDL	Add	N	25MB/file	Once hourly	Visibility Probability <1 mile
		LNUEii KMDL	Add	N	25MB/file	Once hourly	Visibility Probability <3 miles
		LNUFii KMDL	Add	N	25MB/file	Once hourly	Visibility Probability <=5 miles
		Total additional data volume per cycle:			**~ 176 MB**		Note: these estimates represent an upper limit of expected data file sizes
		Total data volume per day:			**~ 4.125 GB**		

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PART C - CHANGE AND IMPLEMENTATION ACTIVITIES

Submitters should propose implementation actions; WSH will assist with and supplement actions or required statements when necessary.

3. IMPLEMENTATION DOCUMENTS REQUIRED

☐ Engineering Modification Note ☐ Software Release Notes ☐ Other Document (Specify)_____

ADDITIONAL IMPLEMENTATION INSTRUCTIONS

4. IMPLEMENTATION ACTIVITY REQUIRED	5. RESPONSIBLE PERSON AND OFFICE	6. REQUIRED COMPLETION DATE	7. DOCUMENT OR ACTION REQUIRED TO VERIFY COMPLETION
Alert GLMP files to TOC	NCO / Dataflow	06/14/2016	
Set up tgftp directory paths/filenames for new GLMP grids	Walt Mussante, TOC	06/14/2016	
Add headers to switching directory	Cynthia Jones, TOC	06/14/2016	
Modify AWIPSII to enable ingest, processing, and display of the GLMP products described in Part A.	Raytheon	Future AWIPS build	

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WMO Headings for Gridded LAMP (GLMP) Products

WMO headings have the format of $T_1T_2A_1A_2$ii CCCC

1. The CCCC for all Gridded LAMP (GLMP) product WMO headings is **KMDL**.

2. The T_1 for all GLMP products is **L**.

3. The T_2 represents the weather element type designator. Values for 0-hour observation T_2 are:

A = temperature at sensor height (nominally, 2 m)
B = dew point temperature at sensor height (nominally, 2 m)
C = ceiling height
D = visibility
E = opaque sky cover
F = wind speed (nominally, 10 m)
G = wind direction (nominally, 10 m)
H = wind gusts (nominally, 10 m)

Values for 1-25 hour forecast T_2 are:

K = temperature at sensor height (nominally, 2 m)
L = dew point temperature at sensor height (nominally, 2 m)
M = ceiling height (see A_2 below for probability specifications)
N = visibility (see A_2 below for probability specifications)
O = opaque sky cover
P = wind speed (nominally, 10 m)
Q = wind direction (nominally, 10 m)
R = wind gust (nominally, 10 m)

Note that T_2 skips letters between 0-hour observation and 1-25 forecast grids so that elements can be added in the future and subsequent to the appropriate list, observations or forecasts.

4. The A_1 designates the geographical area. This implementation is over CONUS only and therefore

A_1=**U**

5. For non-probability grids, the A_2 indicates if the grid is the standard grid (A_2= A) or an Error Estimation grid (A_2= B). Specifically, for non-probability grids the A_2 represents:

A = Standard grid (such as temperature, dewpoint, wind speed, ceiling height, etc.)
B = Error estimation grid (such as temperature error estimation or dewpoint error estimation)

For probability grids, the A_2 for individual element headers indicates the probability event. Specifically:

For ceiling height grids (T_2 = M), the A_2 represents:

C = probability of ceiling height < 500 feet
D = probability of ceiling height < 1000 feet
F = probability of ceiling height ≤ 3000 feet

For visibility grids (T_2 = N), the A_2 represents:

C = probability of visibility < 1 mile
E = probability of visibility < 3 miles
F = probability of visibility ≤ 5 miles

The ii will represent the cycle time for the observation grids and number of hours past cycle time for the forecast grids.

6. Since there will be multiple GRIB2 messages for the GLMP forecast grids in the same file, they will be grouped under a superheader when being routed to the tgftp at the TOC for NDGD. As there will only be one grid per header for the GLMP observations, superheaders will not be necessary for those grids.

Superheaders are defined as T_1T_2AZ98 KMDL, where T_1T_2 is the same as T_1T_2 from individual headers.

For temperature, dew point, celling height, visibility, sky cover, wind speed, wind direction and wind gust, the A is defined

A = the A_1 from the individual header

However, for ceiling and visibility probability categories, in order to distinguish superheaders of different categories described in (5), the A is defined as:

A = A_2 from the individual header

GLMP 0-hour observation grids:

LAUAii KMDL - Temperature
LAUBii KMDL - Temperature Error Estimation
LBUAii KMDL - Dew Point
LBUBii KMDL - Dew Point Error Estimation
LCUAii KMDL - Ceiling Height
LDUAii KMDL – Visibility
LEUAii KMDL – Opaque Sky Cover
LFUAii KMDL – Wind Speed
LGUAii KMDL – Wind Direction
LHUAii KMDL – Wind Gusts

ii = valid UTC hour (00-23)

GLMP 1-25 hour forecast grids:

LKUAii KMDL - Temperature
LLUAii KMDL - Dew Point

LMUAii KMDL - Ceiling Height
LMUCii KMDL - Probability of ceiling height < 500 feet
LMUDii KMDL - Probability of ceiling height < 1000 feet
LMUFii KMDL - Probability of ceiling height ≤ 3000 feet

LNUAii KMDL – Visibility
LNUCii KMDL – Probability of visibility < 1 mile
LNUEii KMDL – Probability of visibility < 3 miles
LNUFii KMDL – Probability of visibility ≤ 5 miles

LOUAii KMDL – Opaque Sky Cover
LPUAii KMDL – Wind Speed
LQUAii KMDL – Wind Direction
LRUAii KMDL – Wind Gusts

ii = forecast projection (01-25)

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Table 1: Superheaders and individual headers and product sizes for Gridded LAMP products to be routed to NDGD beginning on Jun 14, 2016.

Element	Super-header	Product Headers	Geographical Area	No. of Products per cycle	Projections (hr)	Bytes per header/ cycle
0-hr Observed Wind Gusts	N/A	LHUAii KMDL ii = valid hour in UTC (00-23)	CONUS	1	N/A	1MB/1MB
Forecasted Wind Gusts	LRUZ98 KMDL	LRUAii KMDL ii = forecast projection (01- 25)	CONUS	25	1-25 (in increments of 1 hour)	1MB/25MB
Forecasted Probability of Ceiling Height < 500 feet	LMCZ98 KMDL	LMUCii KMDL ii = forecast projection (01- 25)	CONUS	25	1-25 (in increments of 1 hour)	1MB/25MB
Forecasted Probability of Ceiling Height < 1000 feet	LMDZ98 KMDL	LMUDii KMDL ii = forecast projection (01- 25)	CONUS	25	1-25 (in increments of 1 hour)	1MB/25MB
Forecasted Probability of Ceiling height ≤ 3000 feet	LMFZ98 KMDL	LMUFii KMDL ii = forecast projection (01- 25)	CONUS	25	1-25 (in increments of 1 hour)	1MB/25MB
Forecasted Probability of Visibility < 1 mile	LNCZ98 KMDL	LNUCii KMDL ii = forecast projection (01- 25)	CONUS	25	1-25 (in increments of 1 hour)	1MB/25MB
Forecasted Probability of Visibility < 3 mile	LNEZ98 KMDL	LNUEii KMDL ii = forecast projection (01- 25)	CONUS	25	1-25 (in increments of 1 hour)	1MB/25MB
Forecasted Probability of Visibility ≤ 5 miles	LNFZ98 KMDL	LNUFii KMDL ii = forecast projection (01- 25)	CONUS	25	1-25 (in increments of 1 hour)	1MB/25MB
Totals				176		176 MB/cycle (each hour)

Figure 1. GLMP data product routing with present TOC hardware

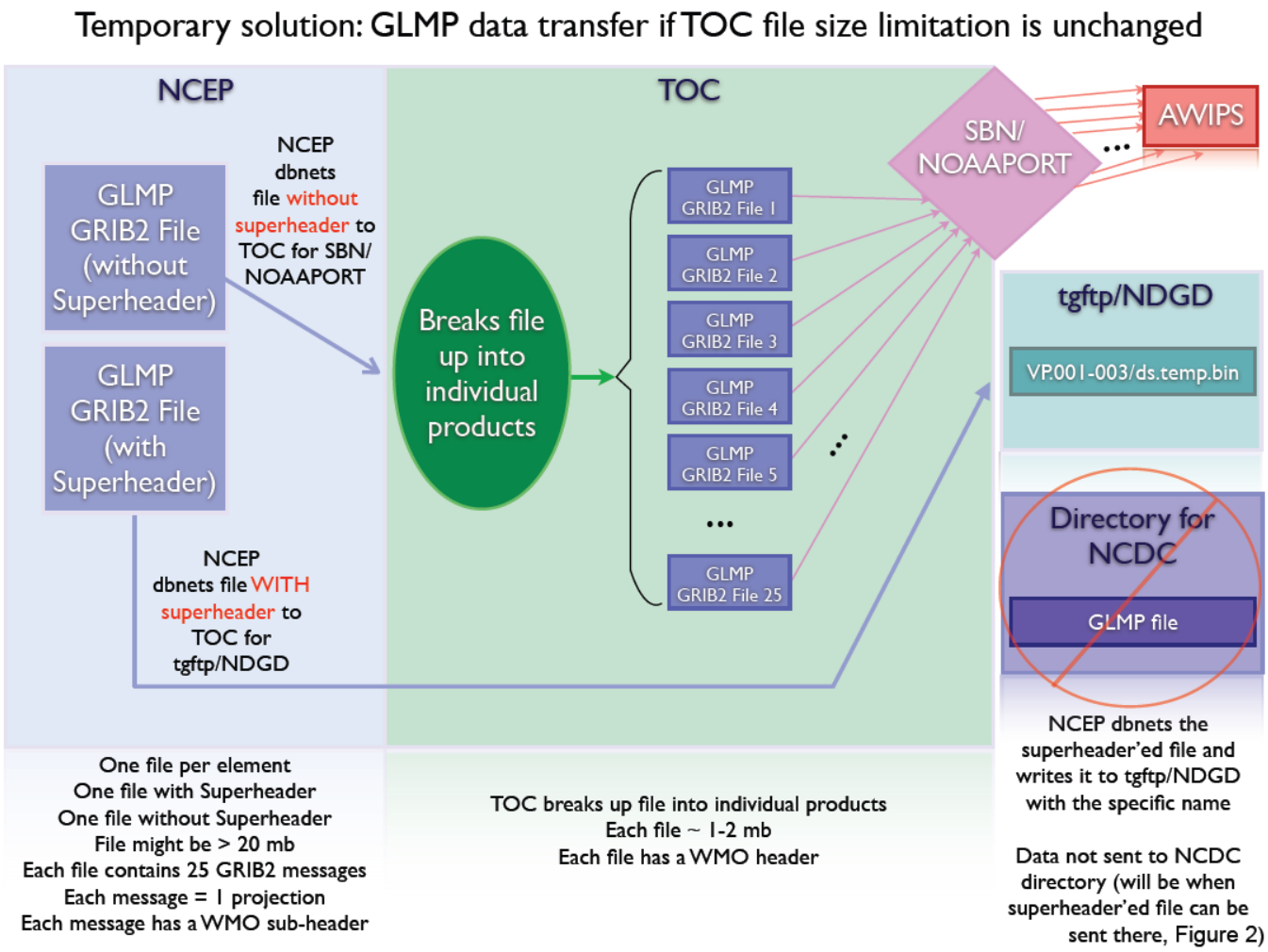

Figure 2. GLMP data product routing when TOC hardware upgrade is in place